HETEROPODA VENATORIA PREYING ON A PIPISTRELLE BAT

THAT some spiders feed on vertebrates is now unquestionable. Records of account of different vertebrates, such as fish, frogs, lizards, snakes, rats, etc., being captured and fed on by different species of spiders in different parts of the world are available.[1] [9] But record of any instance of spiders preying on tiny bats has not been known to me. Recently, however, I had the rare opportunity of recording an instance of the kind.

In a neighbouring village of Calcutta in a cow-shed surrounded by matted wall I witnessed a spider, *Heteropoda venatoria* Linn., preying upon a tiny bat, *Pipistrellus* Sp. Entering into the shed I noticed a pipistrelle bat struggling to drag itself out of a crevice between two bamboo strips of a wall and a big house-spider, *H. venatoria*, was seen firmly gripping the former by the neck with its power-

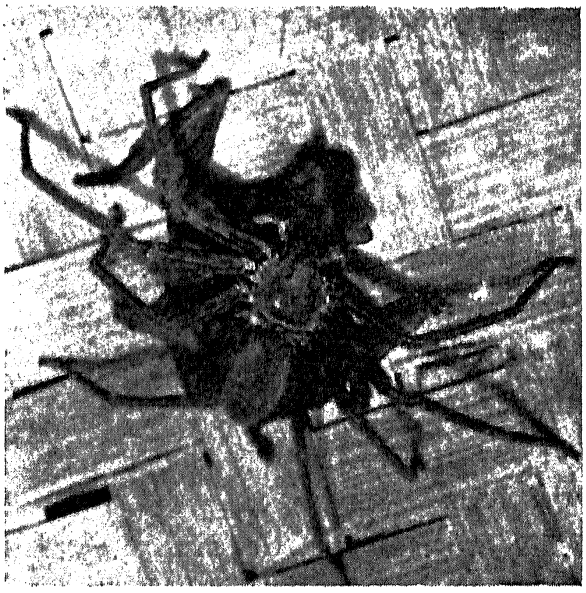

FIG. 1

The spider *H. venatoria* gripping the pipistrelle bat with its powerful mandibles.

ful mandibles. There was intermittent gasping and screaming of the bat. It was dark within the shed and a torch was focussed on the spot. As soon as the light fell upon the spot, the bat screamed loudly and came out of the crevice by vigorous flapping of its wings. The spider at the same time tried its utmost to stick to the spot. The bat, however, could drag itself away a certain distance on the matted wall by crawling with its peculiar habitual gait with the help of its fore-arms, the spider all along keeping its hold. In the strife the bat was completely exhausted. After a stay in that condition for about fifteen to twenty minutes it began to flap its right wing and at the end stretched it to its utmost. Remaining in that position for a minute or two the wing slowly regained its normal position like a stretched-out limb in an atonic condition. By careful manipulation I captured the combatants and brought them home in a glass jar. They were left undisturbed for the night. Next morning the spider was found resting at the top of the jar in an upside down position and the victim was lying stiff at the bottom with the only visible injury on the neck. Evidently the bat had expired long ago and remained untouched by the spider during the night.

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March 3, 1941.

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[1] Cambridge, *Proc. Zool. Soc.*, Lond., 1903, **1**, 152, 158.
[2] Davis, *Ent. News*, 1891, **2**, 77.
[3] Chubb, *Nature*, 1913, **91**, 136.
[4] Gudger, *Nat. Hist. Mag.*, 1925, **35**, 266.
[5] Bhattacharya, *Trans. Bose Inst.*, 1931-32, **7**, 138.
[6] Warren, *Ann. Natal Mus.*, 1923, **5**, 93.
[7] Hutton, *Journ. Asiatic Soc. Beng.*, 1842, **11**, 860.
[8] Bhattacharya, *Sci. Monthly*, N. Y., 1934, **39**, 176.
[9] Abraham, *Ann. Natal Mus.*, 1923, **5**, 89.

SOIL SOLUTION STUDIES IN IRRIGATION PRACTICES

(With special reference to Alkaline and Saline Soils)

IN a previous paper the writer and Pollard[1] have described in detail the practical significance of soil solution studies. Methods of obtaining the soil solution and estimating various bases, fertility ingredients, and soil relations are examined and described. Value of soil solution methods has been critically examined and their application to investigation of

causes of soil productivity and exhaustion has been described.

The soil solution studies have further been extended and a detailed inquiry into the soluble salt status of alkaline and non-alkaline (healthy) soils in relation to irrigation practices has been made. Full data will soon be published.

By use of small-scale drain pipe lysimeters (*vide* plate given) permitting detachment of their contents in a number of separate layers, changes in the composition of soil solution and the movement of its mineral constituents resulting from irrigation and from the upward movement of waters are examined. The technique developed is shown to contribute extensively to the solution of problems likely to arise in connection with irrigation practices.

It is found that the addition of sodium chloride to soils results in (*a*) a depression of the solubility of phosphates, the action being

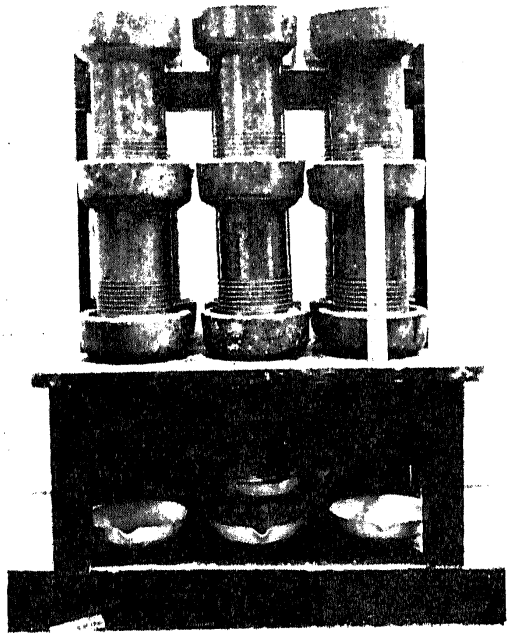

FIG. 1

reversible when sodium chloride is removed by irrigation, drainage, etc., (*b*) mobilisation of organic nitrogen constituents which thus become capable of upward and downward movement in the soil, (*c*) mobilisation of ... aluminium, manganese, in soils of low but ... in those of high lime content.

Examination of leachings, and soil solu... from artificial and natural saline soils u... various conditions show a general similarity ... all characteristics examined. Use of artifi... salted soils, therefore, appears to offer a reli... experimental basis for investigation of p... lems concerned notably with irrigation of s... soils.

Comparison is made of the composition ... displaced soil solution and that of corresp... ing water extracts in which the soil-w... ratio is varied. Soil extracts are shown ... indicate much larger proportion of so... calcium, potassium, carbonate, phosphate ... higher calcium-sodium ratio (on dry soil ba... than actually appear in the soil solution. ... use of water extracts in assessing the pro... tion of soil fertility ingredients or ha... soluble salts (in case of saline soils) s... somewhat unsatisfactory.

Liberal use of irrigation water improve... salt status of almost all saline soils in su... layers, whereas such heavy doses drain ... available plant food material from healthy ... In case of salt-free healthy soils, judicious ... economical use of irrigation water is re... mended for maintenance of high level of ... fertility.

The new methods assist in the determin... of soil nutrient values preparatory to pre... ing profitable manurial treatments.

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Karachi,
February 25, 1941.

[1] *Indian J. Agric. Sci.*, 1939, **9**, 473.

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