this immense extinction will persist unless supported by discovery of a large crater, either visible or buried, or explain its absence.

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FROM THE ARCHIVES

CURRENT SCIENCE

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Polyrhachis ants and bacterial symbiosis

While working with the lac insect, *Lakshadia mysorensis* growing on *Shorea talura*, in Bangalore, India, I found the ant, *Polyrhachis rastella* Latr. v. *formicata* Em. intimately associated with it. All the species of Polyrhachis ants I have come across, build their nests underground while the above-mentioned ant lives entirely on trees. I found its nest not only on *Shorea talura* but also on mango and other trees where the leaves were just broad enough to be webbed or rather glued together to serve as small nests for this ant. It seems to have acquired the habit of living on trees in adaptation to an intimate association with scale insects. While surveying the possibilities of spreading itself in a lac plantation, where there was no scarcity of food in the form of honey excreted by the lac insects, I could not imagine why the ant was so scarce there. I never found two nests on the same tree or even a large one so that the greatest search had to be made to discover its nest. What natural factors check this ant from multiplying itself, has never been clear to me.

Polyrhachis formicata is further interesting as secreting a strong odour pleasant to the human nose. While the odour was characteristically allied to amylacetate, traces of a ketone and an amine as well were detectable. An organic chemist kindly suggested the smell might be that of amylformate since most ants produce formic rather than acetic acid. I asked a colleague in the Indian Institute of Science to prepare some amylformate for me which had an unpleasant smell. Many other esters were also tried but the odour of the ant *Polyrhachis formicata* approximated more to amylaceatate than to any other ester tried. I also know another ant which produces the odour of ethyl acetate and where no appreciable smell of formic acid is formed so that the generalization that all ants produce formic acid in some form is not justified.

Polyrachis menelas For. is also found in the lac plantation in Bangalore. It lives underground and as far as the lac cultivating area is concerned it may be looked upon as non-existing by which I mean to emphasize its degree of frequency. This ant emits a weak but appreciable formic acid odour.

Further three allied species of Polyrachis ants, found in Bangalore outside the lack plantation, were examined, each species having an odour characteristic to it and all living underground building very small nests, with about 200 individuals in each nest. All the species of Polyrachis I have studied line their nests with a web, the habit of living on a tree or underground making no difference in this respect.

A bacteriological examination of the intestine revealed the presence of rod-shaped bacteria in the midgut of *Camponotas ligniperda* and *Formica fusca*. I had from time to time also isolated the bacteria in pure cultures of all these European and Indian ants, so that I was able to see there was no great morphological difference among them. The intestines of many Pentatomid bugs contain long bacteria but these bugs as a class, when compared with all the ants carrying symbiotic bacteria, show a variation, whereas all these ants exhibit a striking uniformity. So far I have examined only five species of Polyrhachis ants and it would be worthwhile extending such observations to other species. Should this note attract the attention of other workers on ants I shall be most grateful to receive say 5 specimens of each species of *Polyrhachis* ants preserved in 96% alcohol.

S. Mahdihassan

C/o The American Express Co.,
Berlin
30 July 1939

COMMENTARY

The new international seed treaty: Promises and prospects for food security

Bhagirath Choudhary

In a recent article[1], the author has put forth the possibility of broadening the international treaty on plant genetic resources for food and agriculture (ITPGRFA)[2]. In this paper, the author envisions an expansion necessary because the seed treaty knowingly exposes uncovered and unprotected plant genetic resources to exploitation, which may thereby threaten the food, nutritional and health security. The expansion of the international treaty provides possible answers to several basic questions related to food and nutritional security. The line of reasoning to expand the seed treaty has been thoroughly discussed in this paper vis-à-vis crops coverage, intellectual property rights (IPR), World Trade Organization, Convention on Biological Diversity and farmers' rights.

Background

The new, legally binding international seed treaty establishes a mechanism known as the multilateral system of access and benefit sharing. The system aims to facilitate access to plant genetic resources, to compensate farmers and local communities, and to help mobilize resources that contribute to food security and sustainable agricultural development. At present, the treaty is restricted to 35 food crops and 29 forages species, out of about 150 crops that are important to global food security and some 10,000 forage species of immense value to farmers for food and agriculture[3].

Evolution of the seed treaty

With the advent of biotechnology era, breeders and private companies increasingly seek free access to genetic variations to identify, isolate and incorporate useful traits for crop improvement and new product development. The latest UNEP report for India further validates that almost 70% of modern medicines in India are derived from natural products, which is three times more than the world's average estimation. On the other hand, India is one of the 25 hot spots of the highly endangered eco-regions of the world, and has some 125,000 described and approximately 400,000 estimated unknown plant species that are often unmonitored[4], and about 26,000 known plant species that are on the verge of extinction[5]. Here, it is important to note that only about 6% of all described plant species have been analysed chemically, and only a small fraction analysed pharmacologically[6]. In spite of their vital importance, genetic resources are being lost at an alarming rate due to extinction of conventional varieties, biopiracy and lack of incentives to continue developing and conserving them for sustainable agriculture.

In 1983, the FAO signed a voluntary agreement known as 'International Undertaking' against these bottlenecks,