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# THE SECRET GARDEN

South America's jungles are a gigantic natural pharmacy — a fact the Amazon indians have known for thousands of years. But just as Western medicine realises their importance, the rain forests are vanishing. Herbert Girardet reports

Twenty years ago, the Kayapo villagers of Gorotire in the jungle of northern Brazil turned in despair to Beptopup, their medicine man. They had decided that they were losing the struggle against the gold miners, road builders and cattle ranchers who had designs on their land. They concluded that they might as well stop having children.

Beptopup was called in to prescribe the plant drugs that would stop the women having babies. And so he did. He gave them certain orchid seeds to chew and the boiled extract of special trees to drink.

Many women became permanently sterile. And so for ten years in the village of Gorotire few children were born. The ancient fertility control remedies, used by the indians so as not to outgrow the carrying capacity of their land, had proved effective once again.

But did this so-called primitive people really know and use plant contraceptives that could actually induce premature sterility in young women? After all, such drugs have only recently been developed at enormous cost in the most sophisticated pharmaceutical laboratories. And, even then, there is still doubt about their longterm effectiveness and safety.

Professor Norman Farnsworth, director of the department of ethno-pharmacology at the University of Illinois in Chicago, has become convinced the natural remedies used by traditional cultures all over the world must be taken seriously as a thoroughly researched body of knowledge. Ethno-biologist Dr Darrel Posey agrees: 'After all, they have used their own living bodies to experiment on for thousands of years.'

## Plant contraceptive

Karen Lowell, one of Farnsworth's students, spent many months with the Shwah Indians in Ecuador, who taught her the medicinal uses of 250 plants. They claim to have plants capable of regulating the fertility of men and women. Karen decided to start testing one of them, a plant called piri-piri. After lengthy animal trials, she concluded it is highly effective in preventing embryo implantation. Piri-piri is now being propagated at the university greenhouse and Karen is convinced she has a major new contraceptive agent under development.

Dr Ghillean Prance, now director of Kew Gardens, used to run a



When the Kayapo of Brazil decided that they wanted no more children, their medicine man administered a highly effective contraceptive distilled from an indigenous orchid (above). But in the early 1980s they forced the

government to grant them a land treaty, and now they have a purpose to multiply again. This woman (right), painted with uruku nut pigment, is pictured with her son and a tribal hunter who gathers food with a bow and arrow

programme in America which transfers thousands of indian medicinal plants from the Amazon to the US National Cancer Institute and to major pharmaceutical companies like Merck.

Dr Prance is profoundly impressed by the plant knowledge of the Amazon forest people whom he has met on many expeditions to Brazil's interior: 'The indians are fantastic botanists. I have learned so much from my indian professors because they just know every plant in the forest, they have a name and a use for every plant. Trees supply building materials, rope, arrow poisons, foodstuffs, raw materials for arts and crafts, and, of course, medicines. They understand the interactions between the different trees and plants and animals; they are not only botanists, they are ecologists.'

The indians are sceptical, but pleased, about the new attention they are getting from Western scientists. Paulinho Payakan, a young

used in major surgery. In Brazil, a number of stimulants of indian origin are widely used, notably guarana and pfaffia. Much of the indian knowledge has passed to the caboclos, people of mixed racial origin who sell medicinal plants in street markets throughout Brazil.

Dr Elaine Elisabetsky is professor of ethno-pharmacology at the University of Para at Belém. Funded by a European drug company, she has developed two new drugs that control epileptic fits from caboclo medicinal plants.

## Aids breakthrough

At Harvard Medical School in Boston, USA, Dr Bill Haseltine is at the forefront of research to find effective drugs against the Aids virus. He is particularly interested in an extract from a leguminous tree, *Castanospermum Australae*, long known for its toxic properties. Dr Haseltine is certain of the effectiveness of 'castanospermine' in preventing the virus's spread in the body. Preclinical trials are very promising.

Courses are run twice a year in central Peru by Ametra, an organisation set up by the indians themselves to find modern applications for traditional medicines. Told by missionaries for many years that the old cures were based on heathen superstition to which they must no longer adhere, many indians now feel they have to relearn their traditional knowledge.

Modern medicines are expensive and often don't reach remote villages. But the well-tried medicinal plants are still readily available and can, once again, be put to good use. Indians from several different tribes congregated at the village of Santa Rosa recently to learn from each other. Under the canopy of the tropical forest trees it was shady and quite cool, about 25°C. The indians, about 20 of them, went deep into the jungle, stopping every few hundred yards, to look at a plant or the bark of a tree, touch it, discuss its use as medicine.

There was the vine on a huge tree that, according to one old Aguruna shaman, was effective in treating childhood polio. The powdered bark of another giant tree was most effective in the treatment of chest infections. Guillerma Arevalho, the young Shipibo medicine man who is the initiator of Ametra, cut into the bark of an Oje tree and the white sap came dripping out. This, he told







the group, was excellent for treating internal parasites. It had been investigated in a laboratory at Uppsala university in Sweden and been found to be most effective. Then we stumbled on a beautiful red flower called the 'lips of the bride' (*Cephaelis*). Oh yes, this was excellent for restoring the sexual prowess of men.

But will the renewed interest in the immense plant variety of Amazonia help to save the rain forest? So far, less than two per cent have been investigated scientifically and plants unknown to botanists are still being found every year. The plants of the tropics, which have never had the climatic trauma of an ice age, harbour unique chemicals which laboratory scientists simply do not have the imagination to invent. The irreplaceable genetic diversity of rain-forests could greatly benefit the countries that harbour them. This would apply even if genetic engineering were the main scenario for future drug development. Dr Albers-Schoenberg, director of natural products research at Merck in Rahway, New

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Jersey, told me: 'We must protect the tropical forests. For if we want successful genetic engineering, we need the greatest possible genetic diversity.'

But in 1988, tropical forest destruction by fire in South America reached an unprecedented scale. In Brazil alone, fires burnt on 30 million hectares of forest and savannah, an area larger than Britain or West Germany.

In early September 1988, I flew in a small passenger plane from Brasilia into the interior to the small town of Redensao in the state of Para. On a flight that lasted seven hours there were fires all the way. On two occasions as we tried to touch down, the smoke was so dense the pilot couldn't find the landing strip.

Beptopup the village shaman, Darrel Posey and I drove through this smouldering landscape a few days later looking for places where the Kayapo had once lived.

The old man was devastated. Only a few clumps of trees were still standing in the desolate landscape that was being turned into cattle pasture. We stopped at a former Kayapo village site. Beptopup said: 'This is a useless field, it is a really useless field with no manioc, sweet potatoes or yams. There will be no animals, there will be no birds, no land terrapin, no medicine plants. Now where will my children live? The white man has no love for the forest. I've finished what I want to say, that is all. I want to leave.' ■

*Jungle Pharmacy, produced by Herbert Girardet, will be shown on Channel 4 on February 19*



## A DOSE OF TRADITIONAL HEALING

Although the Kayapo have managed to hang on to some of their land, vast tracts of the South American jungle are still under threat, mainly from fires started by cattle ranchers (right). The village of Gorotire is now only 15 miles from the edge of the jungle. Meanwhile, the race is on to preserve the rich plant life which remains. Indians from all over South America are pooling their knowledge, and working with Western pharmacologists who recognise the enormous potential of the resources which grow under the jungle canopy. Kayapo chief Ute cuts the bark from a kukrete tree to make cough medicine (left). Peruvian Chipibo women congregate for a late-night healing sessions run by shaman Guillerma Arevalho (far left)

