

natural sciences

BOTANY

Miracle fruit protein isolated

The active ingredient of miracle fruit, *Synsepalum dulcificum*, has been isolated and found to be a glycoprotein with a molecular weight of 44,000. Application of the protein to the tongue modifies the taste so that sour substances taste sweet.

The protein comes from a shrub indigenous to tropical West Africa that yields a small, red berry. Natives often chew the pulp to make their stale and acidulated maize bread more palatable and to give sweetness to sour palm wine and beer.

Drs. Kenzo Kurihara and Lloyd M. Beidler of Florida State University report in the Sept. 20 *SCIENCE* that the sweetening of the subsequent taste of acids occurs at solutions as low as five parts in a hundred million.

PESTS

Locust plague hits Sudan, Ethiopia

A plague of locusts predicted in June (*SN*: 6/15, p. 569) has arrived in East Africa, according to Dr. Philip M. Symmons of the Desert Locust Information Service in London.

Dr. Symmons reports to the Smithsonian Institution's Center for Short-Lived Phenomena in Cambridge, Mass., that Northern Sudan is infested with locusts in all stages of development.

Numerous small swarms of immature insects are reported along the Red Sea coastal plains of Ethiopia. There have been many reports of swarms in various stages of maturity from the Somali Republic, including one swarm covering an estimated 194 square kilometers.

Aerial spraying of dieldrin and other insecticides is being tried as a control measure, with no reports as yet of its effectiveness.

In India, where locust plagues are feared this year but have not yet materialized, a new and cheap locust deterrent is being tried. A water suspension of ground nim seed kernels is sprayed on threatened crops. Entomologists of the Indian Agricultural Research Institute report that even hungry locusts would rather starve than eat leaves so sprayed. A suspension containing a tenth of a percent of nim seed is reported sufficient to ward off locusts for two to three weeks.

ARCHAEOBIOLOGY

550-year-old seed sprouts

A seed of the South America herb achira (*Canna sp.*), taken from an ancient Indian necklace, has germinated and the young plant is growing well.

Researchers at the Universidad Nacional de La Plata in Argentina report in the Sept. 21 issue of *NATURE* that three achira seeds were obtained from a tomb being excavated in Santa Rosa de Tastil, Argentina. The seeds were inside walnut shells strung in a necklace to form rattles; carbon-14 dating of bones at the site sets the seeds' age at about 550 years.

Achira embryos are protected by nutritious reserves resistant to age and by impermeable skins. It was hoped that one or more of the seeds would be viable. Placed

in the dark on damp filter paper, the first seed sprouted a 2 millimeter rhizome, then quit growing despite treatment with gibberellic and indole-3-acetic acids. It is postulated that either growth regulators did not survive the long wait, or the seed originally was genetically deficient.

A second seed, with two modern seeds for controls, was sown in a nutritive medium containing growth regulators. All sprouted together. The plant from the old seed appeared to have a disturbed gravity orientation, but is still growing fairly normally.

ENTOMOLOGY

Hornets depend on their young for food

A common natural phenomenon is the symbiotic relationship between two or more species, each of which depends on the other for some factor vital to its life.

Now scientists in Israel have found a hornet, *Vespa orientalis*, that lives in symbiosis with its own larvae. Reporting in the summer issue of *ANIMAL BEHAVIOR*, they say the adults appear to rely entirely on the grubs to digest food for them.

The adults spend most of their time caring for the grubs, bringing them a stream of meat and other food. As the grubs chew they drop saliva which the adults suck up, in behavior similar to that observed in some other social insects. When the adults are cut off from the grubs, however, the former either abandon the nest or die of starvation.

It was found that the grubs' saliva contains about five percent of various sugars, produced from the breakdown of protein by larval enzymes. The adults were found to be unable to break down protein fed to them; their saliva contains no protein-splitting enzymes.

Many adult insects, the Lepidoptera for instance, can digest only sugar, the larval stage being the main eating period of the life cycle. However it is believed the absolute dependence of *V. orientalis* on its grubs is so far unique.

ZOOLOGY

Wildlife moves to town

Denizens of Britain's hedgerows and stream banks are following the march into the city, according to the London Natural History Society.

Information from some 80 observers indicates that even such staunch symbols of the rural life as woodmice are taking to suburbia; one was spotted squatting on the handlebars of a bicycle in a garage and another sharing crumbs on a lawn with the sparrows.

Gray squirrels are nesting in attics, and the society says it is not unusual in one suburb to find squirrels coming to kitchens to beg food. One hedgehog was seen out in a pub's beer garden and another was spotted swimming in a goldfish pond with a fat goldfish in its mouth. Badgers and foxes, though secretive and therefore seldom seen, are believed to be getting quite common in the London area.

The muntjac, a small Asian deer introduced into Britain, is gaining ground in the country around London, the society says. It is showing signs of spreading from there into the suburbs themselves.

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