Arnaud[1] described this fungus without the latin diagnosis. Ellis[3] emended the genus and also the type species description, besides providing latin diagnosis for its validation. It has been reported from France, Japan, New Guinea and Great Britain[1,3,4].

Spores belonging to the above species were found in abundance during our survey. The conidial measurements of the present isolate are similar to those of Arnaud's description. This fungus was found repeatedly colonizing the submerged root bits in water bodies of Mannanur Forest, Andhra Pradesh, India, during winter of 1978 and 1979 (IMI 239541). This fungus showed an aquatic exitsence.

A survey of literature revealed that there is no report of this fungus so far from India.

*Chaetospermum clasticae* Koorders.

This is a member of Coelomycetes and is found colonizing the submerged grass leaves in pond water of Mannanur Forest, A.P., (India) during the winter months of 1978. The very characteristic conidia are occasionally found in foam samples of flowing waters. Earlier, the conidia of *Chaetospermum chaetosporium* Smith and Ramsb were found on submerged decaying Alder leaves[2] and foam samples[4]. Therefore, its existence in tropical waters cannot be ruled out. *C. elasticae* (IMI 230319) has been recorded by Nag Raj[5] on dead twigs of *Coffea canephora* from India. It is the first record of this fungus from aquatic habitat.

The authors are thankful to Dr. E. Punithalingam and Mr. P. M. Kirk, C.M.I., Kew, England, for their help in confirming the fungus species.

*Mycology and Plant Pathology,*
*Department of Botany,*
*Science College, Saifabad,*
*Hyderabad 500 004, A.P.,*
*(India), January 14, 1980.*

M. MADHUSUDAN RAO.
C. MANOHARACHARY.

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## NOTES ON *MEGASELIA* SP. (DIPTERA: PHORIDAE) A NEWLY RECORDED PARASITE OF *NEPHANTIS SERINOPA* MEYRICK (LEPIDOPTERA : XYLORICTIDAE)

SPECIES of *Megaselia* as parasites of coccinellids, myriapods and grasshoppers have been studied by Lichenstein[1], Myers[2] and Timon-David[3]. The immature stages of *Megaselia* sp. were obtained from the pupae of *Nephantis serinopa*, a serious pest of coconut, collected from Nileswaram, Kerala. Nearly 9% of the field-collected *N. serinopa* pupae was found parasitised by these dipterans. The adult insects (Fig. 1) were fed with honey or sugar solution, provided in droplets on polythene strips. Fresh pupae of *N. serinopa* were supplied in order to observe their parasitic nature.

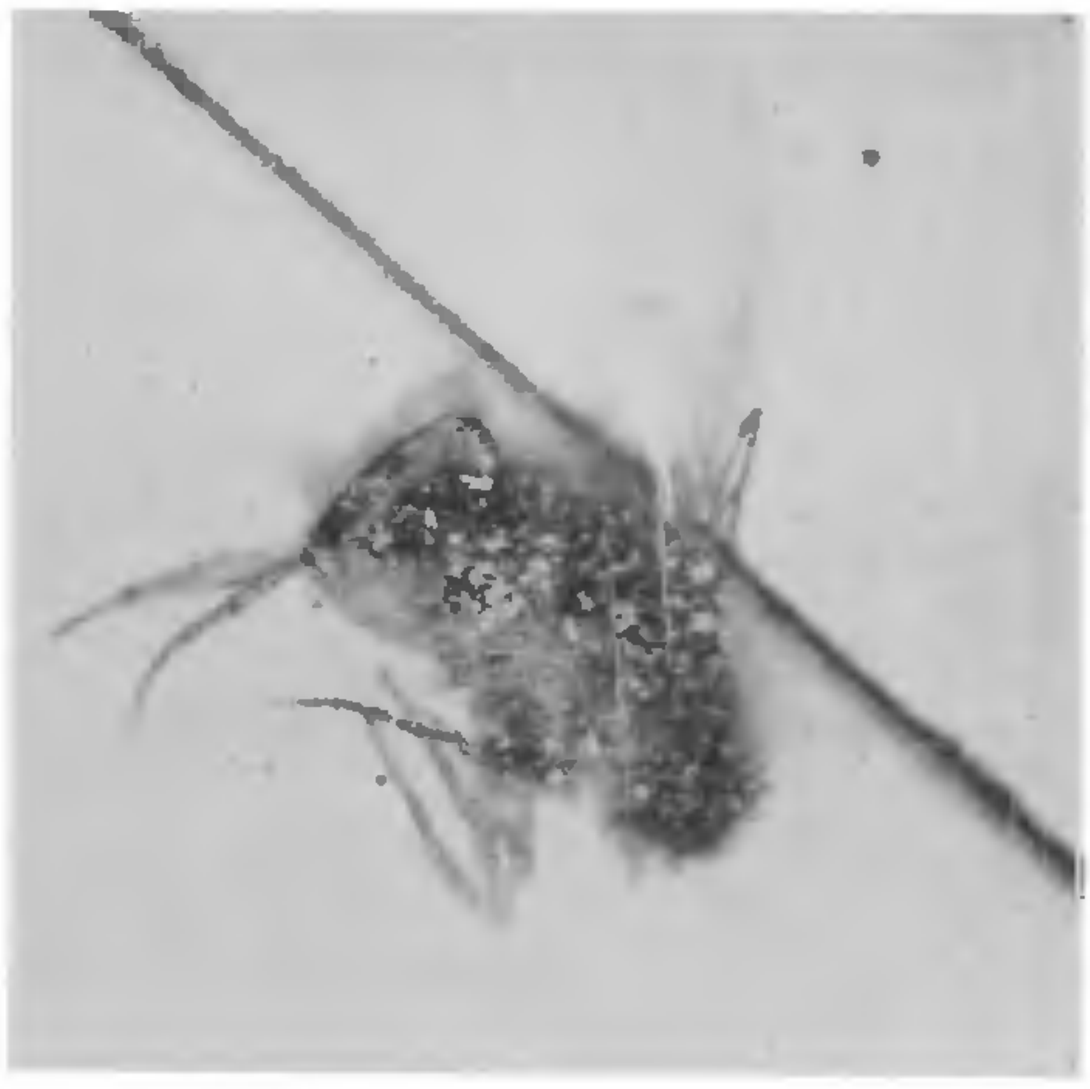

FIG. 1. *Megaselia* sp.

The females are found to lay eggs 2 to 5 days after their emergence. The eggs are scattered, both on the sides of the glass tube and on the surface of *N. serinopa* pupae. The number of eggs laid by a single female varies from 4 to 16. The females have a maximum longevity of 12 days under the laboratory conditions, and oviposit once or twice.

The egg is 0·42 mm long and 0·14 mm wide. It is milky white in colour and has a superficial ornamentation consisting of disc-like structures, 0·14 mm diameter which are held on short stalks 0·005 mm long. The larvae that emerge within a day after oviposition, move about and attack the pupae of *N. serinopa* and feed on them from outside and later, some of them get into the pupa and feed the entire contents from within.

The larval period extend upto 5 days. The full fed larvae either come out of the host pupae and pupate outside, or may pupate within the host puparium itself. The pupa is oval shaped, dorsally convex and with hard and dark brown casement. The pupal period varies from 7 to 11 days. The adult emerges out by breaking the dorsal part of the puparium.

The parasitic nature of many species of *Megaselia* is still a matter of controversy. Evidently the line between their scavengerous and parasitic habit is not distinct[4]. The larval and pupal stages of *Megaselia* sp. got from the field-collected host material, during the rainy season can also indicate the possibility of their scavengerous nature. However, the adults emerged in the laboratory, oviposited on and near the host pupa and their larvae attacked fresh *N. serinopa* pupae. Even in cases, where the eggs were laid distantly, the larvae when hatched, managed to reach the host and feed on it. These facts clearly suggest their potential parasitic habit.

Thanks are due to Dr. W. W. Wirth of the Systematic Entomology Laboratory (USDA) for the identification. We are grateful to Dr. Lloyd Knutson, Co-operating Scientist of our Project, for his encouragement and useful suggestions and to USDA, for its financial assistance under P.L. 480.

Division of Entomology, Department of Zoology, University of Calicut, Kerala 673 635,

O. K. REMADEVI.
U. V. K. MOHAMED.
U. C. ABDURAHIMAN.

*October* 24, 1979.

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# REVIEWS

**Unsolvable Classes of Quantificational Formulas.** By Harry R. Lewis. (Addison-Wesley Publishing Company, Inc., Advanced Book Program, Reading, Massachusetts 01867, U.S.A.), September 1979. Pp. xv + 198. Price: U.S. $13.50 (Paperbound).

This book is addressed to logicians, theoretical computer scientists interested in the theory of computation and combinatorial mathematicians. It deals with the recursive unsolvability of decision problems for automata, tiling problems, linear sampling problems and first-order logic. The first part presents unsolvable problems in combinatorial systems and these are used in the second part to present the strongest known results on unsolvable classes of first-order formulas.

Turing machines are defined and the halting problem is used as the basis for the rest of the unsolvability proofs. Then the 'origin-constrained tiling problem' namely, the problem of determining whether the first quadrant of the plane can be tiled with copies of square tiles drawn from a given finite set of prototypes subject to restrictions about which tiles may abut each other on the four sides, and which may appear at the origin, is presented. The Turing machine halting problem can be reduced to this problem. Then two different versions of the linear sampling problem are dealt with and the results are extended to the unsolvability of two unconstrained tiling problems. One of these is without the origin constraint and the other uses hexagonal tiles instead of square ones. Finally, the Post Correspondance problem and the halting problem for two-counter machines are presented. These are utilized in Part II.

The second part deals with decision problems of first-order logic. The basic definitions of the theory of Herbrand expansions are introduced first. Then the unsolvability of the decision problem for formulas having only one predicate letter, which is dyadic is dealt with. Stronger versions of this result are proved next. Then formulas restricted according to the possible sequences of arguments an atomic subformula may have, are considered. Next, Krom and Horn formulas which are special kinds of formulas in conjunctive normal form are dealt with. Finally, it is proved that formulas with four atomic subformulas form an unsolvable class. The strengthening of this theorem to the class of three atomic formula is an open problem.