

# tropical biology

Gathered at the second symposium on Amazonian biology of the Association for Tropical Biology, held in Florencia, Colombia

## BOTANY

### Secondary growth needs its own study

Almost all of the nutrients in the Amazonian rain forest are contained either in living vegetation or in forest litter. The litter nutrients never reach the soil, some botanists theorize, but are made directly available to higher plant roots by symbiotic fungi in the so-called mycorrhiza (SN: 2/8, p. 134). The slash-and-burn technique commonly used to clear the rain forest destroys the nutrients and the mycorrhiza, leaving useless soil.

If this soil is abandoned, as is often the case, because it ceases to support crops or cattle, secondary forest springs up. This grows slower than primary forest because of the lack of nutrients. Other basic differences between secondary and primary forest also exist.

Most of the ecological studies of the rain forest have been conducted in primary growth, with the results being applied by extension to the large areas of secondary forest. Arturo Gomez-Pompa of the Department of Botany of the Autonomous National University of Mexico says this extension is not justified because of the basic differences between the two flora.

## GEOLOGY

### Amazonian soils differentiated

Because the Amazon basin is located entirely within the even climate of the tropics and because it lacks sharp differences in elevation, it is generally assumed that it constitutes one ecosystem.

Actually, says Ernst Fittkau of Germany's Max Planck Institute for Limnology, marked differences in the degree of poverty of the generally poor Amazonian soils result in wide variation between the flora and fauna of different regions.

The central Amazon basin region, for instance, consists of clays and leached tertiary sands and is a "zone of biological poverty lacking many floral and faunal elements" common elsewhere in the basin. In areas to the north and south where there are rock outcroppings, and at the foot of the Andes, soils from recently weathered rocks provide mineral nutrients which support richer life.

## HERPETOLOGY

### New World origin of Bufo

The genus *Bufo* is the largest genus of the Bufonidae or toad family and is the most widely distributed. The typical species is *Bufo bufo*, the common toad of Europe. Others of the genus are found in Africa, Asia and North and South America.

Once it was thought that *Bufo* arose in the north and spread south into Africa and South America. Dr. W. Frank Blair of the University of Texas, chairman of the U.S. National Committee for the International Biological Program, says the evidence is convincing that *Bufo* arose in the New World, probably in South America in the Oligocene epoch or earlier.

Dr. Blair says the genus split early into a line of narrow-skulled toads adapted to cold and broad-skulled toads adapted to heat. The narrow-skulled toads appear to have followed the mountainous spine of the Americas northward, crossed the Bering landbridge, and dispersed into Asia and finally Africa. The wide-skulled toads became much diversified in the rain forest; they too took the Bering landbridge to Asia.

## PARASITOLOGY

### Mansonella parasite pathogenic

The filarial parasite *Mansonella ozzardi*, occurring in Central America and northern South America, long has been known to infect man and to be transmitted by biting midges or punkies. However, even recent medical texts say the worms, which live in the peritoneal cavity and especially in fatty tissue, cause little or no damage, and therefore cannot be considered pathogenic.

In a study of mansonellosis in Vaupés Province of Colombia, however, Dr. C. J. Marinkelle and Eva German of the University of the Andes in Bogota say the disease is seriously pathogenic, as well as being widespread.

Among the adult Indians living around Mitu, for instance, the infection rate was 96 percent. Overall, 378 cases of the disease were detected in 810 persons examined. Children under 12 years old seem rarely infected.

Up to the beginning of 1968, the researchers say, only 130 cases of the disease had been reported from Colombia, eight from Vaupés itself. Symptoms consist mainly of pains in the upper arm joints, often to the point of incapacitating the patient for work. This can be disastrous in a population already on the verge of malnutrition.

## PLANT PATHOLOGY

### Wild cacao fungus disease sought

Two areas have been postulated as the origin of the tree *Theobroma cacao*, from which commercial chocolate is made. One is in southern Mexico, the other is the region of Caqueta Province in Colombia. For this reason cacao specialists attending the ATB meeting took the opportunity to hunt for wild cacao.

Darryl Thomas and Andrew Watson of the department of plant pathology of the University of California at Berkeley sought wild cacao with either of two fungus diseases, one caused by *Fusarium rigidiuscula* and the other by *Phytophthora palmivora*. Both limit cacao production in certain areas.

Dr. Jorge Soria of the Cacao Research Center in Itabuna, Brazil, was collecting wild strains of cacao in an effort to find one which is resistant to a third disease caused by a fungus of the genus *Marasmius*. The disease, called witches' broom, is a serious cacao disease in South America, though it has not yet reached Central America. If resistance has evolved anywhere, it should be where cacao has been in business longest.

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