

EXPEDITION TO BORNEO GETS UNDER WAY

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(Editor's Note: As part of the research program in the Department of Zoology, the Museum has launched its 1956 Borneo Zoological Expedition. The expedition is in charge of Dr. Inger, writer of the following article, who left Chicago by plane on March 23.)

THE MUSEUM sent its first expedition to North Borneo in 1950. The writer, who was a member of the earlier field party, will conduct the Borneo Zoological Expedition of 1956. The work will again be done in the tropical rain forest that covers Borneo, and it is hoped that certain problems arising from the study of the collections and



EVOLUTION OF HEAD-HUNTER'S 'ART'

Since human head hunting has been suppressed in Borneo, the Dyak tribesmen keep their art alive by using the skulls of gibbons. This one was given to the Museum's 1950 Expedition by a Dyak.

notes made in 1950 may now be solved. Operations will continue in North Borneo and Sarawak for approximately six months. The principal field activities will be the collecting and observing of reptiles, amphibians, and fishes, especially as these relate to an understanding of the rain forest environment. Equipment and supplies were sent ahead at the end of January in order to reach Borneo approximately at the same time operations were scheduled to begin.

A portable tape recorder is being used to record the calls of frogs and toads, because these sounds are significant in the classification of amphibians. An important segment of the equipment is that to establish a small weather station in the rain forest. A thermohumidigraph will make a continuous record of temperature and humidity. A maximum-minimum thermometer set half-way up the trees will show how conditions differ from those closer to the ground. Since the work will be done in the rain forest, a rain gauge rounds out the meteorological equipment.

But why this interest in tropical rain

forests? For a biologist the answer is that this is the richest and most complex environment in the world, and therefore the most fascinating and challenging natural laboratory. For every human being a partial answer is a bit more difficult to state.

About one-half of the world's forest area is tropical rain forest, characterized by an almost solid roof or canopy formed by the crowns of tall trees, by a small amount of undergrowth, and by dense shade and high humidity near ground level. Prior to the coming of white men, the great forests of our own Southeast had the same characteristics. But two climatic factors, continuously warm temperatures throughout the year and abundant rainfall in every month, typical only of parts of the tropics, enable the rain forest trees to retain their leaves the year around. Individual leaves fall all the time in this tropical forest, but they are being replaced continuously so that any single tree is always fully clothed. In effect, the tropical rain forest is an evergreen forest, though it should not be confused with the evergreen forests of our West and North. The tropical forest contains no conifers—no pines, junipers, firs, etc.—and its leaves are broad and not needle-like.

The amount of living plant material in either our Southeastern deciduous forests or in a tropical rain forest such as covers Borneo, is immense. One log may weigh four tons and, if we add to it all the branches and leaves that are not weighed and then multiply by the many millions of trees within these forests, we would come out with some astronomical number. To produce this mass of living matter the soil must be relatively rich in the minerals needed for good plant growth. We found that to be true when we cut down most of our Southeastern forests and planted regular farm crops. Similarly, whenever man cut the tropical rain forest and planted crops, the harvest was good, but only for one or at most two years. Then the unfortunate farmer—Bornean, African, or South American Indian—had to move on to cut another patch of forest where he planted crops for a year or so before moving on to cut and plant elsewhere.

RAPID SOIL DETERIORATION

Why should this shifting kind of agriculture be necessary? Is the tropical farmer incompetent? The answers lie in a natural process beyond man's control. The nutrient minerals are washed out of tropical soils by the heavy rains (more than 100 inches per year) and what remains is changed chemically—literally cooked out—by the intense heat of the sun after the forest is removed. The same processes go on in the soils here, but at a much slower pace. It took 50 to 80 years to exhaust the cotton lands in the South, a snail's pace compared to the rate in the tropics.

Africa and Southeast Asia are areas in which the needs of rapidly increasing human populations will exert more and more pressure on the neighboring rain forests. But, as we have just seen, traditional agricultural techniques are proven failures in such areas. Whether man will learn to use these forested countries in a way that will insure long-range productivity is still unknown.

Yet one thing seems certain: we will not master this problem without knowing a great deal more about tropical rain forests than we do at present. Whenever man has successfully adapted a culture to the climatic, geologic, and biological factors of a particular area, he has usually done so only after much trial and error, which in the long run means that he finally has accumulated a large body of information and has understood how all the facts fit together. In the tropics where the pace of erosion and soil deterioration is at least 25 times faster than in our country, man may not be allowed the luxury of trial and error. He had better have the information and comprehension first.

Chicago Natural History Museum, through its support of basic research in botany, geology, and zoology, contributes to man's knowledge and understanding of the world, including the rain forest. Offhand, it would seem that a study of the classification of insects or the study of the feeding habits of this or that frog have little relationship to the problems of men. But the history of science is characterized by the sudden emergence into usefulness of information discovered long before anyone had any ideas about its application. In fact, the scientists gathering the information most likely had no concern at all with the application of this knowledge. And, because they pursued knowledge for knowledge's sake, they were probably called "impractical," or referred to as "dreamers."

PRACTICAL USE FOLLOWS

In the long run, though, they turn out to be very practical men. For one of them studied the food habits of a little beetle that later was used to save California's citrus groves from destruction by the cottony cushion scale insect. Hundreds of biologists, the Museum's staff among them, have built up a framework of animal classification without which there could be no effective control of malaria, or plague, or any other animal-borne disease.

Exactly how the notes and collection of snakes, lizards, frogs, and fishes of the Borneo Zoological Expedition, 1956, will eventually fit into our understanding of the rain forest is impossible to say now. But the Museum, like all institutions of basic research, is confident that to know is better than not to know, and that, in the world of science, what seems the longest way around is often the shortest road home.



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