

**NATIONAL PROGRAMME FOR RODENT PEST  
MANAGEMENT**

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ICAR

**RODENT NEWSLETTER**

Vol. 1

November, 1977

**COORDINATING & MONITORING CENTRE  
CENTRAL ARID ZONE RESEARCH INSTITUTE, JODHPUR**

## FOREWORD

A National Programme of Rodent Pest Management, sponsored by ICAR with the collaboration of Agricultural Universities, CSIR, and Central and State Departments, has been functioning for the last two years. The importance of rodent pest management as a national programme obviously cannot be overemphasised since rodents cause heavy damage at all levels of agricultural production in the fields, in the threshing yards, in rural and urban households and in storage godowns. The term 'management' rather than 'control' has been used with reference to these pests with a view to emphasise the fact that the indiscriminate application of chemical pesticides, as well as the total eradication of a pest like the rodent, may bring about irreversibly unfavourable ecological repercussions. An action-reaction analysis needs to be made in every case before selecting the strategy of control. That is why the involvement of the Universities is both appropriate and essential.

I am glad that the National Programme has already made considerable headway. Several trainer's trainees have been trained at the 8 Apex Level Training Centres, and rodent control operations have been taken up in field areas and in villages in different parts of the country. The major aim of the

National Programme is to implement management practices in such a way that small university-cum-government sponsored activities may develop into mass movements. We have the know-how, the material and above all, the massive manpower needed for undertaking rodent control measures all over the country. For the ultimate success, however, the decisive factor will be people's involvement in the programme.

In order to have a suitable vehicle for the dissemination of information about recent developments in the field of rodents and their management, the ICAR decided at its meeting on September 20, 1977, that there should be a Newsletter which may act as a source of communication between the research and development organisations in respect of rodent control activities in the country. I am glad that the Coordinating and Monitoring Centre for Rodent Research and Training, Jodhpur has taken up this work. Hope this Newsletter will be able to stimulate greater interest and action on all aspects of rodent pest management.

**M. S. SWAMINATHAN**

Director General  
Indian Council of Agricultural Research,  
New Delhi

## PREFACE

During a recent meeting of the National Programme for Rodent Pest Management, it was suggested that there is a need for publishing a Rodent Newsletter, in order to serve as a channel for communication among research workers, development organisations and organisations concerned with pesticide formulation and utilisation. Accordingly, this Centre has taken up the publication of Rodent Newsletter, which is proposed to be issued at quarterly intervals (November, February, May and August). The Newsletter will, hopefully, cover a wide spectrum of fields related to rodents and their economic importance. Brief reports of researches completed, and of those in progress in various rodent research centres will be published. News of sporadic outbreaks of rodent population in different parts of the country, damages done by rodents to crops/vegetation, interesting new observations made in the fields of rodent biology and behaviour, recent literature on

rodents and rodenticides, abstracts of Master's and Doctoral thesis dealing with any aspect of rodentology, reports of rodent control campaigns, news about newer methods of control, educational programmes, training, public participation, symposia, workshops, etc. will be published in the Newsletter. Short communications, not exceeding 600 words, may kindly be forwarded to the Centre for inclusion in the Newsletter. Suggestions for improving the Newsletter's usefulness are solicited.

Gratitude is expressed to Dr. M. S. Swaminathan, Director General, Indian Council of Agricultural Research, New Delhi, for providing guidance and encouragement, to Dr. D. N. Srivastava, Assistant Director General, ICAR, for his support to this venture, to Dr. H. S. Mann, Director, Central Arid Zone Research Institute, Jodhpur, for advice, unstinted encouragement and providing facilities; and to colleagues for their assistance.

**ISHWAR PRAKASH**  
Coordinator,  
National Programme for  
Rodent Pest Management

Coordinating and Monitoring Centre  
for Rodent Research and Training,  
Central Arid Zone Research Institute,  
Jodhpur

## Preliminary laboratory and field tests on the efficacy of RH-787 to *Bandicota bengalensis*

P. E. Cowan, K. Srihari and Shakunthala Sridhara

Department of Vertebrate Biology  
University of Agricultural Sciences, Bangalore

Laboratory tests were conducted for evaluating the effectiveness of RH-787 (N-3-Pyridylmethyl N-p-nitrophenyl urea) against *B. bengalensis*. Field trials in sugarcane fields were also conducted.

Rats poisoned with 1 percent poison died in less than 18 hours. Symptoms were first noticed after 2-3 hours and involved noticeable reduction in general activity with later partial paralysis of the hind legs, pulmonary distress and coughing. Dead rats were often found with fore and hind limbs held rigid out from the body. No problems of acceptance of RH-787 baits were observed during any of the tests conducted. The present findings suggest that 1 percent

concentration of RH-787 should be effective against lesser bandicoot rats.

The rodent population was censused prior to treatment by counting active burrows for three days. Only *B. bengalensis* was found in the study area. On the fourth and fifth days active burrows were prebaited. Poison baiting (1 percent RH-787) was followed for two days. Two days after poison baiting population was estimated to determine percent reduction of rodents. Results indicated that with 1 percent RH-787 in the bait, 83 percent field rodents can be wiped out in sugarcane fields.

## Metabolism and eco-physiology of Rajasthan desert rodents

P. K. Ghosh, S. P. Goyal and Ishwar Prakash

Division of Animal Studies,  
Central Arid Zone Research Institute, Jodhpur

Temperature regulation and Basal Metabolic Rate of 9 species of Rajasthan desert rodents, of different habits and habitats, and of *Rattus rattus* and *Mus musculus* have been studied during winter. The

desertic species, like the ruderal ones, maintain homoeothermy by a balanced interaction between BMR and thermal conductance. BMR of the desertic species were generally higher than expected values on body



weight basis. *Mus booduga*, the smallest, and *Tatera indica* the largest of the desertic species, respectively recorded (a) the highest and the lowest  $O_2$  consumption rate (4.34 & 1.17 l/hr/kg), (b) the highest and the lowest conductance value (71.4 & 37.0

kcal/°C/m<sup>2</sup>/day) and (c) the lowest and the highest equivalent thickness of covering as fur (1.008 & 1.94 cm). Most of the species examined do not appear to follow the Surface Area Law. Respiratory Quotients of all species were nearly 1.0 (0.970-0.99).

### Rodent menace in coastal areas of Andhra Pradesh

An Expert Committee consisting of specialists from Central Plant Protection Training Institute, Andhra Pradesh Agricultural University, All India Coordinated Rice Improvement Project (Hyderabad) and State Agriculture Department was constituted to assess the rodent menace in coastal districts of East Godavari, West Godavari, Krishna and Guntur. In east Godavari district the problem is very serious in paddy followed by coconut and sugarcane. In paddy itself the damage ranged from 10-60 percent with an average of 15 percent.

Bootleaf stage of crop was most preferred by rodents. In coconut the damage was estimated to be 20-25 percent of the total yield. In sugarcane fields it was 2 to 3 tonnes of cane per acre. The dominant rodent species were *Bandicota bengalensis* followed by *Rattus rattus*. In coconut plantations, *Funambulus pennanti* was also associated. The rodents captured were 20-30 per hectare per day.

It was recommended that Aluminium phosphide tablets should be used in cultivated fields of the

adjoining fallow lands and field channel bunds followed by 2 days pre-baiting. Thereafter 2 per cent zinc phosphide on 3rd and 4th day should be used. In houses adjoining threshing areas and haystacks,

anticoagulant has to be used continuously for a period of at least one to two weeks. Out of 4.5 lakh hectares of affected area about 4.35 lakh hectares of land was treated with poison baits.

(Adapted from the Report of the Committee)

### Involvement of the village ladies for rodent control in Ludhiana, Punjab

Swaran Singh Manj

Save Grain Campaign, Chandigarh

With the assistance of UNICEF the Save Grain Campaign Office, Chandigarh has launched a big programme in September, 1977 for modernisation of grain storage in Punjab. In addition to other aspects of Post Harvest Technology special emphasis is laid for educating the villagers for rodent control management.

for chemical control, aluminium phosphide was used for fumigating the burrows in the periphery of villages.

Twenty villages have already been covered during two month programme and all the 72 villages of the block will be covered upto February, 1978. In all 1050 persons will be trained in 21 courses. Each trainee is given stipend of Rs. 30/- and rat proof storage structure such as metal bins and *pucca kothies* are subsidised by the UNICEF to the tune of 25 percent of the total cost.

50 ladies from 2-3 villages are trained for five days. 30-40 houses are allotted to different groups of ladies. Bait was supplied by villagers whereas, warfarin, which is being supplied by this office, was used

Name of District	Crops affected	Area affected (hectares)	Area treated so far (ha)
Krishna	Paddy and sugarcane	2,90,227	2,90,227
West Godavari	Paddy and sugarcane	1,12,857	1,12,857
East Godavari	Paddy, coconut and sugarcane	38,756	25,890
Guntur	Paddy	9,192	6,138
Total		4,51,032	4,35,112

## Occurrence of the Ventral Marking Gland in the Desert Rodents

Ishwar Prakash and Saroj Kumari

Coordinating and Monitoring Centre for Rodent Research and Training  
Central Arid Zone Research Institute, Jodhpur

Out of 10 Indian desert rodents ventral marking scent gland has been discussed in three species, *M. hurrianae*, *T. indica* and *R. meltada*. The size of glandular pad has been

correlated with their territorial behaviour and social hierarchy. The work is in progress to use the gland secretion as a sex attractant.

## Efficacy of Chlorophacinone for the Control of Indian Desert Rodents

Ishwar Prakash and R. P. Mathur

Evaluation of chlorophacinone was carried out in laboratory on a seven day feeding trials basis on four wild and two commensal desert rodents. Results show that it is quite effective for the control of *Funambulus pennanti*, *Tatera indica*, *Meriones hurrianae* and *Rattus rattus rufescens*. It appears that a longer feeding

period will be required for the control of *Rattus meltada pallidior* and *Mus musculus bactrianus*. Values of lethal dosages of chlorophacinone vary from 1.92 to 6.14 mg/kg for the six rodents. It can be concluded that chlorophacinone is an efficient anticoagulant rodenticide for the control of Indian desert rodents.

## The Phenomenon of Poison-Bait Aversion and its Possible Attenuation in the Indian Gerbil *Tatera indica indica*

Ishwar Prakash and Padma Ojha

This communication embodies results of experiments carried out to overcome bait shyness and poison aversion in the Indian Gerbil; *Tatera indica indica*. Hardwicke by either changing the bait, the marking oil, altering the duration

of poisoning or by changing the poison. It was revealed that change of oil in a second consecutive exposure of zinc phosphide does not keep in reducing bait shyness or poison aversion. However, change of poison does help even with the

same bait. Poison baiting with RH-787 followed by zinc phosphide is more successful than the poisons used in reverse order. Results of the experiments also indicate that when the medium of first poisoning is not available to *T. indica* on subsequent days after feeding the poison bait its

intake recovers to the advantage of the second baiting with other poison. Poisoning attempts in different baiting material with zinc phosphide alone, after first exposure, did not appear to have reduced the development of bait shyness.

## Evaluation of RH-787 as a Rodenticide

Ishwar Prakash, B. D. Rana and A. P. Jain

RH-787, a relatively new rodenticide, was evaluated for the control of two gerbils, *Tatera indica indica* and *Meriones hurrianae*. Stomach tube experiments revealed LD<sub>50</sub> and LD<sub>100</sub> for at *T. indica* 5 and 30 mg/kg respectively. For *M. hurrianae*,

the LD<sub>75</sub> and LD<sub>100</sub> were found to be at 30 and 40 mg/kg. Both the species do not develop any marked aversion to the poison. Bait with one percent RH-787 killed all the species of rodents in a mustard field in the desert.

## Baits for the Control of the Indian Desert Gerbil, *Meriones hurrianae* Jerdon

Ishwar Prakash, B. K. Soni and R. P. Mathur

The Indian Desert Gerbil, *Meriones hurrianae* Jerdon, a predominant rodent in the Indian desert, causes serious losses to standing foodgrain crops and natural grasslands. The gerbil was not found to be consistent in preferring test foods which is quite expected due to its habit of thriving on changing plant material in nature. Wheat was most preferred by *M.*

*hurrianae* but as it is not grown in the desert, cracked millet, which ranks next to wheat, has been recommended for use as carrier of the poison. The additives, vegetable oils, salt and sugar did not enhance the food consumption. The gerbil also does not exhibit a distinct preference for either of the whole, cracked or flour forms of grains.

## Rodent problem in groundnut crop in Gujarat

B. D. Rana

Junior Animal Ecologist  
Central Arid Zone Research Institute, Jodhpur

There was an epidemic of rodents during September 1976 in groundnut crops in Saurashtra region. The damage caused by rodents was estimated to about 10-20 percent in the sampled fields. The rodent species involved were identified as Indian gerbil, *Tatera indica* and Soft furred field rat, *Rattus meltdada*. Several farmers were found to use zinc phosphide repeatedly in very high frequency whereas, one farmer used zinc phosphide poison daily

without achieving any success in controlling the rodents. Under such circumstances, it was suggested that (1) Control operation with 2% zinc phosphide should be carried out for one day only as these rodents develop bait shyness by using poison on consecutive days, (2) This poison shyness persists for about 3 months, by poisoning them repeatedly, (3) To get rid of residual population aluminium phosphide fumigation was recommended.

### A brief report of the ecological work on rodents around Tirupati

A. M. K. Mohana Rao

Department of Zoology, S. V. University, Tirupati

Ecological studies of rodents on natural grasslands as well as in cultivated field was carried out around Tirupati, Andhra Pradesh. The field rodents include *Hystrix indica*, *Tatera indica*, *Bandicota bengalensis*, *Rattus rattus*, *Mus booduga*, *Mus platythrix* and *Funambulus palmarum*, the former two being restricted to the dry and forest ecosystems. Most of the area is free from *F. palmarum*, but *Bandicota bengalensis*, *Mus platythrix* are found to be common in the field and were recorded in the

ratio of 3 : 7 : 1 respectively. The crops harvested in this area are paddy (*Oryza sativa*), ragi (*Eleusine coracana*), Jowar (*Sorghum vulgare*) Groundnut (*Arachis hypogaea*), Sugarcane (*Sacharum officinarum*) and chillies (*Capsicum annum*). The infestation ratio in these crops are 19 : 13 : 8 : 8 : 3 : 6 respectively.

All the rodent species inhabiting this area, except *F. palmarum* are nocturnal, having two peaks of activity, one at dusk and other at dawn. Feeding, which is mainly

consisted of paddy or groundnut, *Dactyloctenium aegyptium* and *Panicum repens* is confined to the dusk period. *Mus* species was found to be most destructive to groundnut crop, whereas *B. bengalensis* was incurring severe damage to paddy seedlings. The latter species having hoarding capacity at the maximum of 2 kg per burrow. The population of field rodents was less during

summer months possibly because of scanty vegetation.

Study of reproduction biology of Indian field mouse and spiny mouse revealed small litter size in unfavourable months. The breeding season of these rodents in this area is found to be from August to February.

### Present situation of rodent menace in Mizoram

D. Srinath

Directorate of Plant Protection Quarantine & Storage, Ministry of Agriculture & Irrigation, Faridabad

A central team consisting of Plant Protection Advisor, Ecologist, C. A. Z. R. I, Jodhpur and myself visited Mizoram in February 1977 to investigate the present situation of bamboo flowering and rodent menace and to suggest rodent control measures:

were also damaged by rodents. In houses, also, clothes, poultry birds and eggs are damaged by rodents; since paddy stored in a primitive condition, considerable damage is caused by rodents.

The measures formerly adopted by farmers were netting, digging of burrows, setting of indigenous traps and poison baiting with zinc phosphide at very high concentration for 2-3 months when the crop is matured.

In houses also zinc phosphide was used to control rodents. There were cases of death of cats and pigs due to secondary poisoning.

The team, which camped in Thingsulthlian, 54 kms from Aizwal, learnt that the early variety of paddy crop was heavily damaged as compared to the late sown crop. In some of the semi-terraced fields where IR-24 variety paddy was cultivated the entire crop was destroyed by rodents which migrated from the adjoining bamboo forests. Some of the farmers have taken up Ginger crop instead of paddy to avoid rodent damage, but their shoots

It was recommended that even though the paddy crop is in its early stage in May-June the control

operation should be started. However, the number of rats killed may be few but if they are killed before the bamboo seeds are formed and paddy crop matures, damages due to the sudden outbreak in the rodent population, as has been predicted, can be considerably reduced.

It was desired that for 2-3 days pre-baiting with 97 parts coarse rice and 3 parts vegetable oils should be broad casted in infested areas and then zinc phosphide @ 2 per cent should be mixed with bait. Rodents are known to develop bait shyness if zinc phosphide is used repeatedly. Therefore, subsequent use of anticoagulants (19 parts coarses rice and one part anticoagulant along with small quantity of vegetable oil)

## Rat menace in Arunachal Pradesh

K. S. Subiah

Pest Control (India) Pvt. Ltd., Calcutta

I went around several jhum, forest and WRC fields, inspected tribal huts and their granaries in search of rats and also met a lot of tribals to question them about their

should be made. Baiting stations having 50-80 gms of this mixed food should be established at the places which are frequently visited by rodents:

It was suggested that above procedure of using zinc phosphide followed by anticoagulants around bamboo clumps immediately adjoining the crop fields may, to a certain extent, prevent the migration of rodents to the crop fields. The use of indigenous bamboo traps should be encouraged and all active burrows in the field should be fumigated by aluminium phosphide @ 1.5 gms/active burrow.

In all residential buildings only anticoagualants should be used to minimise hazards.

rat problem.

There are 3 types of rat pests as mentioned below .

1. Bungli Kabung  
(*Rattus rattus* ?) a brown coloured, white bellied rat. Found in the field and also eaten.
2. Khyeru Kabung  
(*Rattus rattus* ?) A black coloured, pale bellied rat. Found mostly in the huts, granaries and also in fields adjacent to huts. This is not eaten.

3. Bampi Talang  
(Species not known)

I have been told that this is a smaller rat as compared to 'Bungli' but the colour of the fur is little lighter than 'Bungli'. This rat according to the tribals is found only in the deep jungle, jhums and not around Seppa jhums.

The rat damages are more severe during bamboo flowering. The rats invade the jhums paddy field in June/July from the neighbouring patch of jungle or abandoned jhums. One could see a lot of fallen paddy husk, penicle and cut leaves along with rat paths. The rats line under rotten/burnt tree stumps, discarded weeds and rubbish. Actually there is no regular living burrow. They live in colonies and when I was looking around for 'Bungli Kabung', I saw four running away and caught the female which was nursing 8 juveniles. The damage to paddy is severe and mostly by Bungli Kabung inflicted during nights. I feel that the rat damage to jhum fields around Seppa (Kameng valley) should be more than 50 per cent but in any case not less.

The local people observed 2 rats (Kyaru Kabung) swimming, one behind the other and crossing river. They also were of experience that during standing crops rats do not prefer baits. The rat damage in jhum fields was more than 50%. The tribal settlements and granaries built of bamboo were also greatly infested with rats which was evidenced by plenty of rat dropping.

The animal was also causing nuisance to children by biting their body parts. The anticoagulant Rodafarin was supplied to get rid of the rats. In Mizoram, the rats have thus overpopulated and are converting this region to famine conditions. So, it was suggested that before the conditions in Arunachal Pradesh reach that stage of Mizoram it is better the jhum or shifting cultivation should be totally stopped and utilize the same fertile slopy land for plantation crop and cultivate cereal crops in low lying areas.

For control, rats were found averted with Zinc phosphide baiting due to the bad smell of phosphine from poison in humid conditions. On the other hand Aluminium phosphide being highly hazardous and may not work properly due to the uneducated population. So the safe rodenticide for this region is Rodafarin (warfarin). A proper baiting method which would attract the rats from the rainy months of July onward till December should be chosen. The poison should be baited in paraffin cake form mixed with suitable ingredients.



## National Programme for Rodent Pest Management

The ICAR launched a National Programme for Rodent Pest Management in 1975 with its Coordinating and Monitoring Centre at CAZRI, Jodhpur. Under the auspices of this programme Apex level operational training has been imparted to about 300 officers of Agricultural Universities and State Government at the eight Training Centres. The operational training

consisted of techniques of rodent control in crop fields, threshing floors, and rural residential premises; preparation of poison baits, their handling, precautions to be taken, and first-aid measures to be adopted in case of accidental poisoning. The trainer-trainees have subsequently arranged training to NSS workers, Nehru Yuvak Kendras and Youth Farmer volunteers.

Centre	States/Union Territories to be covered
Jodhpur (Central Arid Zone Research Institute)	Rajasthan, Haryana, Punjab and Delhi
Sidhpur (All India Rodent Control Project)	Gujarat
Hyderabad (Andhra Pradesh Agricultural University and Central Plant Protection Training Institute)	Andhra Pradesh and Madhya Pradesh
Parbhani (Marathwada Krishi Vidyapeeth)	Maharashtra, Goa, Daman and Diu and Nagar Haveli
Cuttack (Central Rice Research Institute)	Orissa, Bihar and West Bengal
Shillong (ICAR Agril. Complex)	Assam, Arunachal Pradesh, Nagaland, Manipur, Tripura, Meghalaya, Mizoram and Sikkim
Hapur (Indian Grain Storage Institute)	Uttar Pradesh, Himachal Pradesh and Jammu & Kashmir
Mysore (Central Food Technological Research Institute)	Karnataka, Kerala and Tamil Nadu

A new multimedia agricultural education-cum-training exercise on rat control was attempted in about 800 TV cluster villages under SITE Programme in Andhra Pradesh and Karnataka. This exercise involved the participation of hundreds of extension workers and other field-level functionaries at the grass-root level as also thousands of farmers in these two states. Besides, films on rodent control have

been exhibited on TV and in Cinema houses all over the country. A number of pamphlets in various languages were distributed among farmers, indicating the procedures of rodent control. During 1976 rodent control operations were successfully taken up in the whole country in about 100 million hectares of cropping land; and in 13450 villages.

## National Rodent Control Advisory Board

The Government of India has formulated a Central Rodent Control Advisory Board with the following major functions :

(1) To plan a concerted and cooperative effort to eradicate rat menace (2) To advise the Central and State Governments on the matters relating to administration,

finance, organisation of Rodent Control Programmes and its policies etc. (3) To coordinate the efforts of the State Rodent Committees.

The Advisory Board will be assisted by a Committee of Experts in the field of Rodent Biology and Control.

## State Rodent Control Advisory Committee

The committees in various states are formed under the chairmanship of the Minister of Agriculture. The functions of these committees are :

(1) To advise the State Government on rodent control work, (2) Coordinate state rodent control effort with the Central Rodent Control Advisory Board, (3) Scrutinise rodent control programmes and recommend allocation of the funds, (4) To recommend rodenticides and methods of rodent control, (5) Assessment of the rodent

control programmes periodically and suggest the modifications if necessary, (6) To promote the rodent control research in the state to evolve better methods of control, (7) To make recommendations for a coordinated and concerted effort for rodent control by different agencies in the state, (8) To promote awareness about the losses caused by the rodents, and (9) To carry out such other functions as laid out by the Central Rodent Advisory Board.



## CAZRI, a Coordinating and Monitoring Centre

Central Arid Zone Research Institute has been designated as Coordinating and Monitoring Centre

for Rodent Research and training by Indian Council of Agricultural Research.

### Rodent Biologist Honoured

Dr. Ishwar Prakash, Coordinator cum-Principal Animal Ecologist, was awarded Rafi Ahmed Kidwai Memorial Prize for Agricultural Research

for the biennium 1974-75. This is in recognition of his outstanding contribution to research in agricultural zoology and entomology.

### Seminar on rodent problems

A seminar on Problems of Rodent and their control with special reference to northeast India was held from

December 2-3, 1977 at Shillong. A publication containing 17 abstracts of papers was issued.

### Rodent biology course at undergraduate level

The Gujarat Agricultural University has decided to introduce an elective course of Rodent biology in the final semester B. Sc. (Agri.) class from the year 1977. The syllabus includes classification and general organisation of the class Rodentia; general biology of impor-

tant species of rodent occurring in Gujarat; role of rodents in agriculture improvement of storage structures for protection from rodents, at Navsari, Anand and Junagarh campuses of Gujarat Agricultural University.

### The Rodentological Society of India

The above Society has been constituted with the following objects.

1. To promote education, research and training connected with rodentological dealing with the ecology, ethology, control and other related aspects. 2. To collect, collate and compile scientific data and comprehensive information related to rodentology and publish through papers, books, news-letters and periodicals etc. 3. To accept grant of money from Government, Semi-Government, Private institutions for the purpose of achievements of the objects of the

society. 4. To do all such lawful things as may be incidental to or conducive to the attainment of the above objects of the society.

Interested persons are requested to contact Dr. G. C. Chaturvedi, Rodent Project, Sidhpur-384151. (North Gujarat).

### Visits

Dr. Ishwar Prakash, Coordinator cum-Principal Animal Ecologist, visited Manila, Philippines to participate in the Second Regional Training Seminar on "Field Rat Control and Research" from March 16-27, 1977. Brief report of his visit may be had from CAZRI, Jodhpur.

Dr. P. K. Ghosh, Animal Physiologist, visited Paris to attend XXVIIIth International Congress of Physiological Sciences from 17-24 July, 1977. He presented a paper "Bio-energetic and Physiological aspects of desert rodents", abstract of which is reproduced here.

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The next issue will appear in February, 1978. Contributions for inclusion in the Newsletter may please be forwarded to :

**Coordinator**

**National Programme for Rodent Pest Management  
Central Arid Zone Research Institute,  
Jodhpur-342003**

**Published by Coordinator of the National Programme  
for Rodent Pest Management, ICAR and printed at  
Rathi Printers, Pungalpara, Jodhpur-342001**