

Letters to the Editor.

Priority in Lac Research.

USUALLY lac insects have two life cycles but O'Connor¹ mentions localities supposed to yield three crops of lac per year. Imms² and Chatterjee confess inability to refer to their source of information in their publication but mention having tried to discover a trivoltine insect. In a paper published in 1919, I³ made myself responsible for such a positive finding with regard to Mysore. The late Mr. Howlett, when he visited Bangalore as a Member of the Lac Enquiry Committee, expressed hesitation in believing this fact and I offered to convince him by sending brood lac at a time when only a trivoltine species could yield larval swarming. In their joint Report issued after Howlett's demise, his colleagues Lindsay⁴ and Harlow write: "The fact that we are still unable to say whether there is a trivoltine variety . . . is an indication of the extent to which its general study has been neglected. . . . Whether this is the case or not remains to be seen but it is interesting to note that from *Shorea talura* in Bangalore which originated from a swarm in the latter part of December (larvæ) swarmed on 21st April 1921, a remarkably early date. This seems to be the most definite evidence as yet available . . ." The brood lac referred to was sent by me and I had hoped to read a confirmation of my discovery in the interests of the lac industry or a mention of my name. On the contrary the report devotes two pages criticising some of my theories which have since been substantiated by the findings of Sreenivasaya and myself. I had reasons to protest against an attitude where the report was loud in declamation and silent in recognition, both to my disadvantage. I consulted the then Director of the Indian Institute of Science who gave me to understand that it is immaterial for Science, who says it; the publicity of a discovery after all is the main objective of every worker. This altruistic principle, however, loses its hold on the mind as memory gathers further sad experience.

¹ O'Connor, *Note on Lac*, 1874, Calcutta.

² Imms and Chatterjee, *Ind. For. Mem.*, 1915, 3, Pt. 1.

³ Mahdihassan, *Quart. J. Mysore For. Assoc.*, 1919, No. 3.

⁴ Lindsay and Harlow, *Ind. For. Rec.*, 1921, 8, Pt. 1.

When Howlett came to Bangalore he received a typescript report of another work containing about 25 photographic illustrations on which Fowler⁵ writes, "Mr. Mahdihassan has spent some months in the Department studying the anatomy and physiology of the lac insect. With the aid of the Minot Microtome he has made a number of interesting sections and claims to have succeeded in identifying the special glands concerned with the production of the various substances found in stick lac, viz., wax, hard and soft resins, etc. The work has been submitted to the Officers of the Government of India conducting a special enquiry into the subject of lac." In the Report on Lac by Lindsay⁴ and Harlow no mention is made, however, of this fact. On the contrary the *Ann. Rep. for 1919-20 of the Board of Scientific Advice for India* (Pub. 1921), contains the following statement from Beeson: "A microscopic examination of the internal morphology of lac insects has been carried out under the direction of Mr. F. M. Howlett with the object of discriminating specific differences in the form of lac insect from different kinds of host tree." If this had been the object of research, it was more likely that the external morphology of insects from different trees would first be studied. At any rate, similar problems, for example, distinguishing different species of phylloxera forming galls on the grape vine, have never been attacked in the complicated way suggested above. I addressed an enquiry to Dr. Beeson at Dehra Dun who kindly referred me to Mr. Fletcher at Pusa who was equally unaware of the work done under Mr. Howlett's direction. In the light of my experience a subtle difference had to be made between Howlett's work, which no doubt his successors at Dehra Dun or at Pusa could have easily traced out, and work done elsewhere, supposed to have been carried out under his direction but completed and its typescript report handed even before the suggestion was ever offered. At the same time when Howlett received my work, copies were also sent to the following:— Prof. Tschirch of Bern, Switzerland, the authority on Resins who had the kindness of mentioning in more than one of his

⁵ *Appendix, Eleventh Annual Report of the Council, Indian Inst. Sci., Bangalore, 1920, 8.*

publications that the internal anatomy of the lac insect had been studied by me; Prof. Bugnion then at Lausanne an authority on wax glands; Prof. Silvestri of Portici who was proposing to write a monograph on lac insects; Prof. Ferris of Stanford, California, who was equally interested in lac insects, and Dr. Imms then at Rothamsted. The Director of Industries, Hyderabad, also received a copy and another was deposited at the Indian Institute of Science, Department of Applied Chemistry. Under the post-war economic conditions, even in Germany then, an accepted thesis did not receive greater publicity than had been the fate with my work.

My histological paper entitled "Seats of the Origin of Lac Products" recognised stick lac as a concrete where besides lac, several kinds of wax form an inner structure. I had attempted to show the glands responsible for the secretion of each of these products. In a later publication⁶ several indications have been made to previous histological findings, *viz.*, "Throughout the undersurface of the skin there are dermal glands. They have long chitinous ducts and with these they look like toy balloons." Prof. Misra⁷ in criticising all previous workers generally and Chamberlin particularly says that they "do not mention the presence of any glandular structure associated with these pores". In his historical introduction he entirely ignores the histological findings casually mentioned in my paper of 1923 which he, however, critically refers to in another connection in the same paper. Misra claims "the lac glands are being described and figured here for the first time". I assert that Misra was not the first to have seen these glands; at any rate, he has not given a more exhaustive description than that contained in the very short passage quoted above from me. His illustration of ducts shows them to be wavy and the glandular structures, therefore, resemble spermatozoa. The ducts are of hard chitin and hence they possess a rigidity similar to a wire. I am not interested here in criticising his results but in pointing out that he has ignored my previous findings. In my publication, I have repeatedly emphasised the presence of hard and soft waxes in stick lac.

⁶ Mahdihassan, *J. Sci. Assoc., Vizianagaram*, 1923, 1, No. 2, 86.

⁷ Misra, *Proc. Zool. Soc., London*, 1931.

A histologist would have found wax glands instead of "special lac glands" as named by Misra which is misleading, as it only lends to the assumption that stick lac is a homogeneous substance. Misra's publication is a result of academic work and it is surprising that there should have been other glaring omissions in acknowledging previous work. It may be particularly pointed out that Fig. 1 (B) and Fig. 3 both on Pl. 1 of Prof. Misra's⁷ paper, are similar to those already published by Rai Bahadur Misra⁸ and by Chamberlin⁹ respectively.

It is hoped that in future such plagiarisms will be avoided; that unhealthy rivalry and duplication will be discouraged; and that scientific workers will develop a spirit of genuine research with a sense of responsibility.

S. MAHDIHASSAN.

Hyderabad,
Deccan,
July 24, 1934.

Influence of Moon on Earthquakes.

It is well known that the shape and position of the continents with their high mountains and seas, owe their origin to the great upheavals that have taken place millions of years ago and that are still going on in a moderate scale within the crust of the earth. Some think that the forces which have caused these changes are due to cooling of the earth's crust, while others think that they are due to polar movements caused by the rotation of the earth. Whatever might be the cause, these great upheavals have brought about regions of instability within the crust of the earth, and whenever there is a fresh dislocation due to tectonic movements mentioned above, an earthquake occurs. It is supposed that astronomical bodies, such as Sun and Moon, have no influence in precipitating a quake. It seems, however, that though the astronomical bodies are incapable of precipitating a dislocation, yet they are able to magnify the movement if they can exert their maximum influence during a dislocation.

If the forces due to Moon and Sun act in the direction in which the dislocation of the crust occurs, then obviously the displacement will be greatly magnified, and would

⁸ Rai Bahadur Misra, *Pusa Bull.*, 1923, No. 142, 10, Fig. 2.

⁹ Chamberlin, *Bull. Ent. Res.*, 1923, 14, Pt. 2, Pl. X, Fig. D.