

# SEARCH THROUGH TIGER-HAUNTED JUNGLE BARES SECRET OF RARE OIL THAT CURES "LIVING DEATH"

**Leprosy, Disease That Has Defied Medicine Since Dawn of History, Is Conquered by Courage and Perseverance of Two American Scientists**

**NEW HOPE FOR THOUSANDS RESULTS FROM DISCOVERY OF GENUINE CHAULMOOGRA**

**Professor Joseph F. Rock Braved Perils of Fever-Ridden Siamese Fastnesses to Find Precious Fluid Identified by Dr. Frederick B. Power**

FROM the beginning of history down to very recent years, leprosy, most dreaded and abhorrent of all human diseases, was considered incurable. Now a cure has been found. It is chaulmoogra oil, product of the nuts or fruits of the chaulmoogra tree.

Within the last two years 200 lepers—or leper patients—have been discharged from the Kalihi and Molokai colonies in the Hawaiian Islands. And others are being cured.

Back of that simple announcement, revolutionary and significant as it is, lies a story with which the public is not familiar. It is a tale of long years of patient research in laboratories; of journeys through jungles; of man-eating tigers; of savage tribes and far places; of high adventure and higher courage; and of man's devotion to man.

"Chaulmoogra" is no longer a strange-sounding name. It has appeared in dispatches and scientific articles telling of its discovery and use in the treatment of leprosy. But of the heroism of those who made it possible—those whose work now promises life to victims of a living death—half has not been told.

Leprosy was the worst and most widespread disease of medieval Christendom. It is definitely identified as far back as 1500 B. C. in the delta and valley of the Nile, where its characteristics were similar to those which mark its presence now in Asia, Africa, South America, the West Indies and along the Arctic Circle.

It attacks the membranes, breaks out in body sores, eats away the features and flesh of its victims, and finally causes death. The disease is chronic and may last twenty to thirty years. Recoveries have been rare.

Even farther back in antiquity leprosy is traced. Prescriptions for treating it, found in Egypt, are assigned a date of 4600 B. C. "The law of the leper" was given by Moses to his people. Leprosy was widely prevalent in ancient times throughout Asia as well as Egypt, and among the Greeks and Romans.

In the Middle Ages it became extensively diffused in Europe. In some countries, including France, England, Germany and Spain, every town of any consequence had its leper house. Gradually, by segregating its victims and guarding against contagion, the disease in Europe was checked. In modern times its diminution has been steady in the more enlightened countries. Not until chaulmoogra oil and its derivatives were employed scientifically in the treatment, however, could lepers be promised a cure.

In relatively recent times ointments of many kinds have been employed as palliatives. Chaulmoogra oil has been used in India for hundreds of years in the treatment of skin diseases. But it took one scientist, working with a microscope and test tube, and another exploring the jungle fastnesses of Siam, to find the true chaulmoogra tree to reveal the combination that opens a vista of new life to those afflicted.

**Discovery Is the Work of Government Scientists**

These two men are employed by the United States Government. One is Joseph F. Rock, agricultural explorer. The other is Frederick B. Power, a chemist. Each worked independently in his chosen field. The product of their labors now offers for the first time a scientifically certain treatment for leprosy.

It was Dr. Power, now in charge of the physicochemical laboratory of the Bureau of Chemistry, Department of Agriculture, whose explorations in the molecular field led to the discovery of the chaulmoogra and hydnocarpic acids now employed as therapeutic agents in leper colonies.

His original researches, covering a period of more than ten years, were conducted in the Wellcome Chemical Research Laboratories in London, and comprised not only an examination of the true chaulmoogra oil, but also some related products. Prior to these investigations nothing of a definite nature was known concerning the chemical constituents of chaulmoogra, hydnocarpic and gyncocarpic oils, which come from similar seeds but differ in chemical composition.

For years he analyzed, studied and experimented. The true chaulmoogra was of the greatest scientific value. It was necessary to identify it, to establish its purity beyond a doubt, and to find the true chaulmoogra tree and announce it under scientific supervision in quantity to the medical profession.

**Finest Specimens Found in Depths of Siam Jungle**

Then followed exploring trips into Northern Siam and Eastern Siam, through rice fields and wild bamboo groves, and into the heart of the jungle.

The search was rewarded. On the banks of a klong, or estuary, the tree was found growing much taller and handsomer than any cultivated specimen in Bangkok. No mature fruits were found, but semi-ripe fruiting specimens were obtained.

The natives, Rock discovered, were using an oil extracted from the seeds in the treatment of skin affections. It was stated by the natives that the fruits were poisonous and that fish feed-

**Scientific Explorers Are a Vanishing Race**

"Their number is diminishing," Dr. Fairchild will tell you. "We're not getting new men to replace those who leave us. It takes a special type. He must be, first of all, a scientist, with an enthusiasm for his work; he must have courage; he must be footloose, able to go where we send him, and he must get results."

Rock, says the "chief," is of this type. In India one year; China the next; he may be in Alaska or the South Seas or Africa the year following.

The search for the chaulmoogra tree took him to the other side of the earth. His first stop was at Bangkok, en route to Singapore and Java. There he inquired about the chaulmoogra tree, but obtained little information.

When one day, while at the insane asylum, Dr. Morden Carthwe, the resident physician in charge, showed Prof. Rock a tree growing in the asylum compound. It was the chaulmoogra! Not the true chaulmoogra, as it developed, but so closely related to the genuine that it appears to be identical and bears fruit which produces an oil similar in most of its chemical constituents.

About a dozen fruits were obtained at the time and the seeds sent to Honolulu. There they were planted and promptly germinated. That was the beginning of the "chaulmoogra crop" in the Hawaiian Islands.

That was in 1919.

A year later Prof. Rock again visited Siam in an effort to locate the tree in its native haunts. It was exceedingly difficult to obtain any information concerning it. The Government forest office had little data on it. The tree had been extensively planted in the temple grounds of Wat Benchano Pabit, in Bangkok, and a street in that city also is planted on both sides with this species.

It is grown as an ornament and is exceedingly handsome, says Rock's report, when well cared for. More fruits were obtained from the trees in Bangkok's street, by permission of the municipal authorities. The seeds were forwarded to Honolulu, Singapore and Washington. In the two former localities they germinated splendidly, but with few exceptions failed to grow in Washington.

"After the rains have ceased, when the animals have had their share of kalaw fruits and seeds and the heavy rains have washed large numbers of them into the stream, the natives proceed in parties of twenty to thirty, to collect the remaining seeds. Needless to say, they lose about 50 per cent of

more of each crop through the causes just enumerated.

"The writer found many seeds germinating on the edges of the creek bed and in the pure sand of these dark and southerly hill forests where the sun can hardly penetrate. A number of these seedlings get established sufficiently to withstand the heavy downpours which must swell these creeks to a considerable extent; for only short periods, however, as the sandy soil takes up a great volume of these rushing torrents. Large kalaw trees have been found by the writer growing in the middle of these beds. Taraktogenos kurzii develops a strong and vigorous taproot, which enables the tree to withstand strong currents. That the currents are swift was made evident by the exposure of the whole root system of an enormous tree of Dipterocarpus alatus which grew on the steep banks of the creek.

"The collection of seed, even in the winter, is exceedingly dangerous, owing to wild animals, especially tigers and elephants. The cold season being the mating season, these animals roam through the forests. Tigers wreak havoc in these jungle villages by carrying off bullocks, and often, as was the case during the writer's visit at Kyokta, human beings. A tiger followed the writer and thirty-one coolies in broad daylight for a whole day up the creek bed into the kalaw forests. Returning during the following night, the best killed three women and a two-year-old child."

Then Professor Rock observed in matter-of-fact tones:

"All the seed available was collected by the writer and packed in moist powdered charcoal in cotton bags. Those were wrapped securely in strong oil paper, then in heavy manila wrapping paper, securely tied, and dispatched from Mawlaik to Honolulu, Washington, D. C., the Philippines, and Singapore. The seeds sent to Honolulu and Washington arrived in good condition and germinated well in both places, the result being several thousand trees which give promise of becoming well established."

That was all of the hazards of that particular journey—a man-eater kills three women and a two-year-old child—and the kalaw seed are shipped as per directions."

In another passage Rock tells of a trip he did not take because of the lack of time and threatened railroad strikes. The chaulmoogra tree, the report states, is apparently very common in the Chitangong hill tracts and the Kasatsong forest reserve.

"This reserve," Prof. Rock goes on



Fruit and leaves of the genuine chaulmoogra

ing on the seeds were unpalatable. The narcotic properties of the seed were imparted to the fish, which, when eaten, produced nausea and vomiting.

Natives of that district were exporting the seeds to China.

His purpose was first to find and then to promote the cultivation of the true chaulmoogra tree, and thus insure such a supply of the genuine oil as would meet the demand created by the successful experiments in the treatment of leprosy.

Prof. Rock's preliminary report of his subsequent explorations, filed away in the archives in Washington, describes in matter-of-fact fashion one of the most hazardous expeditions ever undertaken by an American scientist, yet one, it may be said, which is almost commonplace in the lives of these explorers.

These explorers are a race of men apart. They are equally at home in the tropics or the Arctic Circle; in the Andes or the Himalayas. They receive the order:

"Go!"

And they're off to the ends of the world.

Rock is one of this breed—a race that is dying out.

**Nature and Bears Balk Native Hunters**

"Bears are also very fond of the fruit flesh, and large numbers of them roam the forests in search of kalaw fruits. Therefore, at that particular time, the natives refrain from going to collect these, as they have no firearms with which to meet a horde of bears, with which to meet a horde of bears. The heavy rains wash the large and often into the Khodan stream, and thence into the Khodan stream. The natives stated that they dare not eat any fish from the Khodan stream, as it would produce the same effect as the eating of a number of fresh kalaw seeds.

"Wild pigs are also fond of the seeds, and the natives refrain from eating pork at the kalaw fruiting seasons, as the flesh of pigs which have fed on kalaw seeds is poisonous, producing nausea and vomiting.

"After the rains have ceased, when the animals have had their share of kalaw fruits and seeds and the heavy rains have washed large numbers of them into the stream, the natives proceed in parties of twenty to thirty, to collect the remaining seeds. Needless to say, they lose about 50 per cent of



Prof. Rock with a group of Mias men in their village on the slopes of Mount Doi Chang, 4200 feet above sea level



Pure stands of chaulmoogra trees in the depths of the Siamese jungle



Burmese native holding fruit of the Kalaw tree, a species similar to the true chaulmoogra

to say: "It reached in the following manner: A steam launch plies once a week between Chitangong and Rangamati on the Karnaphuli River, a journey of three days; from Rangamati a dugout canoe has to be employed as far as Mahimukh, a journey of about seven to ten days on the edge of the Kasatsong reserve. The trees occur throughout the hill tracts, but in isolated circumscribed areas. It is from this region, infested with tigers, panthers, leopards, and wild elephants, that most of the chaulmoogra seeds come to the Indian markets and to dealers in chaulmoogra oil."

**Chaulmoogra Healing Appears in Legends**

Prof. Rock found, too, that the natives of the Upper Chinwin district cherished a legend which credits the kalaw or true chaulmoogra tree with the power to heal leprosy, indicating that its unscientific use in the treatment of that disease dates back to antiquity.

Here is a free rendition from the "Mahawin," the history of the Buddhas and their Rahandas, relating to the kalaw, as translated to Prof. Rock by a deputy revenue collector of that district:

"This legend," Professor Rock says,

piercing scream. Rama heard the cry from his hollow tree and noted the direction whence it came. Next day he went in search of the person who gave the agonising cry. He discovered the cave and shouted, 'Who lives in the cave?' Piya, hearing a human voice, replied and after the usual greetings explained her circumstances. He asked her to come out, but she refused, being shy and modest. So Rama forced his way into the cave and carried her off to his hollow tree. He then made her eat the fruits, roots and leaves of the kalaw tree which had wrought such a wonderful cure for him. She was soon cured, and Rama took Piya unto himself as his wife.

"Piya gave birth to twins sixteen times, bearing thirty-two sons. A hunter from Benares one day came to this part of the jungle and recognized



Village priest in front of a pagoda of watted bamboo and sand. In the background is the temple in which Prof. Rock slept on the night of the tiger hunt and elephant stampede

Rama as the former King of Benares. Seeing so many young princes, the hunter asked who they were. Rama explained the circumstances, and the hunter on his return to Benares related the whole story to the king, who was none other than Rama's son. The king came with a great retinue to the palace, but Rama refused, saying, 'I will found a new city here. Get your men to clear away all the kalaw trees.' The new city was called 'Kalanagara,' as it was built on the spot where kalaw trees once grew. It was also known as 'Byetragapata,' as the tigers used to eat their prey in this place. Rama's son then returned to Benares.

"So much for ancient native legends regarding the curative properties of the kalaw tree in leprosy."

**Explorers Are Feted Royally at Jungle's Edge**

But the expedition was not all danger and drudgery. There were the charms of Bangkok, with its wonderful temples, the gorgeous colors of its tiled roofs, its green jade Buddhas under golden umbrellas. There were garden parties, and in the jungle itself were beauties found only in the tropics.

In an article written for the National Geographic Magazine, supplementing his official reports to his superiors, Prof. Rock thus describes one of the entertainments given in his honor:

"Entertainment followed entertainment, the series culminating in a garden party on the lawn of the Viceroy's residence (in Chingmai), facing the Meh Ping, which then reached almost to the level of the road. It was a moonlight night, flags and lanterns decorated the trees, and to the soft murmur of the peaceful waters of the river, on whose placid surface the moon was reflected, old Lao orchestras played weird chords which harmonized with the fantastic movements of the strangely costumed Lao spear and sword dancers. These agile and graceful Lao ladies wielded long spears with great dexterity, and a Siamese military band played strange and yet familiar airs at intervals, and it was long after midnight before this really royal entertainment came to a close."

But those were only incidents which broke the journeys into regions where wild beasts stalked their human prey, and where eternal vigilance was the price of safety. There were mighty gorges, deep defiles, dangerous rapids, forested mountains. The natives showed the American the spot where, they said, Buddha crossed the hill with a fighting cock, which scratched the surface of the ground to such an extent as to leave it bare today!

And the Lao crew, instead of buying fresh fish, ate the oldest and rottest they could find!

In the same magazine article Prof. Rock elaborates the official report of the killing of members of his party by a tiger in the following language:

"I had planned to begin the return journey to Mawlaik the next day, but I had reckoned without the tiger. Two of my coolies had a small rice field only a quarter of a mile distant in the jungle, with a small hut in which their children and womenfolk slept and guarded their harvested grain. Instead of returning that evening to their hut they remained in the village, leaving their women alone in the field.

"At 6 o'clock the next morning, as I was about to start, and the coolies were ready to take their burdens, the

tajee (headman) came to me with a very sad face and still sadder story, saying that a boy five years old had come from the outlying paddy-field, reporting that his mother had been killed by a tiger. The poor youngster was himself badly injured, showing the scars of five claws on his back, and his left lower limb badly burned from a campfire into which the tiger had hurled him.

"Great excitement ran through the village. The temple drums were beaten and the gongs sounded an alarm. All the male villagers armed themselves with spears and knives and, marching ahead of them, I went to the scene of the tragedy.

**Marauding Tiger Slays Native Family**

"A dreadful spectacle awaited me. Into this lonesome place, wrested from the jungle, the tiger came at dawn to do its work of destruction. We found that, owing to the cold night, the women, living with two children, had constructed a hut of paddy or rice straw directly on the ground, with only one small opening. In this hut were three women, a two-year-old girl and the five-year-old boy. When the tiger entered the hut there was no escape. Short work was made of the helpless victims.

"One woman, about twenty-five years old, was lying about 100 yards away from the hut, whither she had been dragged by the brute; her face literally bitten out and her neck severed. The second woman was lying in the hut, a formless mass, and the third lay in front of the hut, alive but with a ghastly face wound.

"The little girl had disappeared. All we found was a trail of blood which led into the forest.

"I had a litter of bamboo constructed on which the injured woman was taken to the village, where I dressed her wounds."

Then followed a tiger hunt, with the body of the slain woman as the bait—separated from the main trap where the hunters thought, the tiger would be caught. That night the tiger came. He reached his prey, as they did not think he could get out, and he was shot. But he himself was caught, and the following day twenty spears in the hands of the villagers ended his existence.

That same night a herd of wild elephants swept like a cyclone through the outskirts of the village, trampling and crushing the flimsy huts of the villagers and destroying their harvested rice. The whole village mourned over the double tragedy.

Such is the life of the Government's scientists when sent out on explorations!

What does it all mean? Just this: There are now, as a result of that expedition, flourishing chaulmoogra plantations in Panama and Honolulu, from the fruits of which, in due course, will be extracted the seed to produce sufficient quantities to treat all cases of leprosy now under the care of the American Government there, in the leper colony at New Orleans and in the Philippines, where there are many lepers.

To Prof. Rock and to Dr. Power, go the joint credit for finding the tree and analyzing its oil, doing scientifically what others had done or attempted to do, and making it available for medicinal use.

**Cure Is Now Accepted by Foremost Authorities**

The foremost medical authorities on the treatment of leprosy agree on its curative properties. Two years ago Dr. J. T. McDonald, superintendent physician at Kalihi Hospital, Hawaii, and director of the leprosy investigation station there; and Dr. A. L. Dean, president of the University of Hawaii, said concerning leprosy:

"The remedy to which we pin our faith as superior to all others is chaulmoogra oil."

That their faith was not misplaced has since been proven. So far of the 200 patients who have been discharged as cured from the Hawaiian hospital and leper colony, not one has had to be readmitted.

All because two American scientists did their work well!

**Two Cases of Leprosy Found Here in 1911**

Leprosy has raised its grizzly head within Philadelphia as recently as 1911. In that year two women—both Russians—were taken to the Municipal Hospital with affections which were identified as leprosy in a mild form. Neither had ever seen the other, one having been in this country for twenty-eight years and the other eight years.

New York, with its large volume of immigration, has frequent experience with lepers. It is estimated that there are about 300 of them in continental United States at present.

Although now considered an Oriental disease, leprosy was so widespread in medieval Europe that there were more than 19,000 leper houses of known record. During the fifteenth century the disease underwent a remarkable diminution.

Its presence there today is comparatively negligible, although it still exists in Norway, Iceland, along the shores of the Baltic, in South Russia, Greece, Turkey, Portugal and Spain. In the last-named country it is reported slightly on the increase.

Leprosy has made such extensive gains in South America, China, Japan and the Antipodes, however, that the discovery of the true chaulmoogra oil, whose curative effects are now proved, is regarded by medical authorities as of the highest importance in checking a situation that was rapidly becoming serious.