

elucidate the above facts and to find out the nature of the phasic development of the tropical plants are in progress in this Institute and some of the valuable results so far obtained are in course of publication.

B. K. KAR.

Basic Research Institute,
Calcutta,
March 12, 1940.

Volant Animals which act as Carriers of San Jose' Scale

The San Jose' Scale [*Quadraspidiotus (Aspidiotus) perniciosus* Comst.] is a destructive pest of deciduous fruit trees. It is commonly distributed through nursery stock. Once it is established in a locality it gets distributed, among other means, by those flying animals which visit an infested fruit tree either to feed, or for shelter and rest as well. World literature dealing with the spread of this pest was consulted and it was found that the information concerning the species of volant animals which act as carriers of its nymphs was extremely meagre. Therefore, it was decided to find out the species of these volants in N.W. India and the work was carried out in the autumn of 1939 in the Kulu Valley.

For the purpose of this study birds and bats were shot from the infested and uninfested orchards as well as from the infested and uninfested plants in the jungle and solitary plants in the fields. During the period that this work was in progress 266 birds and bats were killed and this number comprised 26 species of birds and one species of bats. As soon as the shot animal dropped to the ground it was picked up, placed on a white paper and its legs examined for nymphs very carefully with a hand lens. It was then fumigated and shaken, and the nymphs that dropped off its body were collected for their identification in the laboratory.

The nymphs of San Jose' Scale were found on the following six (1-6) species of Passerine birds and on a (7) bat:

1. The Yellow-billed Magpie: "Chhanchhla" or "Tyng-jogring" (*Urocissa flavirostris flavirostris* Blyth.: Corvidæ).

2. The Indian Jungle Crow: "Dhal Kawa" or "Jangli kawa" (*Corvus macrorhynchus levaillanti* Less.: Corvidæ).
3. The Common Indian House Crow: "Kawa" (*Corvus splendens splendens* Vieill.: Corvidæ).
4. The Common Myna: "Desi-maina" (*Acridotheres tristis tristis* Linn.: Sturnidæ).
5. The Simla Streaked Laughing-Thrush: (*Trochalopteron lineatum griseicentior* Hartert: Timaliidæ).
6. The White-cheeked Bulbul: "Painju" (*Molpastes leucogenys* Gray: Pycnonotidæ).
7. The Flying Fox: "Barbagal" or "Badur" (*Pteropus giganteus giganteus* Brun.: Pteropodidæ).

Out of these, the first four species (1-4) of birds and the bat (7) are very commonly met with in the valley while the last two species of birds (5-6) are comparatively rare.

We are grateful to the Punjab Government for their very kindly granting exemption from all provisions of Section 7 of the Punjab Wild Birds and Wild Animals Protection Act (in the Kulu Valley) and to the Curator, Bombay Natural History Society, for his confirming our identification of Nos. 1-4 and for identifying Nos. 5-7.

KHAN A. RAHMAN.
ASA NAND KALRA.

Entomological Laboratory,
Punjab Agricultural College,
Lyallpur,
April 30, 1940.

Detection of Adulteration in "Ghee" (Clarified Butter) by the Fluorescence Technique

IN the March issue of *Current Science*, a note¹ was published suggesting a new method for the detection of adulteration in ghee. The authors of this note do not seem to be aware of the work of J. B. Jha,² which they have confirmed and which appeared some seven months back in one of the well-known scientific journals of this country.

The two studies, referred to above, were confined to fresh samples. It is well known that ghee when left to age under commercial conditions undergoes putrefactive changes and the resulting product is very different. It would be of interest to study the behaviour of the old ghees in the ultra-violet light.

While it cannot pretend to replace the accepted quantitative chemical methods, now in use, the method deserves careful trial as it appears to be both simple and informative. It is, however, difficult to see how such a costly equipment can find favour with the analysts.

G. NARASIMHAMURTY.

Municipal Laboratories,
C. & M. Station, Bangalore,

May 1, 1940.

¹ Muthanna, M. C., and Mukerji, B., *Curr. Sci.*, 1940, 9, 120.

² Jha, J. B., *J. Ind. Chem. Soc., Ind. and News Edn.*, 1939, 2, 159.

We take this opportunity of thanking Mr. Narasimhamurty for drawing our attention to the article of Mr. J. B. Jha. It is a pity that this contribution was missed by us in spite of the fact that one of us (B.M.) is a member of the Board of Editorial Correspondence of the *Journal of the Indian Chemical Society*. However, a subsequent perusal of Mr. Jha's article appears to indicate that he covered only a part of the ground which we had hoped to study. Mr. Jha undoubtedly had the idea of testing the purity of 'ghee' by ultra-violet fluorescence analysis, but he made no attempt to give his method the 'quantitative touch' necessary to measure accurately the amount of adulterant present in a particular sample. We found that by the fluorescence technique (employing the naked eye), it was extremely difficult, nay almost impossible, to detect 20 per

cent. or less of adulteration in 'ghee'. Hence we found it necessary to employ a device (Pulfrich photometer and filtered ultra-violet light) by which the intensity of fluorescence emitted could be actually measured in terms of some numerical unit and standard curves drawn for the more common adulterants. An accurate estimate of the percentage of an adulterant present can only be determined by a reference to these standard curves.

Mr. Narasimhamurty has brought out an interesting point with regard to the ageing of 'ghee' and the response of such 'ghee' to ultra-violet fluorescence. This is an important question and is already receiving our attention though our work in this direction has not yet progressed to a stage to make a pronouncement on the subject possible.

We fully realise that this method of fluorescence analysis is not perfected to such an extent as to replace the existing methods universally employed for 'ghee' analysis, but we feel that it holds out possibilities and deserves further and more extensive trials by the analysts. With regard to the question of cost, Mr. Narasimhamurty has not apparently taken into account the fact that the outlay for a Pulfrich photometer assembly, although fairly expensive, is only an initial outlay and does not involve a recurring expenditure of any magnitude. Further such an equipment will come to the service of analysts in more than one sphere e.g., detection of adulteration in vinegar, spices, eggs, drugs, etc. It is yet too premature to foresee the utility of such an assembly in an analytical laboratory.

M. C. MUTIYANNA.

B. MUKERJI.

Biochemical Standardisation Laboratory,
Calcutta,

May 13, 1940.