rose Bengal-streptomycin agar for fungi and Kuster's agar for actinomycetes. The procedure followed for sampling and testing the rhizosphere effect was the same as that of Timonin.[1] Besides, to examine the total biological activity of the soil and rhizosphere samples, their dehydrogenase activity was estimated by the triphenyl-tetrazolium chloride method following the procedure of Casida[2] with glucose as an added metabolite.

The data presented in Table I indicate the wide variations in the bacterial populations in

TABLE I

A comparison of the rhizosphere microflora of diseased and healthy coffee plants

Rhizosphere soil sample	pH	Moisture %	Bactaria* $\times 10^6$	Actinomycetes* $\times 10^3$	Fungi* $\times 10^4$	Dehydrogenase* activity μl of H_2/g. soil
Healthy plant	5·0	18·99	1·08	0·35	4·8	0·30
Diseased plant	5·8	20·40	3·31	0·41	5·4	0·26
Treated plant	6·3	19·00	3·20	1·95	1·10	1·20

* Data calculated for moisture-free soil.

the rhizospheres of diseased and healthy plants. The fungal and actinomycete populations as also the dehydrogenase activity of the two samples did not vary much. Application of lime and ammonium sulphate to the soil, on the other hand, significantly increased the actinomycete and fungal populations and the dehydrogenase activity, but not the bacterial activity. The H-ion concentration of the region seems to be altered because of the diseased condition of the plant. It could also be manipulated through chemical treatments to the soil, as seen from the data obtained from treated plants.

Studies on the types of fungi present showed that in the rhizosphere of healthy plant majority of them were of sporulating type mainly made up of *Penicillium, Aspergillus* and *Verticillium* and to a lesser extent *Mortierella* and *Botrytis*. In the rhizosphere of diseased plant mostly hyphal forms were found. Prominent among them were *Fusarium* and *Verticillium*. *Botrytis, Penicillium* and *Aspergillus* were significantly absent in the rhizosphere of diseased plants. In the rhizosphere samples from the treated-diseased plants *Fusarium* and *Botrytis* were predominant and *Penicillium, Aspergillus* and *Verticillium* were significantly absent. Closer examination of the bacterial population indicated that in the rhizosphere of healthy plant *Bacillus* was predominant, in the diseased plant as well as treated-diseased plant Gram-positive and Gram-variable coccoids in clusters and chains were common.

These observations indicate that the microbial population in the rhizosphere region is altered both quantitatively and qualitatively due to diseased condition of coffee plant and through fertilizer treatments to the soil the micro-organisms are altered to some extent. How far such an effect would help in preventing infections of plant roots by pathogenic organisms remains to be understood. In a recent paper Sivasithamparam[3] reported that in virus-affected *Crotolaria juncea* L. rhizosphere, there was no *Trichoderma viride* Pers. ex Fr., while the same was dominant in the rhizosphere of healthy plants. Perhaps by manipulations through soil fertilizer application and/or foliar spray we could so alter quantitatively and qualitatively the rhizosphere microflora as to give protection to the plant against infection by pathogens. More work is needed in this direction.

Dept. of Microbiology, University of Agril. Sciences, Bangalore-24, *July* 8, 1968.

N. R. VISHWANATH.
RAMACHANDRA B. PATIL.
G. RANGASWAMI.

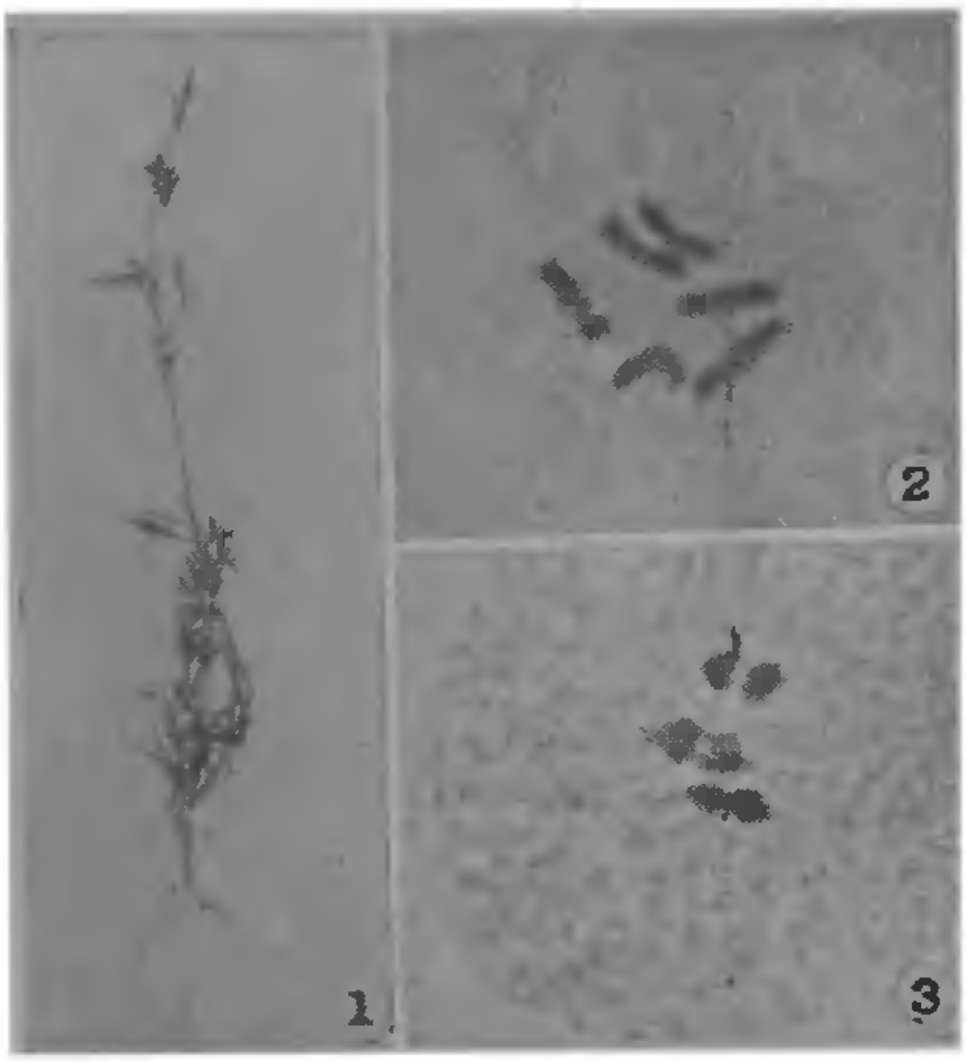
1. Timonin, M. I., *Can. J. Res.*, 1940, **18 B**, 144.
2. Casida, L. E., Jr., *Soil Sci.*, 1964, **98**, 371.
3. Sivasithamparam, K., *Curr. Sci.*, 1969, **38**, 46.

NEW BASIC CHROMOSOME NUMBER OF THREE IN GRAMINEAE (POACEAE)

BOR[1] described five species of the genus *Iseilema*, four of which are found in India and one in Burma. According to Blatter and McCann,[2] three of these four Indian species *I. anthephoroides* Hack., *I. laxum* Hack. and *I. wightii* Anderss. are found in Maharashtra State. Chromosome numbers of *I. laxum* and *I. wightii* have already been worked out by different workers. In *I. laxum* Celarier and Paliwal[3] found $n = 4$; Ramnathan[4] reported 18 and Swami[5] 12. Joshi *et al.*[6] observed that both *I. laxum* and *I. wightii* had the chromosome number of $n = 14$.

I. anthephoroides (Fig. 1) collected from the uncultivated areas of Poona had the height of 30 to 50 cm. and the hermaphrodite spikelets developed on stipes that were 0·5 mm. long. It is an annual and its voucher specimen has been deposited with Herbarium of the Botanical Survey of India, Western Circle, Poona, India (B, S, I.). Squashes of growing root

tips indicated that this species had $2n = 6$ chromosomes (Fig. 2). Studies of pollen mother cells indicated that meiosis was normal as three bivalents were found at metaphase I (Fig. 3).



FIGS. 1–3. Fig. 1. Plant specimen of *Iseilema anthephoroides*. Fig. 2. Mitotic metaphase showing $2n = 6$ chromosomes, × 2,500. Fig. 3. Metaphase I with three closed bivalents.

Chromosome number of $n = 3$ has been reported for the first time in *I. anthephoroides*. It is a new basic number for the genus *Iseilema* and the entire grass family. Darlington and Wylie[7] have given 4 as the lowest basic number for the Gramineæ. In the *Index to Plant Chromosome Numbers*[8,9] and in *Taxon*,[10-14] gametic number lower than 4 has not been listed under Poaceæ.

This research has been financed in part by a grant made by U.S.D.A., under P.L. 480 Research Project A 7-CR-130. The authors acknowledge the technical assistance rendered by Shri A. S. Jadhav of this Section.

Cytogenetic Laboratory, RUI D'CRUZ.
Botany Section, S. P. BIRARI.
College of Agriculture,
Poona-5, M.S., India, *June* 11, 1969.

1. Bor, N. L., *The Grasses of Burma, Ceylon, India and Pakistan*, Pargamon Press, London, 1960.
2. Blatter, E. and McCann, C., *The Bombay Grasses*, Scientific Monograph No. 5, Imperial Council of Agricultural Research, Delhi, India, 1935.
3. Celarier, R. P. and Paliwal, R. L., *Science*, 1957, **126**, 1247.
4. Ramnathan, K., *Curr. Sci.*, **19**, 1950. 155.
5. Swami, U. B. S., *Ibid.*, 1963, **32**, 267.
6. Joshi, A. B., Patil, B. D. and Manchanda, P. L., *Ibid.*, 1959, **28**, 454.
7. Darlington, C. D. and Wylie, A. P., *Chromosome Atlas of Flowering Plants*, Allen and Unwin, London, 1955.
8. Cave, M. S., (Ed.), *Index to Plant Chromosome Numbers—I*, California Botanical Society, 1960.
9. —, *Index to Plant Chromosome Numbers—II*, The University of N. Carolina Press, Chapel Hill, North Carolina, 1964.
10. Love, A., *Taxon*, 1964, **13**, I.O.P.B. Reports I and II.
11. —, *Ibid.*, 1965, **14**, I.O.P.B. Report III.
12. —, *Ibid*, 1966, **15**, I.O.P.B. Reports IV and VII.
13. —, *Ibid.*, 1967, **16**, I.O.P.B. Reports XI, XII, XIII and XIV.
14. —, *Ibid.*, 1968, **17**, I.O.P.B. Reports XVI and XVII.

OCCURRENCE OF *PTERYGOSOMA NEUMANNI* VAR. *HIRSTIELLI* IN AND AROUND TIRUPATI AND MADRAS

Geckobia indica and *G. gleadoviana* have been reported from *Hemidactylus gleadovi* of North India.[1,2] Three other species—*G. diversipilis*, *G. simplex* and *G. hindustanica*—were recorded from *Hemidactylus leschenaulti* of South India.[1,2] *P. neumanni* was reported from garden lizard (*Calotes versicolor*) of Madras.[1] Abdussalam[3] described in detail the male specimen of *P. neumanni* var. *hirstielli* from a garden lizard (Madras and Lahore). Lawrence's[4,5] was a major contribution to the host-parasite relationship in Pterygosomidæ. A recent key to the genera of the family Pterygosomidæ (Oudemans, 1910) was given by Davidson.[6]

This note reports the occurrence of Pterygosomid mites in and around Tirupati and Madras and presents a detailed description of female Pterygosomid mite. The richness of the lacertilian fauna of Tirupati makes the occurrence of Pterygosomid mites highly likely.

The garden lizard (*Calotes versicolor*) outnumbers the other variety of lizards (Sitana, Mabuya, Varanus and others). Specimens of this species were collected in large numbers from different parts of Tirupati and Madras. On close examination mites of Pterygosomidæ family were found beneath the scales from all over the body. These mites were picked up and preserved in 70% alcohol. Some were mounted in Berlese gum chloral mutant and others were cleared in lactophenol with gentle heat wherever necessary and mounted in Canada balsam for microscopic examination. Besides, visual observations were made on fluid mounts as well, and Camera lucida sketches were made.