

WILDLIFE INSTITUTE OF INDIA

**An Autonomous Institution of the Ministry of
Environment & Forests**

**ANNUAL REPORT
1987-88**

**New Forest, Dehradun
December, 1988**

INTRODUCTION

The wilderness of India -- shrunk and degraded as it now is -- continues to be under pressure, because the resource-dependent forest side people have no alternatives. Ecologically sustainable land use in the rural sector in forested regions is a far cry. In consequence, the people, the forests and wildlife all continue to be victims of an aggravating vicious cycle actuated by irrational land use and unrealistic rural development strategies. The stark reality of the severe drought, now running in its fourth year, exposes the vulnerability but sobers us little. The parched hills and the desiccated rolling table lands of the peninsula -- arid and not so arid -- are all devoid of fodder and the great mass of pasturing livestock faces severe threat. The already tenuous equations at the borders of protected areas have shown signs of breaking up in a stress situation, as exemplified by Gir and Ranthambhore. Such breaking up of regulations and control mechanisms points to the possibility that even the few 'sanctum-sanctorum' for wildlife may not remain inviolate and the endangered denizens may become insecure even in their last minuscule preserves.

Yet, the irony is that such onslaught cannot bring any lasting relief to the people, though it surely can cause irreparable damage to the rare genetic resources which the protected areas seek to secure. There is hence an urgent need to probe into the deficiencies and incongruities in the prevailing land use scenario because they are responsible both for people's deprivation as well as ravage of land. If corrective action does not ensue soon, our invaluable wild genetic resources, the basic life support systems and indeed, the sustainable welfare of our people will become increasingly imperilled.

Among these basic deficiencies is also our inadequate capability in managing the conservation areas. This is because of the lack of scientific information and trained man-power required for appropriate management that would take into account also the stress at the interface of protected areas. It is for this reason that the problems of paucity of finance needed to manage the protected areas get compounded and returns from even such investment as can be commanded fall short of the optimum.

The existing network of protected areas comprises 66 national parks and 434 sanctuaries spread over a total area of a little over 1.41 lakh sq km. In its recent consultancy report, the Wildlife Institute of India has proposed a national network of protected areas to comprise 148 national parks and 503 sanctuaries spread over a total area of 1.51 lakh sq km. The proposals in the report are aimed at preservation of our biogeographic diversity and the vital corridor links. The Institute carries the primary responsibility of training the man-power needed to manage the protected area system as well as to ensure the security of wildlife values in other forests and non-forest wilderness.

The report reviews the activities of the Institute in 1987-88 which is the second year of autonomy and is marked by continued concerted activities towards academic and infrastructural development.

THE OBJECTIVES

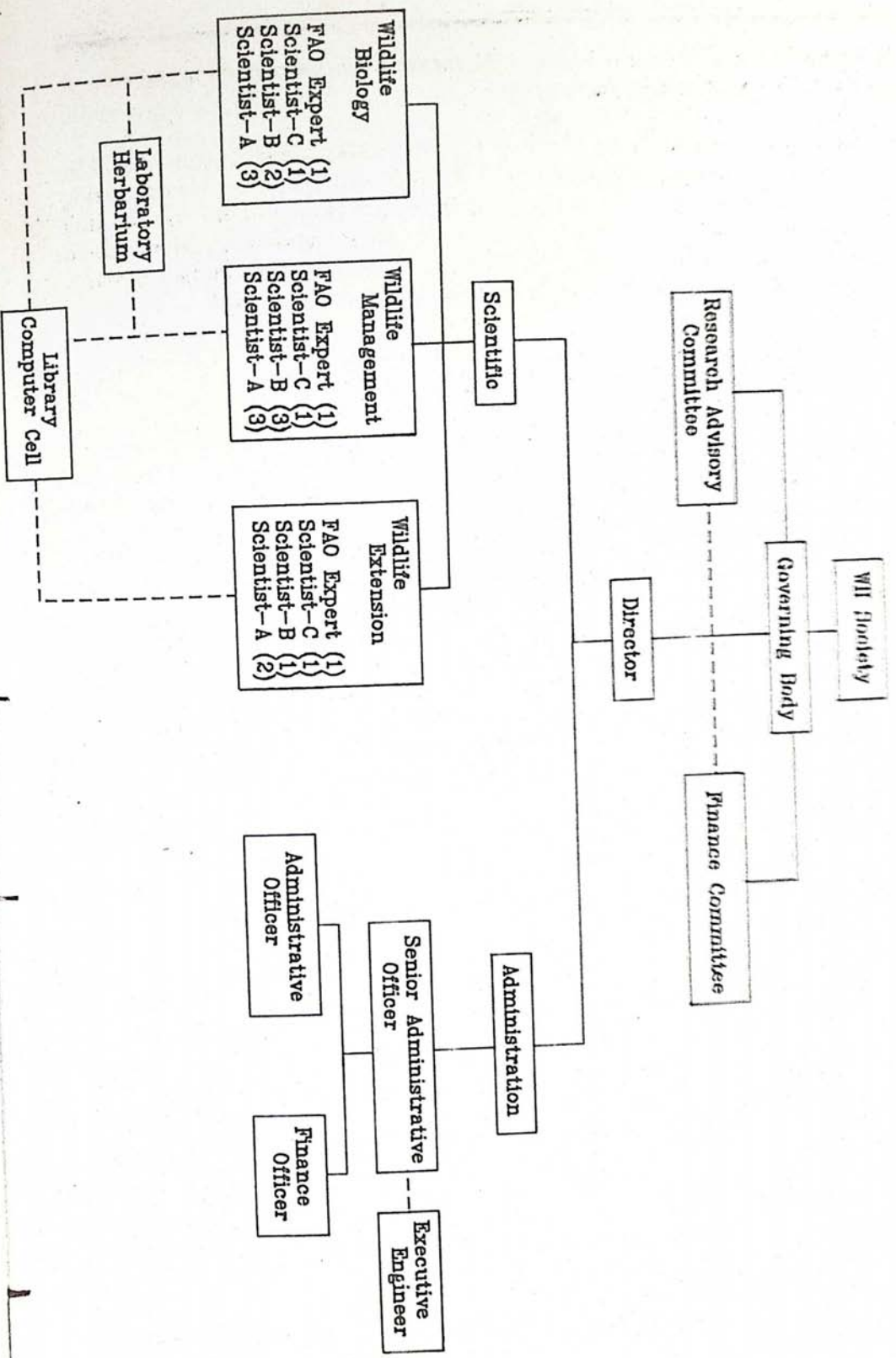
The WII was set up in the year 1982 to fill-up the long standing gap in the training, education and research facilities in the science of wildlife conservation. The main objectives of the Institute are:

1. Training managers and biologists for protected area management and wildlife research;
2. Training education and extension specialists for protected areas to increase support for wildlife conservation;
3. Providing orientation courses for those involved in land use management;
4. Conducting and coordinating applied wildlife research and evolving relevant techniques suited to Indian conditions;
5. Creating a data base for building a wildlife information system employing modern analytical techniques and computer equipment, and
6. Providing advisory services.

INSTITUTIONAL STRUCTURE

The Institute is organised into three scientific faculty divisions of Wildlife Biology, Wildlife Management and Wildlife Extension. The upcoming Library of the Institute receives priority attention in terms of acquisition of books, and journals and documentation, supervised by an inter-faculty committee. In addition, there is an administration division which provides support services to the academic and developmental programmes of the Institute. This division includes an engineering cell to coordinate and oversee the construction programme at the new campus of the Institute. An organisational chart which shows how the various divisions of the Institute relate to each other is given on the facing page. Each of the faculty divisions is headed by a Scientist-C and the administration division, by a senior administrative officer. There are in all 23 faculty posts in the scientists category, including that of the Director. Of these, 20 posts have currently been filled up. Of the remaining 95 posts 17 are technical, 46

WILDLIFE DEPARTMENT OF HIDA
Organizational Chart



administrative and 32 maintenance. 80 incumbents have been appointed at various levels so far against these posts.

The total approved budget for the year was Rs.143.00 lakhs of which Rs.73.50 lakhs was the Recurring component and Rs.69.50 lakhs was the non-recurring part. While the entire amount on the recurring side was spent there was shortfall on the non-recurring component as the building construction programme could not be started owing to the contractor backing out. Details of the annual accounts of the Institute may be seen in the account's section of this report.

ACTIVITIES

All the activities of the Institute are geared toward achieving the recognised objectives. The major thrust justifiably is in the academic sphere. Shortage of trained personnel continues to constrain the development of wildlife wings in the different States. Development of a cadre of trained managers and technicians, therefore, continues to be a priority of the Institute. Likewise, a pool of wildlife biologists and researchers is being developed to meet the requirements of not only the Institute but also of the State Forest Departments, the Universities and other research institutions. The year is marked by the launch of a fully fledged M.Sc. Wildlife course to this end. The training, education and research programmes of the Institute are so designed as to accord with realistic field situations and take into account the various ecological, economic and social aspects of wildlife conservation. Relevance to present day needs at the field level is, therefore, a major guiding factor of these programmes.

The various activities of the Institute fall under the following three broad groups:

1. Academic
2. Organisational
3. Developmental

ACADEMIC

This principal activity of the Institute includes education, training and research programmes. The education programme, launched this year, consists of a 2-year M.Sc. course in field-based wildlife biology which is open to young graduates in life sciences. This course is aimed at producing qualified field biologists/ecologists who could pursue a career either in research with the state wildlife wings, or teaching in the various universities which are setting up separate departments of wildlife science.

The training programme primarily covers in-service personnel of the State Forest and Wildlife Departments at the middle management level and at the field executive level. The objective is not only to provide trained officers for the large protected area network in the country but also to orient forest officers to safeguard wildlife values in managed forest areas.

The Institute's research programme provides the much needed support to field management by addressing problems of endangered species and ecosystems and of human interaction with wildlife. It is also an important means of faculty development, and of developing study and management techniques and methodologies relevant to Indian conditions.

EDUCATION PROGRAMME

M.Sc. Wildlife Biology : This two year (4-semester) course was started in January 1988 with seven (5 men and 2 women) students. The programme has been recognised by the Saurashtra University, Rajkot for award of M.Sc. Wildlife Biology degree to the successful candidates.

Admission to the first M.Sc. Course was through an open competitive examination comprising a written test and viva voce. Each of the selected candidates is being provided a fellowship of Rs.28,200 over a two year period. The candidate topping the merit list in the entrance examination is the recipient of the Dr. Salim Ali Memorial Fellowship provided this year by the Bombay Natural History Society, while the remaining six get the Institute's fellowship.

The selected students were put through an orientation programme, both in the class room and in the field, to expose them to the multi-disciplinary nature of wildlife science. The course curriculum comprises regular theory sessions and practical laboratory work on week days, and field exercises on week ends and out-of-station tours. Nearly half the total period will be spent in the field including a 6-month field study of a research problem as a part of the course. A major portion of the course for the I semester has been completed.

Training Programmes

One of the primary responsibilities of the Institute is to provide training to in-service personnel of the State Forest Departments/Wildlife Wings in the field of wildlife management. For this purpose training is organised at two levels - at the level of manager/director of a protected area, and at the level of a field executive or the range officer level.



A **Post-graduate Diploma Course** of 9-months duration caters to the training needs at the managers level. The emphasis in this course is on imparting training in management planning, strategies and techniques which are most relevant to current field situations. The trainee officers are put through a programme involving both the theoretical and practical aspects of field management. The programme includes visits to representative wildlife areas in different parts of the country to get a first-hand experience of management problems and prescriptions. A major part of the course is devoted to making the trainees adept in the preparation of management plans for protected areas. This involves a 6-week management planning exercise in an appropriate national park, at the end of which each trainee has to write up a management plan for the area and this is evaluated for course credits.

The 3-month **Certificate Course** is aimed at training field executive personnel (Range Officer level). The course structure is quite similar to that of the 9-month diploma course but with less emphasis on theory and management planning aspects. The object of this course is to impart training in the practical aspects which would be useful in field tasks and day-to-day management.

In addition to these two regular courses a number of short term courses and workshops on specialised subjects are conducted to meet specific training needs.

During the period under report the following training activities were undertaken:

Regular Courses

8th Post-Graduate Diploma Course : This course which began in the previous year (August,1986) was concluded in April,1987. Fifteen trainees from thirteen States successfully completed this training.

9th Post-Graduate Diploma Course : This course which commenced in August, 1987 was continued through March,1988. 24 trainees from 14 States are attending this course. Field training tours covered Rajaji, Kedarnath, Sariska, Bharatpur, Corbett, Dudhwa, Palamau, Dalma, Srisailam, Anamalai, Parambikulam and Periyar besides visit to National Zoological Park and National Museum of Natural History at Delhi. The management plan exercise was conducted in Madhya Pradesh at the Satpura protected area complex comprising Satpura National Park and Bori and Panchmarhi sanctuaries.

4th Certificate Course : This was conducted from May to July 1987 with 18 trainees from 13 States. Field tours took the trainees to Rajaji, Bandhavgarh, Shivpuri, Ranipur, Kukrail (Lucknow), Morena, Karera and the Ken Gharial Sanctuary.

5th Certificate Course : This 3-month Certificate Course in Wildlife Management for Range Officers of the South Indian States was to be conducted at the Crocodile Research Centre at Hyderabad from 1st November, 1987. The States of Andhra Pradesh, Tamil Nadu, Kerala, Karnataka and Goa were requested to depute trainees for the course. However, Kerala, Goa and Tamil Nadu intimated their inability to depute any Officers. The Course was deferred until 1st December, 1987 renewing the request for nominations. By the first week of December 1987, nominations of only four candidates from Andhra Pradesh and one from Karnataka had been confirmed. The Course thus had to be cancelled for reasons of inadequate nominations. Trainees from southern states will also now be asked to join the next such course at Dehra Dun (May-July, 1988).

Field Training Workshops/Symposia

Besides the above regular courses, the Institute also organizes field training workshops on specialized subjects of wildlife management. While symposia focus attention on important issues confronting the managers and researchers in the field, the training workshops enable participants to acquire new skills and techniques of wildlife management.

The following workshops and symposia were organized by the Institute during the period under review :

Census Workshop - The Institute conducted a workshop on census techniques, the second of its kind, at Sariska Tiger Reserve from November 22-26, 1987 for officers from forest departments, research organizations and university teachers. Of a total 29 participants, there were 23 forest officers including 10 field directors of tiger reserves, 3 were from research organizations and 3 from the universities. An updated draft manual on census techniques suited to Indian conditions was provided to each participant which proved its utility as a basic reference. It is proposed to publish this manual and the manuscript is currently under finalisation.

Habitat Evaluation Workshop - This first workshop was organized at the Sariska Tiger Reserve from November 26 to December 1, 1987 to demonstrate and discuss the application of wildlife habitat description, monitoring and evaluation techniques suited to Indian conditions. Each participant was provided selected reading material relevant to the exercises. Based on this a manual on habitat analysis and evaluation is being developed. The workshop was attended by twenty five field biologists working for the Bombay Natural History Society on its various research projects, and in addition three other members of the BNHS were also present. The participants found the Workshop to be extremely useful and of direct relevance to their work.





Workshop on the Role of Army in Wildlife Conservation Programmes - At the request of the Army Headquarters, New Delhi one such workshop was organized by the Institute during April, 1986 in which 19 officers from different field formations attended. Following the success of this workshop, the Army Headquarters again requested the Institute to conduct a similar workshop during 1987 which was organized during June 22-26, 1987 in the Rajaji National Park. A wide range of subjects concerning ecology and conservation were discussed, including a village study and its impact on wildlife conservation in the Rajaji National Park. More emphasis was given on teaching through field demonstration and lectures with audio-visual aids emphasizing the help that Army can offer to wildlife conservation. This approach was greatly appreciated by the participants. On the concluding day three seminars were presented by Senior Army Officers on the theme "Wildlife Conservation and Role of the Army".

One of the major recommendations of this workshop was that such workshops should be regularly conducted for the army personnel.

SYMPOSIA

International Symposium on Tropical Ecology, Banaras Hindu University, Varanasi, December 12, 1987 - The IX Symposium of the International Society

for Tropical Ecology (ISTE) was marked by the inclusion of a Special Session on "Wildlife Conservation in the Tropics", for the first time. This Special Session which, as a part of the ISTE Symposium, was organised by the Wildlife Institute of India, received 34 papers out of which 12 were read out. These papers contributed by wildlife ecologists, park managers and conservation educationists covered a wide range of subjects. Special mention should be made of the Institute's paper on the need of improving the national network of wildlife protected areas on the basis of adequate biogeographic representation so as to ensure the protection of wild genetic diversity. This accorded with the shifting emphasis in conservation from species to ecosystems. Other papers emphasized on proper conservation and management of grassland ecosystems in the terai and the arid regions so as to safeguard their typical plant and animal species. The need for further research on management techniques which would provide welfare both for the smaller and the larger species such as Bengal florican, pygmy hog, swamp deer and rhinoceros, was highlighted. Pleas were made for conservation of grizzled giant squirrel habitat and mangrove environments as a means of stabilizing the coast line, preserving plant and animal species diversity and augmenting the productivity of fish and forest resources for the people of the region.

A strong case was made in favour of wildlife conservation through protected areas as an essential aspect of overall land use. It was argued that while the preservation of areas of natural wilderness was essential and could not be compromised, simultaneous efforts should be made to bring up the productivity of multiple use areas around such wildlife reserves so that the needs of the people are met by the latter and pressures on the wilderness are minimized.

The Little Rann of Kutch harboring wild-ass, flamingo and migratory wader birds was shown as a particularly threatened ecosystem requiring most urgent attention.

Four poster papers were also presented at the Session and these covered the Institute's research studies on Elephant in North-West Himalayas and on threatened Nilgiri Langur in Mundanthurai Wildlife Sanctuary of Tamil Nadu. A computer demonstration of the wildlife information system set-up at the Institute was also given.

RESEARCH

One of the primary objectives of the Institute is to conduct research in selected priority fields pertaining to wildlife. The Institute is also being increasingly called upon to play a nodal role in fostering the development of wildlife science in the country and this is being done not only through its own research projects, but to some extent also by interacting with the universities and other research

organisations. Institute's own research projects are visualised as an important means of faculty development by keeping the faculty abreast of the realistic field situations and management needs so as to ensure that teaching remains relevant at all times.

The thrust of the Institute's research effort is on the applied aspects and its research prioritisation takes into consideration the various ecological, biological and socio-economic factors. Research projects are designed in such a manner that their findings are of direct help in mitigating threats to wildlife and its habitat and in improving the overall management of wildlife and of the protected areas.

During the year under report 14 research projects were in operation in different field locations. Of these, 13 were on-going studies from previous years and one, on the Snow leopard in Ladakh, was initiated during December, 1987 to continue the work done earlier under a general survey project.

A brief resume of progress under each of these projects is as follows :

- ✓ **Investigation of Biogeographic Patterns of Relevance to Planning of Long Term Wildlife Conservation Strategies in India** - The objective of this study is to develop viable conservation strategies for extensive endemic and rare flora in Meghalaya and Garhwal Himalaya. The study for plant conservation planning of Meghalaya was completed. Several sites in the UP Himalayas were visited where plant conservation planning continues. The project will be completed by December 1988.
- ✓ **Monitoring of Rhinoceros Reintroduced in Dudhwa National Park** - Data is being collected on habitat utilisation by quantifying factors such as home range, shelter, food and water. Behavioral aspects such as social interaction, use of space by individuals and relationships between individuals are being observed. A rhino female gave birth, the first such event in the introduced population during August, 1987. Unfortunately the calf was found dead, a suspected case of predation by tiger.
- ✓ **The Investigation of Habitat Types of Rajaji Sanctuary and their Utilisation by Large Mammals** - Plant species collection work is complete. Field work related to collection of habitat parameters data is nearing completion. The aerial photographs for the study area have recently been acquired and will considerably ease the work of habitat mapping. Report preparation is underway. This along with the elephant and gujar study in the same area will prove useful in formulation of a management plan for the national park.

Ecological Factors Pertinent to Improved Management of the Asiatic Lion in India - Radio-tracking of four lions, two adult males, one young male and an adult female collared in the early part of February, 1987 continued till mid July, 1987 when the female died. In the first week of November, 1987 another adult male was collared in Eastern Gir.

Because of the third consecutive drought there was a large scale influx of cattle into Gir in June, 1987. As a result lions almost completely shifted on to livestock for prey. Nevertheless with the removal of most of the stock since January, 1988 the situation has reverted to normal. Lions in Eastern Gir, in total contrast to those in the west, survive largely on domestic stock. Only one wild lion kill (an adult male nilgai) has been collected from eastern Gir so far. The socio-economic aspects of lion conservation, particularly the impact of maldharis, are also being addressed in this study. The project will end in December 1989.

A Study of the Ungulate Habitat Ecology in Gir - To investigate the patterns of habitat utilization and to correlate the habitat use with different environmental situations, data on dung was collected. Data has also helped ascertain spatio-temporal abundance of different species by analysing values of their relative dung density.





For better understanding of food availability in different seasons, regular observations on phenology has been made. Data on abundance and biomass of different grass species was collected by clipping herbage in random quadrats. To investigate the dietary selection of different ungulate species, rumen samples were regularly collected and analyzed. Direct observations on feeding behaviour were made while walking on permanent transects.

Due to the 3rd consecutive drought year in the region and high pressure of livestock grazing, data on inflow of livestock, grass and water availability were collected. Now it will be possible to compare data with normal rainfall years. Further field work is in progress.

Grizzled Giant Squirrel Project - Behavioral and ecological studies on an adult male, a female and intermittently on two young males and two females in the Megamalai Sanctuary of Tamil Nadu were continued. Attempts are being made to radio-collar two squirrels.

Phenology data on 150 trees representing 15 species is also being collected. Vegetation studies using plotless methods in the riverine, nallah bank and hill slope forests are nearing completion. Information on nest trees along three kilometers of riverine and nallah bank forests has also been collected.



Nilgiri Langur Project - Behavioral studies on two study troops in the Mundanthurai Sanctuary were completed by August, 1987. The other aspects of the study, which continued till March, 1988 are:

1. Monitoring eight troops of Nilgiri langur for birth, death or disappearance of individuals and estimating their home ranges;
2. Phenology study in both Tambiraparani and Servalar study areas;
3. Assessing the rate of Nilgiri langur habitat destruction; and
4. Assessing the impact of blasting on riverine forest.

Work on this project will be completed by March 1989.

Movement and Habitat Utilization of elephants in North-Western Uttar Pradesh

- The study is aimed at obtaining information for proper management of the fragmented habitat in the Rajaji-Corbett region of the Siwaliks. Direct observations, indirect evidence gathering and monitoring of elephants after radio-collaring are the main study methods. The project received a setback of nearly one and half year because of an accidental death of an elephant after immobilization. With the renewal of permission further immobilization and radio-collaring was successfully done of a Makhna on 9th March, 1988 at Dholkhand.

Radio-tracking since then has established the viability of Motichur-Chilla corridor across the river Ganges and Chilla power channel which was earlier considered

to be inaccessible for elephant movement. It is proposed to immobilize and radio-collar five more elephants from different age groups and sex. The project will end in December 1989.

Ecology of the Indian Flying Fox in the Dehradun area - Monthly census of the population and collection of a sub-sample of 10 to 15 animals for histological studies on reproduction and blood chemistry continued. Feeding observations in relation to the fruiting seasons, the onset and end of activity timings and whole day activity patterns are also being made. The initial activity data analysis has revealed that the onset and end of activity timings are more closely related to the sunset and sunrise timings. The whole day activity data revealed that the animals start using one wing for fanning body when ambient temperature is > 27 degree celsius. A feeding trial on guava fruit under captive conditions on four animals showed a daily food consumption (wet weight) of 71 p.c. of their body weight. The results of this study will be useful for designing control methods for the heavy losses of fruit crops in the region.

Turtle Ecology Project - The objective of this project is to study the ecological relationship in food preference, habitat utilisation and reproductive strategy among the seven species of freshwater turtles found in Chambal river.

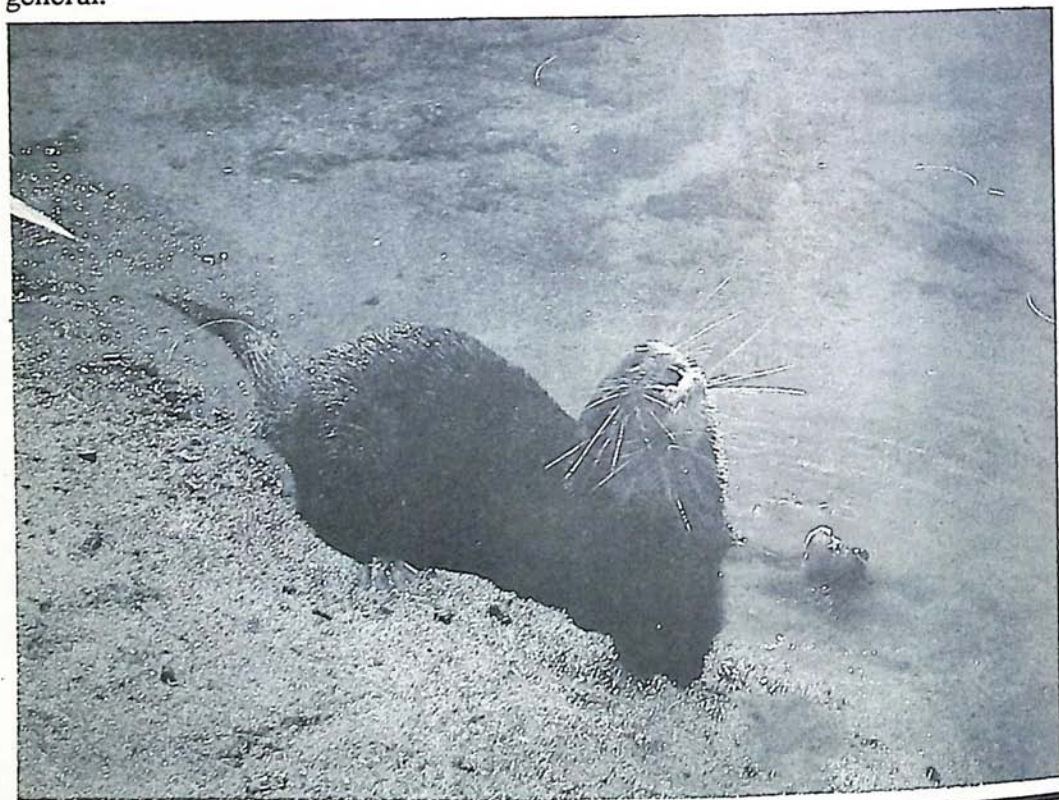
During the two years field work, besides gathering information on the nesting ecology and reproductive biology of all these species of turtles, small scale captive



hatching and rearing of various species of turtles have also been taken up at the research station in Deori to study captive incubation temperature and period, and post-hatching growth. Stomach content analysis to determine the diet preference has also been carried out. While the field work is being continued, the report of this project is also being finalized.

Mugger Crocodiles Monitoring Project in Andhra Pradesh - Beginning the field work from January, 1987, this research project has been monitoring reintroduced mugger crocodiles in five different sanctuaries of Andhra Pradesh. Data on nesting biology and reproductive success, movement and survival of hatchlings and diet preference of mugger by faecal sample analysis have been collected. Additional individually marked muggers are being reintroduced to study movement and dispersal pattern of adult size classes.

Ecological relationship of aquatic mammals in National Chambal Sanctuary - Besides gathering data on nesting biology and reproductive success of the introduced gharials during the year 1987 in Chambal river, survey findings and suggestions of the Research Advisory Committee necessitated a shift of attention to gangetic dolphin and otters. Since January, 1988, field work has been geared to collect data on dolphin and otter habitat preference, diet, population structure and their relationship with gharial in particular and other aquatic reptiles in general.



Freshwater frogs in Andhra Pradesh - Collection of freshwater frogs in Andhra Pradesh is being continued and analyzed to find out their relative abundance, breeding biology and role as agricultural pest controllers. This small-scale project has already resulted in two M.Phil and M.Sc. dissertations. A new long-term research project proposal is under preparation.

The Ecological studies of Snow leopard and its associated Prey Species in Hemis High Altitude National Park, Ladakh (J&K) - Field work was started in late December 1987. The entire study area has been surveyed. Distribution of four major ungulates (Ovis ammon hodgsoni, Capra ibex siberica, Ovis orientalis and Pseudos nayaur) was established within the study area. Information has been collected on the movement and activities of the snow leopards, wolves and lynx. Indirect evidence suggests the presence of 6-8 snow leopard in the study area. Three snow leopards were observed over a blue sheep kill for over 19 hours. A large number of snow leopard scats have been collected as also the pellets of the wild ungulates. Rumen contents of kills have been collected. Linear transects have been laid out along which sample plots are being studied for plant community composition. Several individual blue sheep have been identified based on distinctive features, in different herds, and these are being monitored to assess herd composition, habitat use and activity patterns including feeding habits.

Faculty Members Participation in MEETINGS/WORKSHOPS/SYMPOSIA

Tele-film for the UGC Educational Programme - A 19 minutes educational film on Crocodiles with the title "Crocodiles - The living Dinosaurs" was made in collaboration with the Audio-visual Research Centre of Osmania University. The overall story line, location, filming facilities as well as subject expertise was provided by a faculty member of the Institute. This film is slotted to be telecast in May, 1988 in UGC Programmes.

The Director participated in a Symposium organized by the Environmental Services Group in Delhi on the Role of NGOs in environmental conservation.

Environmental Education Through Video - Extension has an important role to play in creating public awareness and generating support for the conservation movement. Television as a medium for transmitting environmental education programmes is coming increasingly into use. This calls for the production of appropriate, imaginative and relevant video programmes on various topics dealing with environmental conservation. During the year, a number of workshops were organized in the country in which faculty members of the Institute participated with a view to acquire better techniques for wildlife extension programmes. A brief description of each of these workshops is given below :

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1. "A National Workshop on Use of Video" was organized by B.H.U. and N.C.D.C. of Varanasi from June 20-30, 1987. Aim of this workshop was to provide skills in video programme production to the participants. A faculty member participated in this workshop and produced a fifteen minutes video film on the Ganga pollution entitled "And the Ganga Flows";
 2. Two workshops on "Environmental Education and Curriculum Development" and "Writing on Environmental Issues" were organized by CEE, Ahmedabad. The objectives of these workshops were to prepare an outline to develop 26 TV films on environmental education. The workshops were under the Indo-US collaborative project between the CEE, Ahmedabad and the State University of New York, Syracuse and the US Fish & Wildlife Service. A faculty member of the Institute participated and contributed papers in these workshops from 21st June to 1st July, 1987.
 3. A follow-up workshop on the above was organized to develop approaches for environmental education TV Series for children from November 10-12, 1987. The aim of workshop was to discuss children, television and learning, review of environmental films, selection of concepts, decide style and formats and approaches to the series.
 4. A two day retreat on production of video programmes on the state of Indian environment was organized by JNU, New Delhi with the assistance of UGC on November 17-18, 1987. The aim of this workshop was to discuss environmental issues for TV films production. Two faculty members participated in this workshop.

Meeting of IUCN General Assembly - The Director participated in the IUCN General Assembly Meeting held from February 01-10, 1988 at San Jose, Costa Rica as a member of the official Indian delegation and also represented the Wildlife Institute of India. WII is a Government agency member of the IUCN. Being a member of the IUCN Commissions he also attended the meetings of the Species Survival Commission (SSC) and the Commission on National Park and Protected Areas (CNPPA).

In the SSC meeting information on the current status of recovery programmes of a number of endangered Indian species such as sangai and barasingha, and an update on Project Tiger was provided. In the CNPPA meeting progress on the implementation of National Wildlife Action Plan was furnished. This included the planning by WII of the national network of protected areas recommending setting up of additional national parks and sanctuaries. WII's contribution to improving the management of PAs was explained giving details of the regular courses for wildlife managers, the M.Sc. programme for wildlife biologists and a number of specialized training workshops. IUCN urged and offered support to the WII for

accepting students from the countries of the region in the various courses which the WII operates. The Committee was informed that the Governing Body of this Institute was seized of the matter and that a formal communication specifying quantum of admission to different courses would follow.

Significant amendments were suggested in the resolutions on "Ex-situ Conservation of wild genetic resources" and "Development aid in conservation programmes". The accepted amendment recommends siting of ex-situ genetic reserves in the developing countries of origin and not in the developed countries. The countries of origin, for whom wild genetic resources are a major prospective wealth, should be involved in distribution of genetic material and in sharing of royalties therefrom. It was also stressed that these measures should in no case lead to a neglect of in-situ conservation which indeed must be strengthened. As for development aid in conservation programmes, the accepted amendment recommends international aid agencies like the World Bank to grant loans at concessional rates to national governments of developing countries in order to activate the field conservation programmes.

The National Rangeland Symposium, Jhansi - Two members of the Wildlife Institute of India presented papers at this symposium which was arranged by the Range Management Society of India as a preparatory to the hosting of the large and prestigious International Congress of Range Ecology in November, 1987.

The symposium was of considerable interest and the venue at the Indian Grassland and Fodder Research Institute allowed an examination of the very impressive "Wasteland development" set up by the IGFRI. The more than fifty papers presented served to show the distressingly low level of research input into the natural forested rangelands of India, most attention being given to improved pastures. Both faculty members participated in a small committee asked to draw up recommendations for rangeland development in the Himalayas.

Elephant Census Workshop - At the meeting of the IUCN's Asian Elephant Specialist Group in Bandipur in November, 1985 it was observed that a wide variety of methods were being employed for estimating numbers of Asian elephants. Disparity in accuracy resulting from this makes meaningful comparison of elephant numbers in different areas extremely difficult and casts doubt on the validity of the conservation status of some elephant populations. Accordingly, a small Committee including a faculty member of Institute, was set up to look into ways of producing some standardization of elephant censusing methodology in the region - and the first workshop on elephant census was organized at Mudumalai in Tamil Nadu from December 28-31, 1987. Based on these deliberations and field trails at the workshop the following three recommendations were given for elephant methods:

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1. In very open habitats with relatively good visibility aerial census should be tried;
 2. In forest and wood land habitats with medium visibility ranges (mean maximum elephant sighting distance of between 50 and 200 m) direct counts are recommended; and
 3. In dense elephant habitats with a mean visibility of less than 50 m, meaningful direct counts are not feasible and should not be attempted. In this case indirect method using dung counts as the basis of either an index of abundance or an estimate of total numbers should be attempted.

Results of this workshop were written up as a report to be submitted to the Asian Elephant Specialist Group Meeting in Thailand from January 19-21, 1988.

CONSULTANCY

The Biogeographic Project of Government of India - The full report "Planning a Wildlife Protected Area Network in India" consisting of some 600 pages in 2 volumes was completed in March, 1988. The report has been sent to Chief Wildlife Wardens, to the original consultants and to interested conservationists, for comment, updating and correction of detail.

The report has shown that there are inadequacies in the present network of parks and sanctuaries. Many biogeographic zones are poorly protected, there are often large gaps in the spatial pattern of protected areas and a large proportion are too small or have an inadequate core zone to be effective.

Recommendations within the report increase the protected area network to 4.6% from 3.3% of the country's land surface. The proportion of National Parks is very much higher (1.5% from 0.6%) stressing the need for effective land management within the system. Many proposals are for the ecologically diverse but relatively fragile alpine, evergreen forests, coastal and island biomes. Planning has attempted to develop large protected area units in biologically significant regions by creating corridors between existing isolated parks and sanctuaries. The report is intended to stimulate conservation action. It has within it therefore, data and recommendations at varying scales of detail, viz:

- There is a basic two page Abstract which explains the project and major findings;
- There is a more detailed Executive Summary of 25 pages of text and tables. This lists all recommendations and discusses major conservation issues;

The full report has a lengthy introduction and Discussion Section which argue the case for greatly improved conservation inputs into the protected area system. The Biogeographic Classification is described in detail, and then all planning recommendations are considered within the 10 Biogeographic Zones of the country.

The second volume contains summaries of recommendations and discussion for each state separately.

The report stresses that improved conservation demands inputs from all segments of society -- administrators and politicians, foresters and conservationists, and the people themselves. It is hoped to follow up this initial report with state and regional level seminars to discuss the implementation of proposed protected areas.

Ecological Survey of Sriharikota Islands - During October, 1987 a survey of Sriharikota Islands was carried out by the Crocodile Research Centre of the Institute (Hyderabad) on the request of the ISRO. The survey objective was to assess, (a) the ecological health of the coastal dry evergreen forests in the Islands, (b) the suitability of waterbodies in this Islands as habitat for introduction of saltwater crocodile, and (c) to assess and suggest ways of eliminating detrimental factors on this habitat. Suggestions made are under consideration by the ISRO authorities.

Management of Drought-affected Mugger Crocodiles in Rajasthan - Recommendations were made to the Forest Department of Rajasthan in March, 1988 on managing a population of drought-affected mugger crocodiles in the Jawai Lake in Pali district. Ways and means of avoiding mugger migration out of the lake and minimizing man-crocodile conflicts were also suggested.

Introduction of Sangai in Pabitora Sanctuary - Professional assistance was provided to the Government of Assam in establishing the feasibility of introducing of Sangai (Manipur brow antlered deer) in the Pabitora Sanctuary. This included a study of the vegetation in the proposed introduction area and the measures including design of enclosures, the sex and age composition of the population group to be introduced and the zoo sources from where to obtain these animals.

Electric Fencing - Technical guidance and advice for use, installation, construction and maintenance etc. of electric fence have been provided to different states on their requests. Installation of solar-panel energizer operated electric fence at Sathiana, Dudhwa National Park with the purpose to prevent entry of cattle from outside in the park and movement of the park animals outside was done. Training on construction of electric fencing was also given to personnel from SICO, Ghaziabad.

Training Programmes : Other Institutions - The Faculty of the Wildlife Institute of India provided significant teaching inputs in the wildlife management curricula of the Indira Gandhi National Forest Academy, Dehradun, the State Forest Service College, Dehradun, Aligarh Muslim University, Aligarh and the Institute of Forestry, Tribhuvan University, Nepal.

Training Foreign Students - A comprehensive programme to provide a cross section of wildlife management practices in India was prepared for two visiting Vietnamese scientists. Part of the overall programme in the Rajaji National Park was supervised and conducted by the Institute Faculty during January, 1988.

Publications

The Institute is publishing its bi-monthly Newsletter. The following two works of the Institute are completed and sent to the press during this period :

- "Planning A Wildlife Protected Area Network in India" (in 2 volumes);
- "A Pocket Book of Indian Pheasants"

These two publications will be available shortly. The Report of the Workshop on Conservation Education and Nature Interpretation has also been brought out.



More than 60 research papers of faculty members of the Institute are published in internationally reputed journals. A list of these publications is appended.

ORGANISATIONAL

The 35 member WII Society, presided over by the Minister for Environment, Forests and Wildlife has a varied membership comprising Forest Ministers of some States, Members of Parliament, Members of the U.P. Legislative Assembly, officials of some concerned Ministries, and non-officials including representatives of NGOs connected with wildlife conservation. No meeting of the Society could be held in the year. The Institute functions under a 14 member Governing Body chaired by the Secretary, Environment, Forests & Wildlife. The Governing Body normally meets once every three months. Some of its functions have been delegated to Sub-Committees in matters such as finance, research and building construction.

Faculty and other recruitments

During the period under review four faculty members - two in Scientist-C level and two in Scientist-B level were recruited. Apart from these, the Institute recruited 23 persons as administrative and support staff.

FAO Inputs

The FAO-UNDP assistance project to the Institute which was due to end on 30 June, 1987 was extended by 1 year at Government of India's request, bringing the total budget of the Project to US\$ 1,879,229 since 1 January, 1983. Three international experts continued assistance with training and research programmes on the basis of the three WII faculties. An Associate Expert assisting with computer training and habitat mapping and another specializing in power fencing as a wildlife barrier were present for the whole and part of the year respectively. During the year the FAO team also gave considerable input into the establishment of the Wildlife Database, following its initiation by a short-term FAO specialist consultant; the preparation of the report on planning a Wildlife Protected Area Network in India; a manual on Power Fencing for Indian Wildlife and finalization of the M.Sc. programme.

In addition to on the job assistance with faculty training, one overseas group study tour, for four officers to Kenya and Zimbabwe, was completed. Individual fellowships in habitat evaluation procedures (6 month, USA) and tropical grassland

management (1 - 1/2 months, Australia) were commenced during the year. The Director, WII participated in the IUCN General Assembly in Costa Rica with Project assistance.

Specialized field and laboratory equipment to the value of US\$ 65,707 was procured and training in its use given during the year.

Logo Design Competition

A logo design competition was held to select an appropriate logo for the Institute. The selected logo was presented to the Governing Body which approved it with slight modification. Cash rewards were given to winning entries.

DEVELOPMENTAL

Faculty Training Abroad

Four faculty members were deputed on an African Wildlife study tour under the faculty improvement programme for one month (15th June to 16th July 1987). The objectives of the tour were to study the management of wildlife in protected areas, study wildlife education, interpretation and training programmes and to get information on the ongoing research programmes.

The following protected areas were visited: Nairobi National Park, Aberdare National Park, Samburu Game Reserve, Nakuru National Park, Tsavo National Park (all in Kenya), Arusha National Park (Tanzania), Zambesi National Park, Matetsi Safari Area, Wankie National Park, Gonarezhou National Park, Sengwa Reserve and McIlwaine Recreational Area (all in Zimbabwe). Discussions were held with Research personnel at KREMU, Matetsi Safari Area, Wankie National Park and Sengwa Research Centre. Training Institutes visited were the college of African Wildlife Management at Mweka, Tanzania, and Naivasha Wildlife and Fisheries Training Institute, Kenya.

Information on wildlife utilization (hunting, crocodile and ostrich farming well organized in Zimbabwe) was also collected.

In addition to the group study tour, two other faculty members were sent on individual study programmes with support from the FAO-UNDP project to USA and Australia. The 6-month programme at the Colorado State University, USA undertaken by one was for training in advanced habitat evaluation and mapping techniques. The fellowship to Australia for a period of one and a half month, which the other availed with a view to study tropical grassland management.

National Wildlife Database

The setting up of a micro-computer based national wildlife database moved a step further in its developmental phase. The need to enhance the present predictive ability of the database both with respect to presence/absence of a species and its abundance in a particular area was felt. A paucity of accurate quantified data and finalisation of an established methodology for their collection were identified as unavoidable features of the present developmental phase of the database. In order to overcome these problems a study project has been taken up by one of the faculty members associated with the database to develop a model for enhancing the predictive ability of the database and to evolve simple and rapid methodologies to obtain standardized information for the country's wildlife areas. Field investigations have already commenced at one of the six sites.

Campus Development

The new campus of the Institute is being developed on a 80 hectare site in the Siwalik foothills near Dehradun at Chandrabani. During the year under report, construction of boundary wall around the main campus block (Block-I) and fencing of Blocks-II & III was nearing completion. In addition, pathway and carriage way alternatives have been constructed to avoid inconvenience to local villages.

The main constructions could not be started owing to the lowest tenderer backing out. Fresh tenders have been invited and award of the contract is likely by the end of July, 1988. Measures are afoot to acquire a strip of land lying between Blocks-I & II to make the main campus into a compact block.

Library and Documentation

Academic work and training at the Institute is backed by a rapidly upcoming library service comprising text and reference books, research journals, reprint and documentation facilities. With the recruitment of new library staff, documentation work has been accorded priority. A Library Committee constituted within the Institute oversees the library development and service.

A total of 1,344 books were added to the library during the period under report of which 828 were purchased and 516 were received as gift, bringing the total to 5,416 books. There are 110 titles of journals and periodicals, on current subscription. Among those on subscription, 83 titles are foreign (11 added this year) and 27 are Indian (11 added this year). There are 400 bound volumes of journals.

The library maintains a films section. Seventeen 16-mm films on various wildlife and conservation issues were added to this section bringing the total to 50. Apart from these, 6 video films were also acquired.

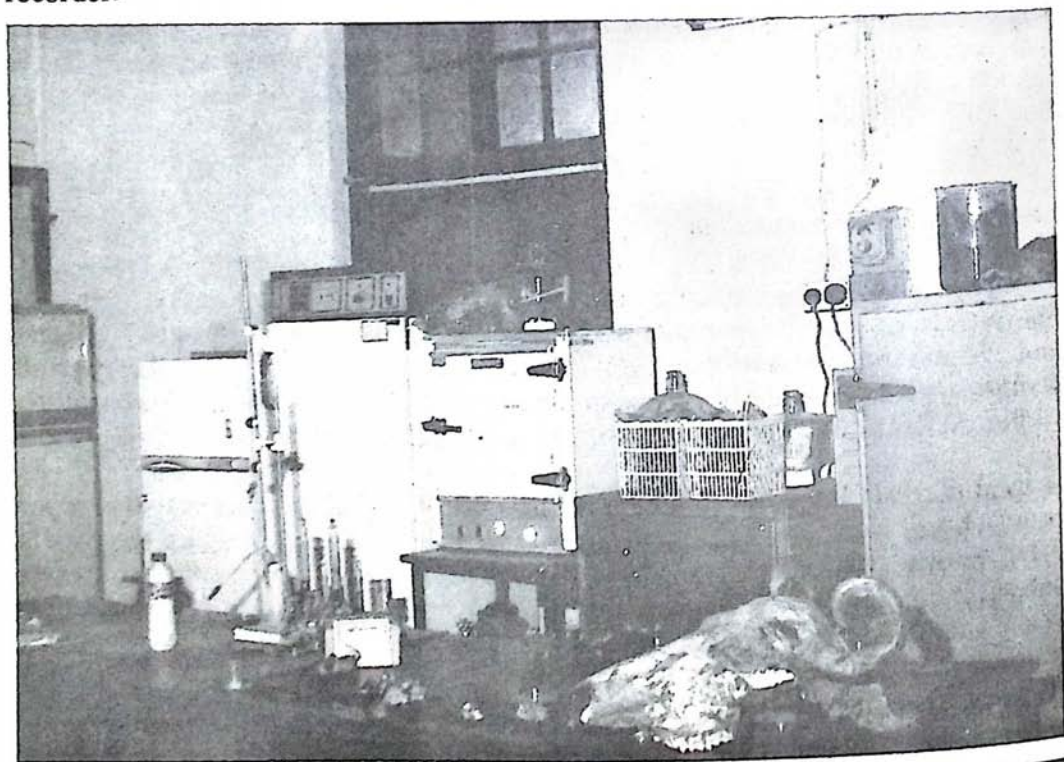
About 3,000 slides on 44 different aspects of forest and wildlife conservation and interpretation techniques have been collected by the Wildlife Extension Division under its developing facilities of slide library for teaching and extension. The cataloging system devised covers the following broad subjects:

Animals
Natural Habitats
Human Habitat/Life-style

Environmental Problems
Protected Area Management
Specific Area and Themes

Laboratory & Teaching Aids

Existing laboratory facilities were strengthened by adding equipments such as Willey and Ball type grinding mills for grinding plant and faecal samples; Tissue embedding bath -- for use in histological work; Portable temperature indicator -- to measure rectal and skin temperatures; Lux meter -- to measure light intensity; Hand-Sugar Refractometer -- to measure sugar contents in fruits; Magnetic stirrer with hot plate, Stop Watch, Hand tally counter and Rain gauge recorder.



Reference slides of hair of various prey animals with respect to cuticular pattern have been prepared for 35 species to identify the hair present in the scat samples of carnivores.

Preparation of reference slides for parts of plant species collected from Rajaji National Park is in progress and the slides will be used to examine the food habits of ungulates.

During the year, the Institute procured 170 maps for different areas from Survey of India for use in field studies by faculty and research fellows and for management plan exercises of Diploma trainees.

Herbarium

The Institute's herbarium has some 5,000 collections of over 3,000 species from all over India. Specimens are fully labelled, mounted and poisoned. They are classified alphabetically to make the collection 'user friendly' to the non-taxonomist!

New collections were made from Kedarnath WLS, Satpura NP, and the Western Ghats. Collection in Sariska and Rajaji is also continuing. The Kedarnath collections contained several rare species and a number of new records for Chamoli District.

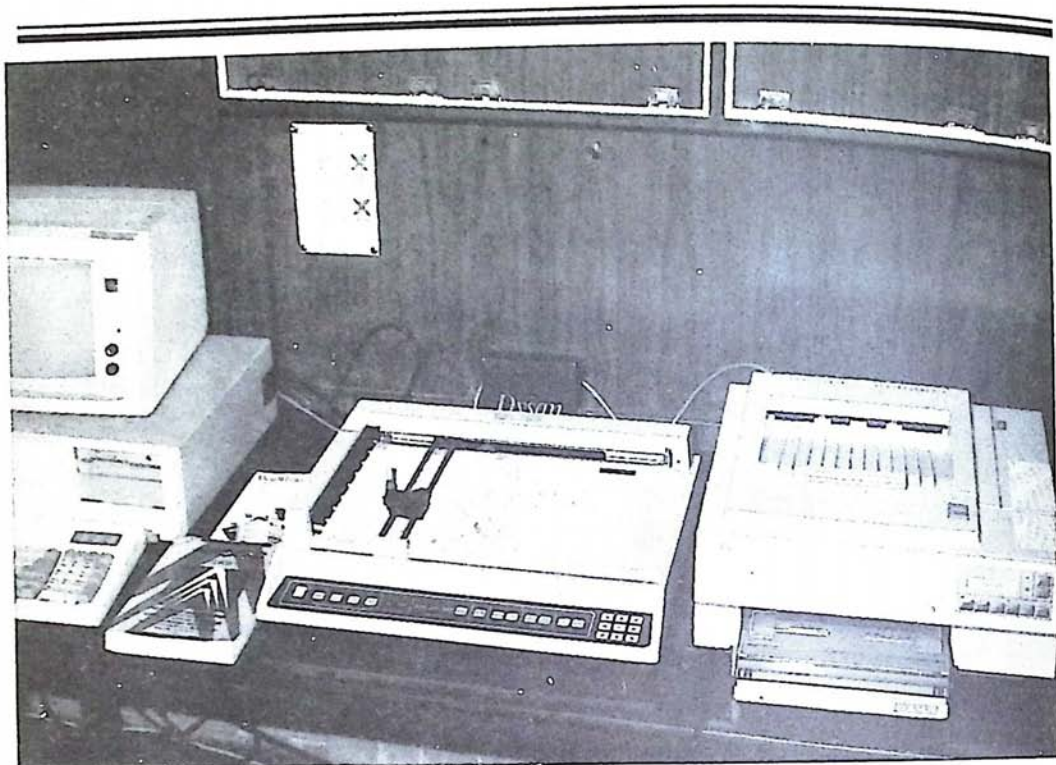
Plant collections and subsequent herbarium work have allowed the preparation of comprehensive plant checklists and vegetation descriptions for Sariska (over 400 species) Rajaji (500 species) and Banog RF, Mussoorie (300 species). In addition, the herbarium provided support for a quantitative analysis of the altitudinal distribution of alpine meadow species in the Himalayas, a dataset recently analyzed on main-frame computer in UK, with very encouraging results.

With more habitat based research projects and M.Sc. dissertations due to begin, the herbarium is expected to provide an increasingly useful service to the Institute.

Deer Park

The Institute's Deer Park has got a captive stock of 28 spotted deer, one chinkara and one barking deer. Spotted deer are breeding successfully in captivity. However, number of these animals remains more or less the same due to almost equal number of birth and death cases.

Hematological study was done on chinkara and barking deer.



Equipments

Computer equipments consisting of one UNICOMP PC and a Desk Top Publishing (DTP) system consisting of one UNICOMP PC/AT, one HP Laser Printer and a Mouse were added to the Institute's Computer centre.

Audio-visual equipment acquired to supplement teaching aids include two Epidiascopes.

One laminating machine, a photo-copier and a Bradma machine were also added.

PERSPECTIVE FOR 1988-89

Academic activities at the Institute came in full swing with the start of the 2-Year M.Sc. Course in Wildlife Science. The regular 9-month post-graduate diploma and the 3-month certificate courses will continue to provide trained managers and biologists for the management of the protected area system. However, the number of national parks and sanctuaries is very large while the rate of availability of managers is quite low in view of the meagre training capacity of the Institute's regular courses. Further, the states are not even able to utilize the existing training capacities owing to financial constraints and in some cases because they cannot spare their officers for long durations. It is also not possible

to increase this capacity in the coming few years. For these reasons an important short-term training programme of the Institute to be launched in 1988-89 will be the conduct of three 2 to 3 week capsule courses in wildlife management for in-service wildlife officers. These courses to be organized regionally will enable the trained officers to organize the minimum level of scientific management in the protected areas. It is hoped this programme will be able to train seventy-five to a hundred officers every year. The first of the capsule courses is scheduled for September 1988 at the Bandipur National Park, Karnataka, for the southern states, followed by one at the Kanha NP, Madhya Pradesh, in January 1989 for the states of the northern & central regions, and the third during February-March 1989 at the Kaziranga NP, Assam for the eastern states.

Some of the other major programmes planned for the coming year include the following:

1. Four of the existing 14 field research projects will be completed and 5 to 6 new ones are expected to be launched. The new studies will include ecology of wild ass in Rann of Kutch, study of mangrove habitat in Krishna estuary in Andhra Pradesh, the study of alternate habitat for Manipur sangai, the conservation problems of barasingha in Dudhwa, a corridor viability investigation in Corbett-Rajaji region, and a study of environmental impact upon the flora and fauna in the project area of Narmada Sagar in Madhya Pradesh.
2. A 3-year study would be initiated aimed at identifying measures for nationally coordinated zoo management and captive breeding programmes. This will include formulation of guidelines for the preparation of management plans for zoos and recovery plans for endangered species. An important outcome of this study would be the development of curricula and conduct of courses for zoo managers and technicians.
3. Field workshops will cover census and habitat evaluation in high altitude areas as well as control, capture and management of elephants. A national symposium on interface conflicts between protected areas and people and mitigatory measures therefor, is also proposed. This is expected to contribute to the planning of a special short-term training course in the preparation of management plans for ecodevelopment in the surrounds of protected areas and thus, provide trained personnel in the field in time for a likely centrally sponsored scheme on ecodevelopment in the VIII Plan.
4. Although the current FAO project ends on 30th June 1988 essential inputs will continue to be provided, without a break, through a small Phase-II project. Under this project one of the FAO experts would continue for a period of 2 years and help in the teaching of the first batch of the M.Sc. programme.

MAIN WORK PROGRAMME 1988-89

Sl. No.	Activity	Month of Commencement	
		1988	1989
	Regular Courses:		
1.	2-Year M.Sc. in Wildlife Biology	JAN	
2.	9-Month Diploma Course in Wildlife Management	AUG	
3.	3-Month Certificate Course in Wildlife Management	MAY	
	Other Activities:		
4.	Capsule Course in Wildlife Management	SEP	JAN FEB-MAR
5.	5 New Field Research Projects		JAN
6.	Study on Zoo Management and Captive Breeding	NOV	
7.	High Altitude Census Workshop	OCT	
8.	Habitat Evaluation Workshop	NOV	
9.	Workshop on Capture and Management of Elephants		JAN
10.	FAO Phase II Project	JUL	
11.	Overseas Training Fellowships (FAO)	JUN	
12.	Indo-US Project on Faculty Development		MAR
13.	Main Building Construction	SEP	
14.	Publication of a Manual on Wildlife Management Techniques	JUL	
15.	Publication of a Pocketbook on Pheasants	AUG	

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5. Under the on-going programme of faculty development some junior faculty members would be deputed on overseas training under FAO Fellowships in the fields of environmental impact assessment on wildlife habitats and wildlife data base development.
 6. Another significant faculty development programme to be initiated during 1988-89 will be a U.S. assisted project under which specialized training would be imparted to the Institute's faculty in specific identified subject areas. While the FAO project was more broad based and dealt with institutional development as a whole, the Indo-U.S. project will be specific to specialized subject areas. The project envisages 3 distinct stages generally applicable to the different subject areas: In the first stage, a U.S expert would visit the Institute and work with the counterpart Indian faculty on specific projects. This will be followed by a workshop on the subject to be jointly organized and to which participants would be invited from state wildlife organisations as well. Lastly, the counter-part Indian faculty member would be visiting selected agencies and institutions in the U.S. to top-up the training.
 7. As for the new campus development, the boundary wall and the fencing of all the three blocks will have been completed before the onset of the monsoon and the construction of the main institutional and residential buildings will be initiated by September, 1988. In addition, avenue planting will be carried forward on the approach road and landscaping of Block I and Block III would also commence. Work would also be initiated on water supply and other civil services. A narrow strip of private land lying between Blocks I & II will be acquired for rationalisation of campus boundaries and approach road. Hopefully, about one-third of the work of main construction will be completed during 1988-89.
 8. The publications programme of the Institute will be further expanded with the publication of a Field Manual on Wildlife Management Techniques, a Handbook of Pheasants, Proceedings of the International Workshop held at Kanha NP in 1982 and some Research Project Reports.
 9. The Library would continue to be developed and documentation service strengthened. To guide its development, the post of Librarian is proposed to be upgraded in order to get an experienced and suitable person for the job.
- A bird's eye view of the main work programme in 1988-89 is contained in the chart on the facing page.
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GOVERNING BODY

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Paryavaran Bhavan, 'B' Block,
CGO Complex, Lodi Road,
NEW DELHI - 110003 - Chairman
2. Inspector General of Forests,
Ministry of Environment & Forests,
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CGO Complex, Lodi Road,
NEW DELHI - 110003 - Vice Chairman
3. Shri Duleep Matthai
Vice Chairman
National Wastelands Development Board
Ministry of Environment & Forests
CGO Complex, 'B' Block, Lodi Road
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Bombay Natural History Society,
Hornbill House,
Shaheed Bhagat Singh Road,
BOMBAY - 400023
5. Prof. R. Misra,
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Rajmahal,
BANGALORE - 560080
7. Lt. Col. Fatehsingh Rao P.Gaekwad,
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-
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8. Joint Secretary (Wildlife),
Ministry of Environment & Forests,
CGO Complex, Paryavaran Bhavan,
'B' Block, Lodi Road,
NEW DELHI - 110003

 9. Joint Secretary (Finance),
Ministry of Environment & Forests,
Paryavaran Bhavan, CGO Complex,
'B' Block, Lodi Road,
NEW DELHI - 110003

 10. Director General,
Indian Council of Forestry & Education,
New Forest,
DEHRA DUN

 11. Joint Secretary (Education),
Ministry of Manpower & Resources,
Shastri Bhavan,
NEW DELHI - 110003

 12. Chief Wildlife Warden,
Uttar Pradesh,
17, Rana Pratap Marg,
LUCKNOW
(Representative of the Chief Secretary, U.P.)

 13. Dr. J.B. Sale
Chief Technical Adviser, FAO-UNDP Project,
Wildlife Institute of India,
New Forest,
DEHRA DUN - Special Invitee

 14. Shri S.K. Mukherjee,
Scientist - C, Faculty Member,
Wildlife Institute Of India,
Dehra Dun

 15. Director,
Wildlife Institute of India,
P.O. New Forest,
DEHRA DUN - Member Secretary
-
-

RESEARCH ADVISORY COMMITTEE

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UNDP-FAO, Wildlife Institute of India,
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Wildlife Institute of India,
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DEHRADUN

- Member Secretary

FINANCE COMMITTEE

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Governing Body.

- Chairman

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3. Joint Secretary (Finance) & F.A.,
Deptt. of E.F. & W.

4. Joint Secretary (Wildlife),
Deptt. of E.F. & W.

5. Director,
Wildlife Institute of India

- Member Secretary

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ANNUAL ACCOUNTS OF THE WILDLIFE INSTITUTE OF INDIA

1987 - 1988

AUDIT CERTIFICATE

I have examined the accounts and the Balance Sheet of Wildlife Institute of India, Dehra Dun for the year ending 31st March, 1988, obtained all the informations and explanations that I have required and subject to the observations in the appended Inspection Report, I certify, as a result of my audit, that in my opinion these accounts and balance sheet are properly drawn up so as to exhibit a true and fair view of the state of affairs of the Institute according to the best of my information and explanation given to me and as shown by the books of the organisation.

Dated: 16.11.88

Sd/-
(S. Sathyamoorthy)
Director Audit,
Commerce, Works and Miscellaneous II.

**WILDLIFE INSTITUTE OF INDIA, DEHRADUN
BALANCE SHEET AS ON 31ST MARCH, 1988.**

	Amount		Amount	
	Rs.	Ps.	Rs.	Ps.
FUNDS & LIABILITIES				
Department of Environment & Forests, Govt. of India, New Delhi Grant-in-Aid A/C Balance as per last Balance Sheet				
With Indian Bank, Hyderabad.	16,218.14			
With Union Bank of India, Dehradun.	45,944.67			
With Indian Bank & Union Bank of India, Dehradun.	13,49,771.09			
Cash in Hand	12,954.35		14,24,888.25	
Excess of Income Over Expenditure			71,82,049.55	
Equipments, Furniture & Fixtures, Vehicles, Library Books, etc.			24,47,340.70	
Amount transferred to Capital Fund as per last Balance Sheet.	8,82,828.09)	15,87,687.93)		
Addition during the year.	33,95,928.70)		58,66,444.72	
			C/F	1,69,20,723.22

	Amount		Amount		Amount	
	Rs.	Ps.	Rs.	Ps.	Rs.	Ps.
ASSETS						
As per last Balance Sheet						
Land*	31,87,590.00				31,87,590.00	
Trees*	24,32,709.00				24,32,709.00	
Chandrabani Campus under Construction						
Architectural Competition	1,50,000.00		--		1,50,000.00	
Architect Fee & Supervision Charges	2,00,000.00		1,62,873.00		3,62,873.00	
Avenue Plantation	78,560.15		49,396.50		1,27,956.65	
Campus Development	54,258.69		4,399.75		58,658.44	
Boundary Wall Block-I	4,00,009.25		7,95,270.34		11,95,279.59	
Boundary Fencing Block II & III	--		4,25,927.62		4,25,927.62	
Equipment, Furniture & Fixtures, Vehicles, Library Books, etc.*	40,35,028.63		19,58,061.49		59,93,090.12	
Grant-in-Aid Acrued not received					33,00,000.00	
			C/F		1,72,34,084.42	

	Rs.	Ps.	Rs.	Ps.
Brought Forward		----		1,69,20,723.22
OUTSTANDING LIABILITIES				
Security Deposits				46,172.63
Income Tax				4,000.21
Sundry Credit Balances				26,998.18
Audit Fee				10,000.00
Earnest Money				750.00
Land				31,87,590.00
Trees				24,32,709.00
G.F. Fund	12,997.80)			
	17,540.00)			30,537.80
C.P.Fund	49,947.60)			
	1,68,816.00)			2,18,763.00
Interest on G.P.F.	301.00)			
	1,458.00)			1,759.00
Interest on C.P.F.	896.00)			
	9,835.00)			10,731.00
TOTAL				2,28,90,734.00

The above Balance Sheet to the best of our belief contains a true Account of the Funds and Liabilities and property and Assets of the Institute.

(S.B. Prasad)
Finance Officer

(Dr. J.H. Desai)
Senior Administrative Officer

	Rs.	Ps.	Rs.	Ps.	Rs.	Ps.
Brought Forward		--			1,72,34,084.42	
Advance to conduct Trainees tour, Workshop & Seminar.					3,78,500.00	
Loans & Advance to Staff					2,02,758.00	
Advance to Staff (for Expenses)					92,830.98	
To Sundry Debtors					13,450.00	
Suspense Account					20,625.83	
CASH & BANK BALANCES						
With Indian Bank, Hyderabad.	1,377.71					
With Union Bank of India, Hyderabad.	15,798.43					
With Union Bank of India, Dehradun (Trainees A/C)	62,468.36					
With Indian Bank & Union Bank of India, Dehradun.	48,53,740.49		49,33,384.99			
Cash in Hand.	15,099.82		15,099.82		49,48,484.81	
			TOTAL		2,28,90,734.04	

(H.S. Panwar)
Director

Director of Audit.
Commerce, Works & Miscellaneous II,
New Delhi.

**WILDLIFE INSTITUTE OF INDIA
PERMANENT ASSETS AS ON 31.3.1988**

Sl.No.	Particulars	Opening Stock	
		Rs.	Ps.
1.	Land	31,87,590.00	
2.	Trees	24,32,709.00	
3.	Boundary Wall Block I Chandrabani under construction	8,82,828.09	
4.	Fencing Block II & III		--
5.	Avenue Plantation		--
6.	Campus Development		--
7.	Architect Fee & Supervision Charges		--
8.	Furniture & Fixtures	2,81,571.51	
9.	Laboratory Equipment & Chemicals	4,89,424.56	
10.	Office Equipment	3,90,950.78	
11.	AV Aids, Computers & Training Equipment	4,51,443.47	
12.	Camp Equipment	1,59,472.16	
13.	Photographs & Photographic Equipment	1,63,181.35	
14.	Educational Films	2,37,578.75	
15.	Library Books	5,74,796.50	
16.	Journals & Periodicals	1,16,650.15	
17.	Materials & Supplies	1,43,160.01	
18.	Vehicles & Trailers	10,26,799.39	
	TOTAL	1,05,38,155.72	

(S.B. Prasad)
Finance Officer

(Dr. J.H. Desai)
Senior Administrative Officer

(H.S. Panwar)
Director

Addition during the Year		Total	
Rs.	Ps.	Rs.	Ps.
	--	31,87,590.00	
	--	24,32,709.00	
7,95,270.34		16,78,098.43	
4,25,927.62		4,25,927.62	
49,396.50		49,396.50	
4,399.75		4,399.75	
1,62,873.00		1,62,873.00	
2,13,424.46		4,94,995.97	
2,16,658.71		7,06,083.27	
1,90,541.94		5,81,492.72	
1,96,700.00		6,48,143.47	
16,885.00		1,76,357.16	
	--	1,63,181.35	
2,61,736.00		4,99,314.75	
2,69,489.18		8,44,285.68	
1,23,231.33		2,39,881.48	
2,59,329.35		4,02,489.36	
2,10,065.52		12,36,864.91	
33,95,928.70		1,39,34,084.42	

Director of Audit,
Commerce, Work & Miscellaneous II,
New Delhi.

**WILDLIFE INSTITUTE OF INDIA, DEHRA DUN
INCOME & EXPENDITURE ACCOUNT
FOR THE YEAR ENDING 31st MARCH, 1988**

	Rs.	Ps.
EXPENDITURE		
To Salaries	21,64,840.29	
To Honorarium	21,996.00	
To Leave Salary & Pension Contribution	16,130.00	
To Bonus	40,569.50	
To Fellowship	1,20,487.95	
To Wages	1,97,529.85	
To Travel Expenses	4,18,967.95	
To Newspaper & Magazines	10,625.18	
To Publicity & Advertisement	29,722.35	
To Rent for Hired Buildings	1,18,683.65	
To Electricity & Water Charges	30,220.28	
To Telephone & Trunk Calls	1,09,004.40	
To Postage & Telegrams	28,954.75	
To Stationery	90,615.47	
To Photographs & Photographic Materials	18,414.03	
To Scientific Publications	29,500.00	
To Printing & Binding	213.50	
To Repair & Maintenance of Office Equipments	18,556.25	
To Conveyance Charges	2,491.30	
	C/F	34,67,522.70

	Rs.	Ps.	Rs.	Ps.
INCOME				
By Grant-in-Aid				
Department of Environment, Forests & Wildlife, New Delhi	1,10,00,000.00)			
Less transferred to Capital Expenditure	33,95,928.70)		76,04,071.30	
Acrued not received			33,00,000.00	
By Training Cost				
9 Months Diploma Course	5,69,700.00)			
3 Months Certificate Course	1,34,100.00)			
2 Years M.Sc. Course	7,350.00)		7,21,150.00	
By Seminar & Workshop	16,000.00)			
	7,000.00)		23,000.00	
By Training Cost acrued not received	7,450.00)			
By Workshop Fee acrued not received	6,000.00)		13,450.00	
By Miscellaneous Receipts			8,057.15	
By Interest Received			6,731.30	

C/F 1,16,76,459.75

	Rs.	Ps.	Rs.	Ps.
Brought Forward	--		34,67,522.70	
To Sports Goods			1,127.76	
To Maintenance of Animals (Deer Park)			37,996.80	
To Operational Expenses			2,18,533.26	
To POL for Vehicles			1,41,875.26	
To Repair & Maintenance of Vehicles			1,11,569.31	
To Vehicle Insurance			582.00	
To Legal Expenses			2,850.00	
To Training Programme			4,58,345.31	
To Seminar & Workshop			21,281.00	
To Stipend (M.Sc. students)			10,236.80	
To Provision for Audit Fees			10,000.00	
To Provision for Interest on CPF	10,731.00)			
Provident Fund	GPF	1,759.00)	12,490.00	
To Excess of Income Over Expenditure			71,82,049.55	
		TOTAL	1,16,76,459.75	

(S.B. Prasad)
Finance Officer

(Dr. J.H. Desai)
Senior Administrative Officer

Brought Forward

Rs. , Ps.

Rs. Ps.

1,16,76,459.75

TOTAL 1,16,76,459.75

(H.S. Panwar)
Director

Director of Audit.
Commerce, Works & Miscellaneous II,
New Delhi.

**WILDLIFE INSTITUTE OF INDIA, DEHRADUN
RECEIPTS AND PAYMENTS ACCOUNT
FOR THE YEAR ENDING 31st MARCH, 1988**

	Rs.	Ps.	Rs.	Ps.
RECEIPTS				
To Opening Balance:				
Cash in Hand		12,954.35		
Cash in Bank		14,11,933.90	14,24,888.25	
To Grant-in-Aid				
Department of Environment, Forests & Wildlife, New Delhi.	60,00,000.00		1,10,00,000.00	
	50,00,000.00			
To Training Cost				
9 Months Diploma Course	5,69,700.00)			
3 Months Certificate Course	1,34,100.00)			
2 Years M.Sc. Course	17,350.00)		7,21,150.00	
To Workshop & Seminar				
	16,000.00)			
	7,000.00)		23,000.00	
To Recoveries from Pay Bills to be remitted to Govt. Deptts./other bodies				
			3,57,864.83	
To Refund of unspent Advance for Expenses				
			98,853.80	
To Recovery of Income Tax from Contractor				
			28,875.06	
To Recovery of Security Deposits from Contractor				
			76,562.41	
To Earnest Money				
			750.00	
				C/F
			1,37,31,944.35	

PAYMENTS

By Salaries	21,67,403.04
By Leave Salary & Pension Contribution	16,130.00
By Bonus	40,569.50
By Honorarium	21,996.00
By Fellowship	1,20,487.95
By Wages	1,97,529.85
By Travel Expenses	4,46,041.55
By Library Books	2,69,489.18
By Newspaper & Magazines	10,625.18
By Journals & Periodicals	1,23,231.33
By Publicity & Advertisement	29,722.35
By Purchase of Vehicles	2,10,065.52
By POL for Vehicles	1,41,875.26
By Repair & Maintenance of Vehicles	1,11,569.31
By Vehicle Insurance	582.00
By Audio-Visual, Computer & Training Equipments	1,96,700.00
By Laboratory Equipment & Chemicals	2,16,658.71
By Office Equipment	1,90,541.94
By Camp Equipment	16,885.00
By Photographs & Photographic Materials	18,414.03
By Educational Films	2,61,736.00
By Furniture & Fixtures	2,13,424.46
	C/F
	50,21,678.16

	Rs.	Ps.	Rs.	Ps.
Brought Forward		---	1,37,31,944.35	
To Miscellaneous Receipts	27,073.60)			
	2,562.75)			
	48,374.20)			
	8,057.15)			
	8,790.00)			
	1,230.00)		96,087.70	
To Interest Received			6,731.30	

C/F

1,38,34,763.35

Brought Forward

Rs. Ps. Rs. Ps.

1,38,34,763.35

TOTAL

1,38,34,763.35

(S.B. Prasad)
Finance Officer

(Dr. J.H. Desai)
Senior Administrative Officer

	Rs.	Ps.
Brought Forward	69,80,962.60	
By Pay Advance		2,000.00
By C.P.F. Contribution		74,922.00
By Remittance of Recoveries from Salary Bills to Govt. Deppts./other bodies	3,38,316.65	
By Remittance of Income Tax recovered from Contractor	3,595.00	
By Refund of Security Deposits	17,969.25	
By Remittance of Income Tax from Staff	10,020.00	
By Avenue Plantation	49,396.50	
By Campus Development	4,399.75	
By Architect Fee & Supervision Charges	1,62,873.00	
By Construction of Boundary Wall Block-I	7,95,270.34	
By Fencing of Block II & III	4,25,927.62	
By Suspense Account	20,625.83	
By With Indian Bank, Hyderabad	1,377.71	
By With Union Bank of India, Hyderabad	15,798.43	
By With Union Bank of India, Dehradun (Trainee A/C)	62,468.36	
By With Indian Bank & Union Bank of India, Dehradun	48,53,740.49	
By Cash in Hand		15,099.82
TOTAL	1,38,34,763.35	

(H.S. Panwar)
Director

Director of Audit,
Commerce, Works & Miscellaneous II,
New Delhi.