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Seeing is 'not always' believing

Coconut palms infested with black headed caterpillars (*Opisina arensella*) display brown fronds in the lower and greener ones in the upper canopy. These symptoms, which are visible for over a 100 m, appear to progress from the lower to the upper canopy giving rise to speculations that *Opisina* prefers to feed the lower canopy – a consequence of 'seeing is believing'.



Allaying speculations, Muralimohan and Srinivasa (page 876) demonstrate that the insect might not show any preference for position of fronds in the canopy. Further, they reveal that in spite of an initial random distribution of infestation in the canopy, the populations move from the lower to the upper canopy at the later stages. The answer appears to lie in the combined action of the pattern in which the insect consumes the fronds; the preference of moths to lay eggs among the most recently fed parts of the fronds and the temporal dynamics of the fronds. After an initial random distribution, the infestation spreads mostly along the previously infested portions, which means that infestation extends to fresh fronds only after the previously infested ones are almost exhausted. During build-up, as population sizes are low, the symptoms are not conspicuous. As the population swells over generations and symptoms become conspicuous, the dynamics of coconut fronds takes the infestation to the lower canopy. Beyond a critical level, the population increases rapidly to take over the entire canopy. It is during this time that the infestation appears to progress from the lower to the upper canopy.

Nuptial colouration in cyprinid fishes

Sexual selection provides one of the most important contexts for the incorporation of magnificent colouration and atypical morphological variations in living organisms enhancing the beauty of nature. Without colours, beauty is imperfect. In cyprinid fishes nuptial colouration has been evolved to its full glory and contributes significantly in visual cognition and selection of the sexual partner during mate choice. Moncey Vincent and John Thomas (page 922) studied the spectacular colour change associated with courtship and spawning in a small freshwater fish using synthetic hormone Ovaprim. In *Puntius chola*, scarlet bands appear on the lateral sides in both sexes during early reproductive phase. However, there is a remarkable asynchrony in the appearance and disappearance of nuptial colouration in male and female. In females a less intense, narrow red band appeared at



about 5 h after the hormone injection, and the colour intensified with the advancement of courtship activity, reaching a peak just before spawning and then faded away. In males, intense nuptial colouration developed earlier than the females and disappear only 40 h after spawning. It was observed that intensification of nuptial colouration and vigour of courtship activity in male is a highly synchronized process. It is interesting to note that Ovaprim induced nuptial colouration in both male and female but they achieve different adaptive advantages by modulating the timing and intensity of the colouration. In fishes female/male mate choice based on a transient

body colouration can be a powerful mechanism for the selection of secondary sexual characteristics of the opposite sex and acts as a potential agent for rapid population differentiation and speciation.

Low energy nuclear reaction

Cold fusion, as the press initially called the discovery by electrochemists Martin Fleischmann and Stanley Pons, is now recognized more precisely as low energy nuclear reaction (LENR) research. It has been the target of mockery, derision and doubt for many years. Some of it has been deserved, most of it not.

Accumulating a rigorous body of evidence has taken 19 years, and on page 854, Steven B. Krivit reviews a broad spectrum of some of the field's best research and key historical facts. Some of these facts were known very early in the field's history but were difficult to see because of the chaos and confusion at the time.



LENR research is no longer merely a test tube filled with heavy water, but a wide-ranging set of approaches and phenomena that arise from experiments with deuterium or hydrogen in room-temperature conditions. The data show anomalous energy production, transmutations of heavy elements, nuclear products and emissions, and a variety of other anomalous observations.

LENR methods often use only a few watts of power for their input – yet produce reactions previously exclusive to the domain of high-energy physics. The phenomena do not belong to the field of chemistry or physics but to a novel field now recognized as condensed matter nuclear science.