

EDIBLE BIRDS' NESTS

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The collection and distribution of edible birds' nests is one of Thailand's most interesting industries, and the nests themselves are among the Kingdom's oldest export products. Birds' nests have been shipped abroad for centuries and are mentioned in the trade reports of the earliest explorers of Southern Asia.

Thailand has the reputation of producing the best edible nests to be found anywhere. The prices paid by consumers have always been high. Today even ordinary nests of average quality are worth more than their weight in silver. The quantity and value of the nests collected every year is a trade secret, but it is well known that the Government of Thailand realizes a rather handsome sum from taxes on this strange commodity.

The high value placed on edible nests is not entirely because of the fact that birds' nest soup is considered a great delicacy. It is due more to the belief of a great many people that the soup has health-giving properties. On first thought, this might seem to be one of the many food-fads that spring up from time to time. But anything that has remained popular for several centuries can hardly be called a fad. I believe that the nests actually do have tonic properties; that the nature of the therapeutic element will eventually be discovered; and that the industry, therefore, has a bright future.

During late April of this year I had the privilege of visiting the Five Birds' Nest Islands of Thalè Luang, or the big Inland Sea of Southern Thailand, where we visited a number of the birds' nests caves and observed the work of the nest collectors. This trip was made possible through the courtesy of Mr. Lim Jim Koh, a prominent business man of Bangkok, who is engaged in the collection and sale of edible nests.

The Sea is quite extensive in size and lies in the Changwads Songkhla and Pathalung. The island can be reached by a journey of about four hours by motor launch, departing from Songkhla and proceeding northward through a long inland channel. Just beyond the fishing village of Pak Phagun, you come into the Inland Sea and can see the islands looming against the sky several miles ahead.

A sight of the Inland Sea is well worth the journey. The sea around the islands is rather shallow, the water has a scummy, green appearance, and is very warm. Seaweed is abundant there, and the surface of the sea is covered with leaves. This seaweed is probably the home of at least some of the insects that are eaten by the birds that make the edible nests.

When we arrived at the headquarters camp on one the islands, we were shown to a guest house which is clean and comfortable. The house is located on a narrow strip of beach at the base of a huge cliff. There are two grottos under the cliff, and in one of these is a spring of fresh water, which they say runs warm in winter and cold in summer. A second grotto is used as a workroom by the nest collectors. On the cliff over the grottos is inscribed the signature of Rama V, or King Chulalongkorn who, according to the date on the rock, visited here in the 108th year of the Chakri Dynasty; that is, in about 1890. The beauty of the island is such that the King was well justified in making this trip, but I think that he was also interested in the problem of protecting the birds so that the industry could be maintained. Several of Thailand's kings have visited the Birds' Nest islands, and the Government of Thailand has for a long time exercised strict control over the collection of edible birds' nests.

The nests may be gathered only by permission of the Government, which is in the form of three-year concessions granted to the highest bidder. Two concessions are now in effect. One contract covers the Five Islands of Thale Luang and some thirty other islands lying near the east line of the Provinces of Prachuab, Chumpon and Surat Thani. The other concession is for several islands in the Bay of Bengal along the western shore of the peninsular region.

The Five Islands of Thale Luang are covered with vegetation from top to bottom and are fantastically beautiful. The plants grow in crevices of the rocks, as the islands are almost entirely of limestone. No one lives there throughout most of the year except a few guards. In certain seasons the place swarms with nest collectors. Since the inducement for poaching is very great, no person is allowed to visit the island without proper permission.

The islands are high and steep and honeycombed with caves. The mouths of many of these caves are along the shore line, and you may ride a boat right into them. In these wet caves the nest collectors work standing in water, and it is said that the best nests come from such locations. The entrances to some of the caves are high on the sides of the islands, others are right on top of the mountain. From one top entrance which we visited, there is a sheer drop of 600 feet into the heart of the island. The collectors are let down in a basket on the end of a long rope. I declined an invitation to enter this tremendous chasm in a basket, but I did make the dangerous climb that is necessary to reach one of the entrances located on the face of a high cliff,

It is difficult to describe the size of the caves without seeming to exaggerate. Many of the rooms are larger and higher than a good-sized office building. High up on the walls or ceiling of the rooms you can see slender beams of light entering through cracks in the outer shell of the mountain, but down below the light is too dim for human eyes—one can move about only by the aid of a flashlight. When one first enters these dark caverns the air inside seems to be filled with mysterious sounds. It is a little while before you realize that this is the twitter and flutter of tens of thousands of birds hovering around you, or darting in and out of the openings high above.

The nests of the birds are plastered to smooth places on the walls of the cave. Usually there are several dozen nests in each group. You can see them only with the aid of a flashlight or torch, but the birds apparently have no trouble finding their own nests in the dark. The birds are quite tame and seem not to be greatly disturbed by the presence of the collectors.

The birds that inhabit these caves are esculent swifts; presumably so-called because their meaty breasts make a tasty tidbit. The swifts that build the edible nests are known as *Collocalia francica*. They are not swallows, as they are sometime called.

These swifts are not a migratory bird; they remain on the islands throughout the year. The swifts are extremely graceful in flight: their wings are very long, extending far back beyond the tail when the bird is sitting on the edge of its nest. The swifts are smoky black in color, and apparently they feed almost entirely upon insects. Unfortunately, there are two types of birds inhabiting the caves. One of these two is known locally as the Black Swallow. His nests are inedible because of a bad habit of mixing feathers with the materials used for building the nests.

The swallows build their nests of mud and other inedible materials; the esculent swifts build their nests almost entirely of a gelatinous substance secreted by powerful salivary glands.

The bird picks out a smooth surface on the wall of his cave and begins to build a nest by ejecting a thin substance from his mouth. This he smears on the wall in the shape of a small U. As the material dries it becomes hard. Thread by thread the nest is built up and given form. Upon completion it is somewhat like the half of a small porcelain bowl with the split side attached to the wall.

It apparently takes the bird about one month to build a nest, possibly a little longer. Probably the younger birds work more slowly than the older ones. It is said that the nests built by three-year old birds are the best.

The building of the nests begins in January. The first collection of nests take place during the latter part of February or early March. Expert inspectors determine the proper time for each collection, which is made three times a year. Each collection lasts about 15 days, and altogether about 400 workmen are employed during these periods.

The second collection begins around April 25th and ends about May 10th. The birds are then given a long rest, permitting them to lay their eggs and at last to raise a family. Usually each brood consists of only two nestlings. By August these are big enough to take care of themselves. The third and last collection then begins.

Nests taken during the first collection are the best of the lot. They are pure in color, free of extraneous materials, and somewhat heavier than later collections. Only first-collection nests—white, perfect in form and texture—are given the highest classification of the trade.

Second collection nests are not quite so good as the first. Third collection nests are inferior to the others. It would seem that after building two nests the bird becomes somewhat exhausted, or his inability to build a good third nest may be related to food supply. These are matters with which we are not yet sufficiently familiar.

It has been learned by experiment that the birds are unable to build a fourth nest during one year. Thus after collecting the first and second nests it is necessary to permit the birds to maintain the third nest long enough to raise a family in order to preserve the colony.

The nests are collected by men working in crews of ten or twelve. Each crew is in charge of one or two hardy professionals who prefer to work in caves with which they are familiar. This preference arises out of the fact that the occupation is a very dangerous one.

The collectors work from the tops of long poles, some as high as 40 feet or more. Try to imagine being in a dark room perched on top of a 40-foot pole while it is being held in place by five or six men seated in obscure corners, hanging on to slender ropes. While the collector stands on a little perch near the top of his pole, he knocks down the nests with a long, slender rod to which a flat-bladed knife is attached.

As the nests fall to the floor, they are picked up by assistants and placed in bags.

At the end of each workday, the collectors carry their day's take to the headquarters camp, some arriving there after sundown. The nests are then spread on the floor of the workroom in the grotto to be counted and stored in a place which is safe from rats. On the day after each delivery, the nests are cleaned and sorted. After preliminary preparation, the nests are spread out on clean mats in a cool, damp, and rather dark curing house. They are never exposed to the direct sunlight; to do so would make them brittle. After a short period of curing, they are packed in large wooden boxes for shipment to Bangkok. A launch calls at the Five Islands in Songkhla Sea once every week to take away the shipment from that area.

When the nests reach the concessionaire's workshop in Bangkok, they are classified. Each nest is carefully brushed; the part by which the nest is attached to the wall of the cave and all the rough edges are trimmed off with a sharp knife. The "*piece-form*" nests are packed in cartons; the trimmings are sold in bulk at reduced prices. From the time they are collected until they reach the consumer, the nests are handled with care and kept scrupulously clean. Citizens of Bangkok consume large quantities of edible birds' nests, but there is a fair surplus available for export, the principal export markets being at Hong Kong and Singapore.

Shortly after returning from our visit to the Birds' Nest Islands of Thale Luang, I was fortunate in being able to contact an eminent bacteriologist who was greatly interested in the birds' nest industry because of the fact that so many people believe that birds' nest soup has tonic properties. An examination of available literature on the subject revealed nothing to explain this fact. A bulletin published by the U.S. Department of Agriculture under the title, "Composition of Foods Used in Far Eastern Countries" contains a report on an analysis of edible nests. This report states that the nests are made up of the following: Water, 16.2%; Protein, 54.3%; Fat, 0.3%; Carbo-

hydrates, 23.3%; Ash, 5.9%. Included in the foregoing is a small amount of phosphorus or 32 milligrams of phosphorus for every 100 grams of nest. Footnotes state that no information is available on the digestibility of the carbohydrate present; and that the nutritional value of the protein is poor, as it is deficient in several essential amino acids, especially lysine. However, the table from which this information was taken had been prepared for the specific purpose of determining the food energy of the various items tested, and apparently no attempt had been made to discover the micro-organisms that might be present in edible nests. The scientist with whom this problem was discussed says that the nests might very well contain beneficial bacteria, and in order to discover whether or not that is true, arrangements have been made to have the nests tested in a well-known New York Laboratory. All concerned are in high hopes that the test will lead to an important discovery.

Tremendous advances have been made during recent years in the study of useful bacteria. Formerly our scientists gave almost exclusive attention to harmful bacteria; the kind that causes disease; and once we dreamed of what a fine world it would be if it were entirely free of bacteria and microbes. Now we realize that if it were possible for us to destroy all bacteria, we would at the same time destroy ourselves.

We now know that for each kind of harmful bacteria there are several thousand different kinds of bacteria which are not harmful, to life itself and that, in fact, some of these are essential. Forms of beneficial bacteria enrich the soil; bacteria dispose of the organic matter in sewage water and make city life possible. The preparation of many foods like bread and vinegar is dependent upon the action of bacteria.

Forms of beneficial bacteria inhabit our intestines and keep us healthy. Some bacteria manufacture vitamins or other substances necessary to health. Most of the wonder drugs we have been hearing about recently are possible through the controlled use of micro-organisms.

Edible birds' nests are ideal for the growth of bacteria, and it is highly possible that these bacteria are of a *meritorous* nature. It is even possible that the bacteria in the nests manufacture a form of useful substance that is as yet unknown. The manner in which edible nests are made, and the way in which they are handled after collection, makes of them a perfect culture for bacteria. Until they are consumed, the nests are never exposed to bright light; they are kept moist and at constant temperatures, and they provide a gelatinous food to sustain the bacteria. When a nest is finally made into soup, it must be literally teeming with bacteria, and centuries of experience seem to prove that this bacteria is of an especially beneficial nature.

It is not necessary to prove the value of edible nests to the Siamese or to the Chinese. But suppose that through scientific research other peoples are convinced of the useful properties of edible nests. In that case a problem of supply would arise. How could the increased demand be met? How would it be possible more carefully to conserve and possibly increase the numbers of esculent swifts now engaged in making these wonderful nests?

As to the conservation of the species, it would seem wise to give some of the colonies a rest once in a while. That is, leave some of the birds in peace for at least one season—alternating the reserved caves from year to year. Possibly one year's rest in ten would be enough. That would mean collecting in only 90% of the caves every year, leaving the other 10% at peace in order to give the birds a chance to increase.

Should the birds increase to a point where they become crowded or too numerous for the food available, it would be necessary to take steps to increase the food supply. But first it is necessary to know exactly what the birds eat. A careful investigation of their feeding habits should be made. There seems to be considerable misinformation on this subject. Some people still claim that the birds eat sea air, others that they live on seaweed. These beliefs probably arise

from the birds's habit of darting about to catch insects which are invisible to the human eye, sometimes swooping down to catch insects living on the leaves of the weeds floating on the surface of the sea. There is some evidence that the birds eat only insects. In any case, the floors of their caves are littered, sometimes to a depth of several inches, with the fecal remains of insects that the birds have eaten.

How could the birds' food supply be increased? For one thing, it might be possible to control the black swallows and possibly other birds that now compete with the esculent swifts for such food as is available. Or possibly the swifts could be persuaded to eat substitute or artificial foods.

Once the birds' food supply problem has been solved, it should be possible to increase the number and size of places which are suitable for building nests. As it is, they build only on smooth surfaces on the walls of the caves, and these places are limited in extent.

The birds might even be persuaded to live in artificial shelters. The idea is not as fantastic as it might seem, as the so-called house birds are common in Java. There are two houses in Pak Panang in Southern Thailand where esculent swifts are now living. The owner of these houses secure some revenue from the sale of the nests. These appear to be exactly the same kind of bird that inhabits the caves on the islands. A few of these birds moved into the houses at Pak Panang just three years ago, and they seem to be quite contented there, although their present location is not at all ideal to their needs. Some people say that the nests of house birds are inferior in quality. Even so, the house nests still sell for a good price; and if it can be proven that bacteria in the nests is the principal reason for their beneficial qualities, what does it matter whether the nests come from a house or a cave?

If the measures proposed above regarding increased production of nests appear to be impracticable, we still have recourse to one other possibility. Assuming that the nests do contain bacteria of a beneficial nature, would it not be possible to produce these useful micro-organisms by laboratory methods with some additional aid from the birds themselves?

Our theories concerning the presence of beneficial bacteria in edible nests may or may not be true; but if they are, the birds' nest industry has a very bright future indeed. In any case it is hoped that the readers of this article now agree that the collection of edible birds' nests is one of Thailand's most interesting industries.



Fig. 1 *Nests and nestlings on Koh Ngan (Beautiful Island) in Changwat of Prachuab. As soon as the nestlings are large enough, they climb out of the nest and cling to its edges until ready to fly.*

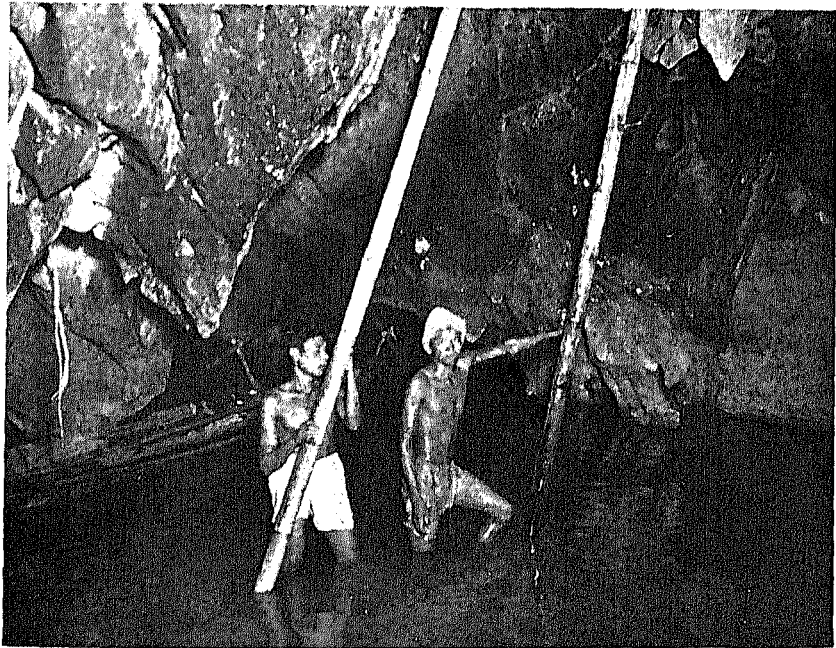


Fig. 2 *Collectors erecting climbing poles in cave on Koh Na Thavadu (Angel Face Island) in the Inland Sea, Songkhla. Nests of high quality are secured in caves where the floor is slightly below sea level. The climbing poles of bamboo must be replaced every year at considerable expense.*



Fig. 3. *Assistant gathering nests that have been detached from the high walls of the cave. He works by the light of the torch in left hand. In spite of the almost complete darkness, each bird can go unerringly to its own nest.*



Fig. 4. *Preparing edible birds' nests for distribution and sale. The nests are carefully cleaned, trimmed, and packed in attractive cartons containing nests weighing one-half catty. This view was taken in a workroom of the Thai Swallows' Nest Company, Rajawongse Road, Bangkok.*