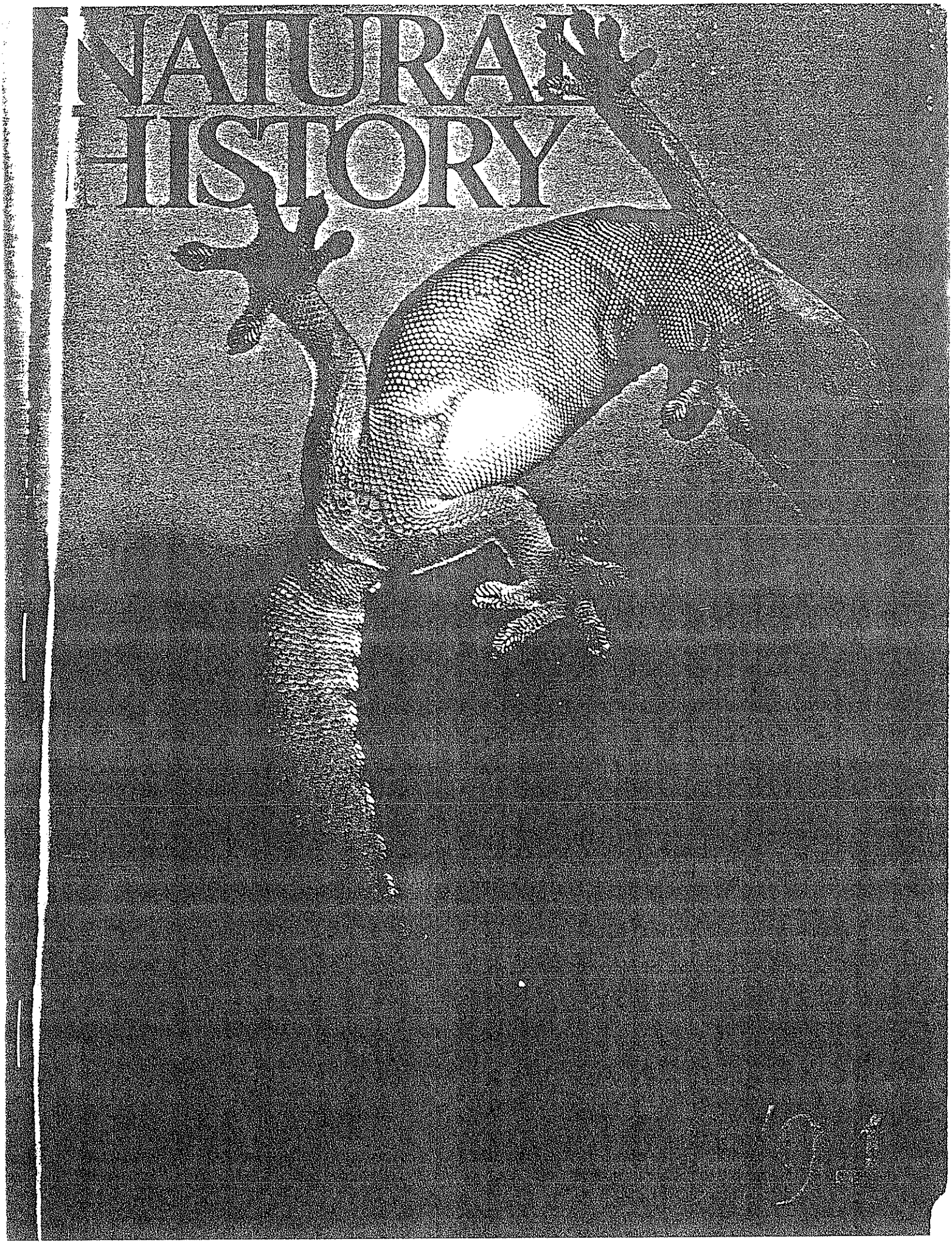
NATURAL HISTORY



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No Pain, No Game

For the Mayoruna and Matses of the Amazonian forest, preparing for the hunt can be an ordeal

by Katharine Milton

Early in my study of diet and ecology in Lobo, a village of 110 Mayoruna Indians in Brazil's Amazonian forest, I noticed that the men and adolescent boys had neat rows of small scars on their upper arms and chest. At first I thought these might be the result of cigarette burns, and although this seemed a bit odd, I didn't really question my interpretation until it dawned on me that the Mayoruna had no cigarettes. Not conversant in Panoan, the Mayoruna language, I finally pointed to the scars and indicated that I wanted to know what had caused them. Several youths smiled at me and then ran into the forest. After twenty or thirty minutes, they returned bearing a leafy branch on which sat a large, handsome, green frog.

I thought it very kind of the boys to show me this wonderful frog, but I had no idea that it was connected to my question about the burn marks. I wondered if the boys thought I was hungry and were offering the frog to me for my supper. They allowed me to admire it for some minutes as it sat calmly on the branch and then on the shoulder and arm of one young man. It was a vivid green, with striking yellow mottling on the underside of its limbs and body, and it moved with an exaggeratedly slow gait, similar to that of the African chameleon. But then the boys took the frog and began to prepare it for some kind of procedure. I finally realized that the frog did have something to do with the burns after all.

Without touching the animal, the boys looped slender cords made of vines around all four of its limbs. They then drove small stakes into the ground and stretched the frog out, firmly attaching the cords to the stakes. At that point, several of them picked up wooden splinters and began to harass the frog, poking it particularly around the eyes and nostrils. In response, the terrified frog began to exude a clear, glossy secretion from its skin that began to settle in a cloudy, mucuslike film around its feet. I had no doubt that this was some kind of potent substance that the frog used for defense. Did contact with it cause burns? Using a splinter, the boys

A Matses hunter in Peru, an expert with bow and arrow, displays a common piping guan he has shot.
Jeff Rotman

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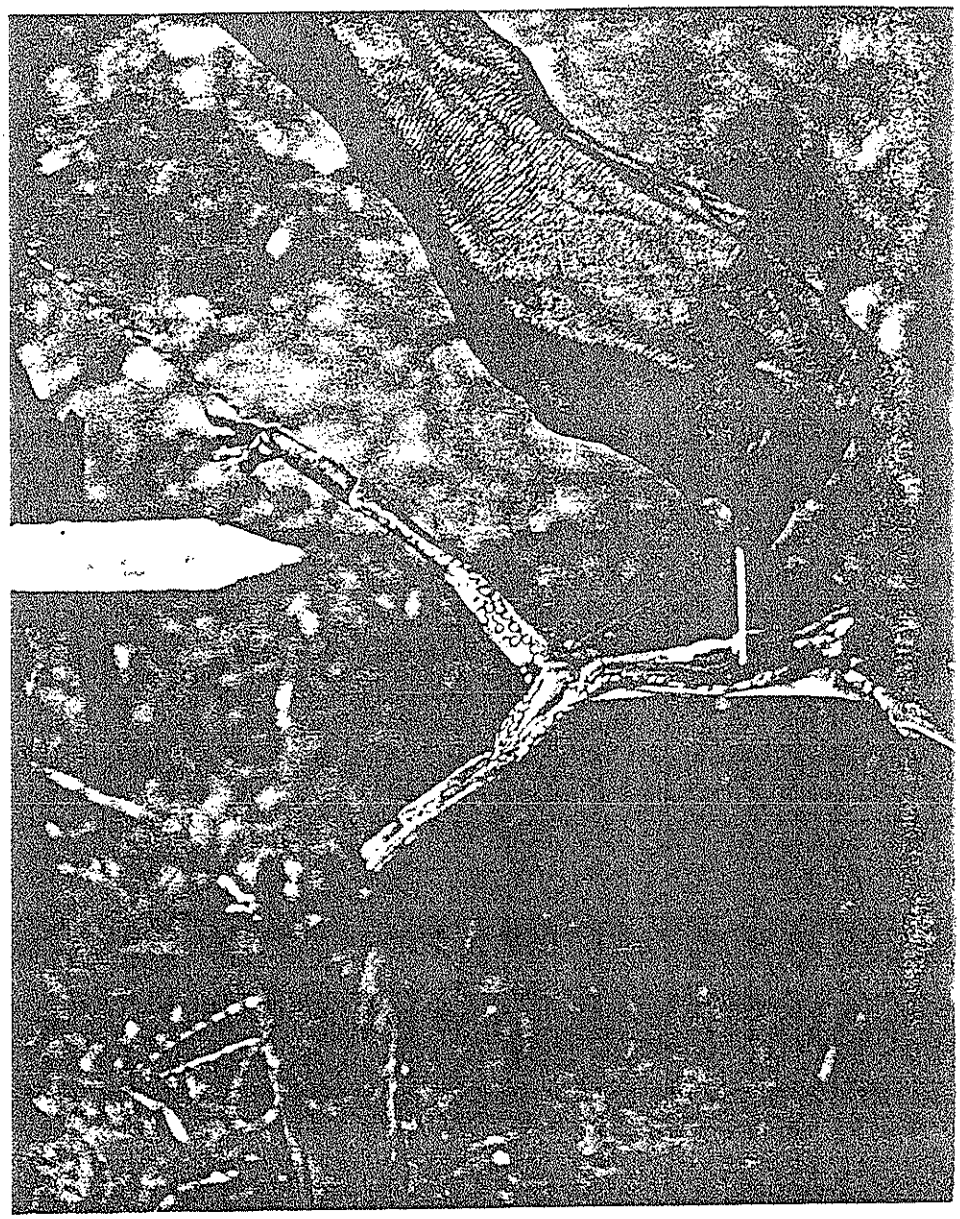

scraped the secretion off the head, back, sides, and limbs of the frog.

After the frog had been poked and scraped for some minutes, its ability to produce the secretion evidently was exhausted. At that point, the captors carefully removed the cords from the frog's limbs and permitted it to walk away. The frog was not physically damaged, only frightened. One boy who briefly touched the frog while removing the cords ran to the nearby river to wash his hands.

The secretion had been collected on a clean, flat piece of wood, which was placed near a fire to dry. The wood with the dried secretion—which looked like shiny glue—was then wrapped in cloth and stored in a secure, dry area in the thatch of a nearby house. On four occasions I observed how the frog's secretion was used in a type of hunting magic.

Traditionally, the Mayoruna live by horticulture (sweet manioc, plantain), hunting (tapir, peccary, woolly monkey, spider monkey), and some supplementary fishing. The men's skills with bow and arrow are impressive: "I pity the animal that crosses the path of a Mayoruna," remarked a visitor who had done considerable hunting with them. Yet hunting game in the forests of the Amazon Basin is always an unpredictable venture, a hunter never knowing whether on any given day he will have good luck, moderate luck, or no luck at all. Anthropologists have long noted that important activities with uncertain outcomes are the most likely to be surrounded with magical practices.

Detailed cave paintings, animal figurines, and stylized caches of animal bones found in Europe suggest that more than 30,000 years ago, human hunters were carrying out a wide variety of magical practices, possibly to improve hunting success. Ethnographic accounts of many past as well as present-day hunter-gatherer groups throughout the world describe a rich array of magical practices involving smoke, blood, bark, leaves, roots, and other substances, which the hunters believe improve their hunting prowess and luck, increase the numbers of prey, or propitiate animal spirits.

The Mayoruna use the frog secretion as a drug and regard its effects as a potent form of hunting magic. On two occasions when I observed the procedure, the drug was taken on a day of heavy rain—perhaps a bad day to hunt but a good day to practice hunting magic in preparation for more opportune conditions. I never saw a hunter take the drug by himself: two, three, or more men took it together.

To get the frog secretion into the body, the hunters heat a vine twig on a burning log until the twig is white hot. One man then takes the twig and applies it to the arm or chest of a person wishing to take the drug. The white-hot twig is allowed to rest on the surface of the skin for less than a second, then removed and reheated; each individual ultimately receives three to six burns, placed in a neat row, one under the other. At this point, the frog secretion is taken from its storage site and unwrapped.

Gorman/Lavalle

When disturbed, a tree frog of the species Phyllomedusa bicolor, *far left, secretes a noxious substance, presumably a defense against predators. Amazonian Indians deliberately harass a frog, left, and collect the secretions on a stick for use as a ritual drug in hunting. (They will then let the frog go.) Small scars, below, show where the secretions have been introduced through the skin.*

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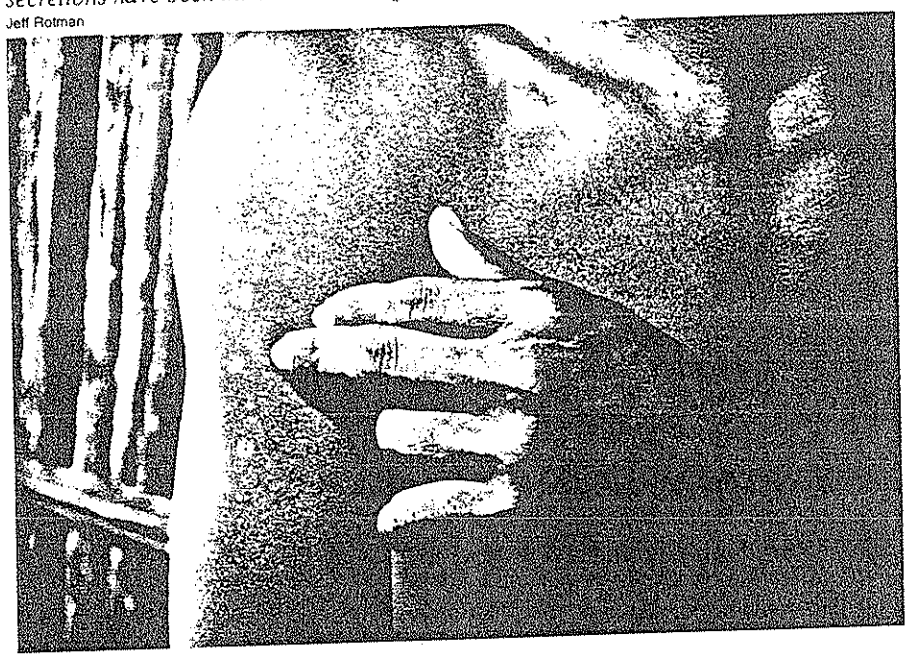

One hunter mixes his saliva with it, stirring it with a splinter to make a whitish, soft paste. The individual receiving the drug then uses his fingernail to carefully scrape away the small burned patches of skin, leaving open wounds. A small mound of the paste is then applied to each open burn.

Before receiving the burns, participants drink an impressive amount of manioc, banana, or other gruel. The first time I witnessed this, I didn't know why they did it, but I soon found out. The drug apparently enters the bloodstream through the open wounds very rapidly; within minutes it induces heavy, repeated vomiting. The Indians told me, through an interpreter, that the gruel lessens the pain. Another visible result is swelling of the lips and face; other rapid effects are headache and a burning sensation in the anal mucosa.

After vomiting several times, each participant sits quietly, often holding his head in his hands. Later he gets into his hammock and falls into a "sleep," during which he may babble and make other sounds. The sleep was described to me as exciting, rather than restful. Men say they think of "nothing" while in this sleep; that it is very similar to being very drunk. If they take the secretion about eight in the morning, they are recovering from its effects by five or six in the evening of the same day, although they may still lie about in their hammocks and act somewhat groggy. I was told, however, that if someone who is under the influence of the drug is thrown in the river or forced to bathe, he will rapidly shake off his somnolence.

I asked various Mayoruna why they took the drug since it appeared to be so unpleasant. The men replied that taking the frog secretion "made them hunt better." Taking it was said "to get rid of bad luck, help you to keep good luck, and help your arrows find the game animals." Men also stated that taking the secretion made them physically much more powerful—their senses keener, their stamina greater, their aim with the arrow more precise.

I was told that Mayoruna boys are first given the frog secretion when they are about seven or eight years of age "so that they will become accustomed to taking it." Women occasionally take the frog secretion so that "they will work harder." I estimated that most or all adult male hunters in Lobo take the frog secretion at least once a month.

The Mayoruna Indians in Lobo have another type of painful hunting magic. Men seek out large "fire" caterpillars, whose three-inch bodies are covered with long, white, stinging hairs. My one contact with one of these caterpillars produced such immediate, excruciating pain that for months afterward I flinched at the mere thought of white, fuzzy objects. As caterpillars are soft-bodied, small organisms, they apparently require a very rapid-acting chemical defense against potential predators that would crush or ingest them.

Some Mayoruna keep these white caterpillars on banana plants in their gardens so they will be readily available. To use them for hunting magic, they pick up the caterpillar on a twig and rub it on the bare upper arm. This practice, which is supposed to make a man a better hunter, leaves additional areas of scar tissue on the Mayoruna men and boys who take the frog secretion.

The Mayoruna I visited live in western Brazil, near the border with Peru. Steven

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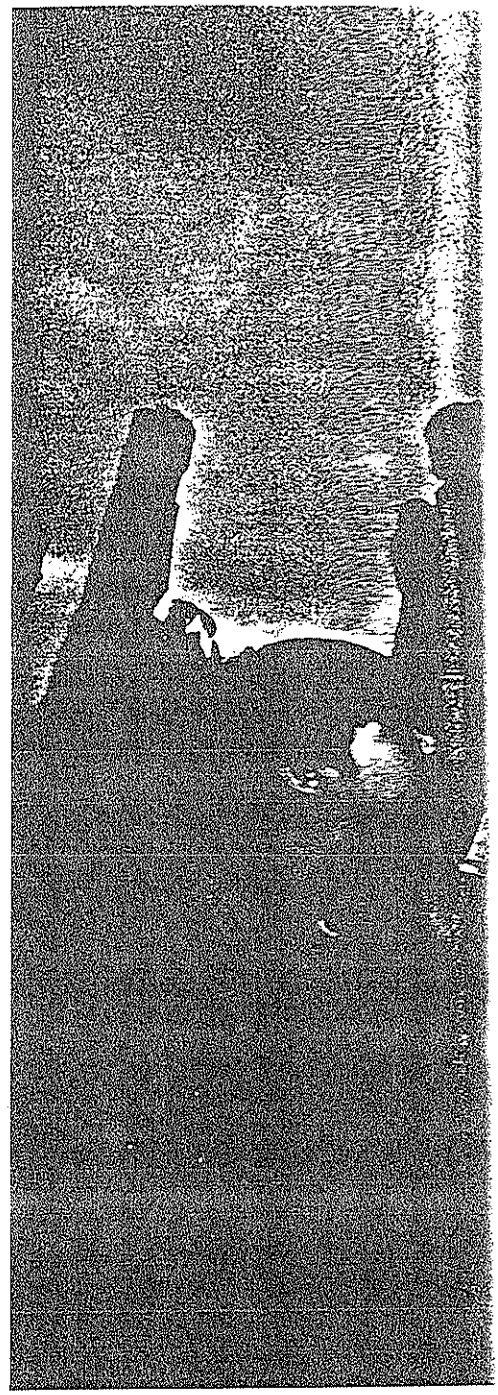

The articles of manufactured clothing worn by young Matses, right, indicate their group's outside contacts. A Mayoruna boy, below, holding his family's catch from the river, and a Mayoruna teenager with his pet fawn, below right, belong to a much more isolated group.

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Romanoff, an American anthropologist, has spent some fifteen months living with the Mayoruna of Peru, where they are referred to as Matses. His description of how the frog secretion is used for hunting magic matches what I saw almost completely, but he also mentions that the drug is sometimes administered to individuals (men, women, or children) who are lazy or are having problems or even as a punishment. Among the Matses, a dab of the paste may even be placed on the nose of a favored hunting dog to improve its hunting abilities.

Romanoff also observed a number of other energy-inducing rituals among the Matses. In these, an older man, respected for his knowledge or energy, blows tobacco smoke or uses stinging nettles or other painful materials to magically imbue younger individuals, usually men, with energy, strength, or knowledge.

While working with the Amahuaca Indians in a Peruvian headwater area of the Rio Inuya near the Brazilian border, anthropologist Robert Carneiro of the American Museum of Natural History also observed similar hunting magic. The Amahuaca, like the Mayoruna, are Panoan-speakers, and the two groups may be closely related. The Amahuaca men take a frog secretion (almost certainly from the same species of frog used by the Mayoruna) and place it in burns using the same technique. Carneiro, however, reports that in their case the effects last for some three days rather than a single day, and that Amahuaca men claim to experience vivid hallucinations while under the effects of the drug.

Amahuaca men also deliberately seek out wasps' nests and let numerous wasps sting them, believing that they will emerge from this ordeal better hunters. Youths may have strips of highly caustic tree bark tied around their wrists or forearms to insure that when they are hunting "no animal will escape."

Some years ago, Delvair Montagner Melatti, a Brazilian anthropologist, began to work with another Panoan-speaking group in Brazil, the Marubo, who live to the south of the Mayoruna and are one of their traditional enemies. The Marubo used the frog secretion extensively during her earlier visits, giving it to children as young as three years of age. Children typically did not like to take the secretion, which is unpleasant for anyone and which, in a small child, can produce very powerful effects. According to Montagner, taking the frog secretion appeared to be a daily or even twice daily ritual; however, the Marubo bathed very shortly after the secretion was administered. In some manner, the shock of the cold water and action of the bath curtailed much of the effect of the secretion, so the Marubo did not spend the rest of the day lying in a hammock but rather were able to hunt, work, or carry out other activities with vigor.

The Marubo stated that they used the secretion for two principal reasons—to rid the body of harmful impurities, including such things as bad luck, and to imbue the body with power, energy, and good luck. Children were given the secretion not only for these reasons but also as a punishment to correct improper behavior. In the past, the area of the body on which the burns were placed was apparently related to the type of effect desired. To cure laziness, for example, burns would be placed on the back of the neck, while to rid oneself of weakness and become powerful and quick, burns were placed on the stomach or upper arms. To improve hunting success, burns were placed on the chest and upper arms. To kill people in warfare, they were placed near the sternum. Painful, stinging herbs were also rubbed on the skin to augment the effects of the frog secretion. In her later visits, Montagner noted far fewer scars on the bodies of the Marubo and concluded that the practice was gradually dying out owing to the influence of missionaries and other outside forces.

The Mayoruna and others obtain the secretion from *Phyllomedusa bicolor*, a large tree frog that lives high in trees near rivers

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and streams. Curious about the chemical composition of the frog secretion, I obtained a dried sample and brought it back to the United States for analysis. I sent it to the laboratory of John Daly, a chemist at the National Institutes of Health, who along with his associate Charles Myers, a herpetologist at the American Museum of Natural History, is well known for studies of the chemical compounds in secretions of the so-called poison dart frogs.

Poison dart frogs of the genus *Phyllobates* produce among the most potent of all naturally occurring, nonprotein toxins—the batrachotoxin alkaloids. Some Indian groups smear the secretions from these frogs on blowgun darts in order to kill game. The poison leads rapidly to car-

Art Wolfe

A Matses woman, below, cuts up a tapir, a favored game animal. Bottom: A pot of tapir meat cooks over the fire. Opposite page: A Mayoruna mother wears straw whiskers to evoke the image of a jaguar. This adornment has now fallen out of use, but facial tattoos are still in fashion.

Photographs below by Jeff Rotman

diac failure in wounded game, but the meat of such animals is safe for humans to consume.

The secretion from the hunting magic frog, *Phyllomedusa bicolor,* is very different from those of poison dart frogs. Daly and his colleagues were able to isolate a previously unknown peptide, which they named adenoregulin. Earlier work by Vittorio Erspamer had shown that the skin of the frog contained a variety of vasoactive and opioid peptides. All these peptides presumably interact to produce the variety of symptoms and sensations noted in individuals who take the frog secretion. When some of the frog secretion was administered to mice at the National Institutes of Health, the mice fell into a drowsy trance. When the mice were stimulated, however, the effects of the trance could be rapidly dissipated—the same pattern of behavior noted in the Marubo, who bathe in the river after taking the secretion and then are able to carry out their daily activities with increased enthusiasm.

No one knows how tropical forest-dwelling people first acquired knowledge about the plant and animal compounds they use as medicines, stimulants, and magic. Most such discoveries were probably the result of some chance observation of the effect of contact with, or ingestion of, some leaf, bark, insect, or animal. The observer may have noted this effect on himself or on another person or animal. A series of trial-and-error experiments may then have helped determine how best to administer and use the chemical substances involved. To the best of my knowledge, the Mayoruna, and related Panoan-speaking groups among whom the procedure has been observed, are the only Amazonian Indians who introduce a drug into their bloodstream through a deliberate break in the skin. Elsewhere, such chemical substances are generally inhaled or swallowed.

Why many hunting magic procedures are painful or unpleasant is another mystery. Perhaps, as practitioners claim, the experience leaves them feeling energized and refreshed. The pain or stimulation brought on by frog secretions, wasp stings, stinging caterpillars, and caustic bark conceivably causes the release of brain peptide endorphins that ultimately lead to enhanced alertness, physical strength, and endurance.

Or more simply, hunters may believe that by subjecting themselves to some form of ordeal or discipline they are earning favor or investing themselves with extra power derived from animal spirits, deities, or ancestors. This added confidence and determination could enhance their hunting success. The limits of the human mind's influence over physical reality, at least over the body and health, are far from settled. Whether through a prayer, a fetish, or a frog, people throughout the world find ways to harness this resource. □