

collected them for sale. The other kind was the black one, which have a rather prickly roughness on their skin; they are thinner, softer and longer, and are not collected. There were many kinds of shells here, specially kinds of Neritas, which clung to the rocks, two kinds of patochis, many Chitons, which are also collected to be sold to the Chinese, some kinds of Porcelains, etc. The most remarkable things I found, were some *kreuz hapen* and *ostrea isognomum*; they were in such places where the shore was low and shingly, and covered with a little mud. The *ostrea isognomum* specially are most frequently found under medium-sized stones or between them. The sea-stars were very big here, each point measured about one and half feet, so that stretched out the points from one to the other opposite one were three feet in length, although the real body was not larger than a Dutch ducat. Between the stones I found many kinds of flesh corals, which all had opened. Some of them consisted of angular tubes, which were easily divisible; they were quite yellow and could easily be detached from the stones. Others crept back into their respective holes as soon as I touched them, and it was impossible to get anything else but fragments. To-day I could only find out that their mouths were sometimes $\frac{1}{4}$ of an inch in diameter, they took different shapes and were sometimes oblong, angular, or round; at times they stretched or they were pressed together by others near them. The inside (*Discus*) of this species was of the most brilliant green that can be imagined, and was smooth and convex. The edge consisted of innumerable fibres, arranged in irregular order; they were purple with white points. I could not see the opening of the mouth without a magnifying glass, but as soon as I touched them they all sent forth some water.

The other kind had a sky blue disc, and the edge was yellow-grey. The bottom of the sea was filled with many kinds of *Aleyonius* all of which I had already seen in Trinquemalle. The dark night made me postpone my researches until the next morning.

3.—At midday I went again to this island first as the low tide was setting in. First of all I visited the huts of some Malays and learned from them that they boil the large *Holothuria* first in salt-water; after that they are put on a stand, which is made of split bamboo, is half a man high, two yards broad and

six feet long. They kindle a bright fire underneath this stand, which has the effect of both drying and smoking the *Holothuria*. I saw that they had gathered some fruits of the *Lycas*, which are oval in shape. They were being cut into thin cross slices and put for some time over the fire to be dried. They told me that this fruit is more nutritious than rice in this dried condition, but when eaten fresh it is unwholesome.

After this I went to the wood and found first of all a dry male blossom, afterwards a very young cone with female blossoms, and at last a beautiful perfect male inflorescence, which had a completely oval cone about one foot long. This furnished me with an opportunity to make some minute observations concerning the character in the second *Montissa* of Mr. von Linnè. On the mountain ridges of this island I found some high trees of the *Lagerostræmia*, as thick round as a man. The bark was smooth and had slightly indented irregular scars, and resembled the bark of the *Gujava* though the colour was lighter. A new species of *Tschæmum* grew among *Scævola* and *Amaryllis Teylanica* and *Sophora Tomentosa*. Near the shore of this island in a sandy place grew some Casuarin trees, which I have already described before now.

4.—I went again to another island, and found some new kinds of plants, specially a tree the blossoms of which resemble those of a *Contorta*, specially those of a *Nerium*. The blossoms, when they had fallen off were also purply-red, like those of the *Nereis*, but they had ten anthers; five of them stood inside and were connate in pyramid shape a little before the pointed ends; the others stood erect at the side and seemed nearly all unfertile. There was no fruit upon the tree; on account of the wet weather most of the blossoms fell down without forming any fruits. I also found a new kind of *Capparis* with oblong leaves and prickly stalks; the large Solomon's ants often covered the whole fruits, and whoever touched one of the fruits could be sure to be covered with hundreds of these biting insects. I came to a place where shortly before a rhinoceros had come on shore. My companions advised me to go back, as the animal has the habit of often returning to the sea to refresh itself in the water from the burning heat of the sun.

In the afternoon I went to another island, and found several *Epidendra* in bloom; some of the blossoms I took with me to

describe them. There also bloomed *Cordia Sebestena*, *Guettarda*, *Speciosa*, *Ixora flava*, *Lophora tomentosa*; they were all very beautiful.

5.—It rained during the whole day; I described some plants.

6.—I went to an island which lay one mile northward from our ship. My researches were soon interrupted by the arrival of seven or eight Malay praus, whose neighbourhood is always dangerous for all Europeans. I only saw that the stones consisted of a *Schist*, which was thin, grey and weathered on the surface by the heat of the sun and the sea. Sometimes they were intersected by some quartz, or by some red iron ore; these veins mostly ran down perpendicularly. I also found some traces of splendid corals here. Dark clouds rose from the sea in the north-west and though there was a strong west wind, the sky soon looked very threatening. This, the Malays, and the dangerous storms which we had had a short time ago, combined with heavy rain, made it advisable for me to return. I arrived at the ship just as it was beginning to grow dark. After 8 o'clock the anchor was weighed to go to Tamah, where we had been a month ago.

7.—We had hardly made half our way, and the weather grew more and more stormy. We had had rain and storm every day which we passed on shore, but now there was a fresh storm nearly every second hour. We travelled between the islands of Pullu Penjang and the Lehlands, as far as the French island, but the ship did not advance, because if the wind was moderate we had not enough sails, as some had to be taken down from the upper mast, and if there was a storm the body of the ship alone sufficed to serve the storm in driving us back; therefore the anchor was cast and we were glad to be in our dry cabins.

8.—We tried again to get near the land, and succeeded a little better than yesterday, and about 10 o'clock we went on shore with a boat to the place where we wanted to go, which was at about three German miles distance. We got wet on account of the rain, but the wind though contrary was moderate and at four o'clock in the afternoon we arrived at Tamah.

13.—Until this day we had most violent storms and showers. I botanized in the few dry-hours, but the damp spoiled everything because the houses here are like sieves. Moreover, there was the annoying circumstance that my servant, whom I had

sent to the ship in a boat, had been carried away by the storm and everybody deemed him lost.

14.—I went out to botanize; the *monandria* (Gingers) began to bloom on account of the rain which we had had. The *Mussaenda* had some sort of fringe at the blossom, and so they seemed to belong to the class of blossoms, which Burman has drawn in his "Thesaurus Teylanicus," but in reality these fringes are only a projecting *Sacina* of the corolla, which has been caused to grow by the continual wet weather. I had the pleasure of seeing many specimens of *Papilio priami* seeking the honey out of this beautiful bright red blossom. They were later than all the others, as *Hector*; *Helenus* and many other kinds had already visited these blossoms.

I found some very rare chrysalis on the shrubs, which I could not compare to any other kinds, and which made me hope for some fine *Papilios* in the future.

15.—The weather continued to be showery, but I tried to find some object of interest. I obtained to-day a somewhat damaged specimen of *Papilio priami* and many other kinds, but as the blossoms of the *Mussaenda* grew very high up and this was the only tree in blossom I had to content myself with having seen these beautiful *Papilios*. A Chinese told me that in Pegu no real silver ovin is used. The silver is smelted together into big pieces, and smaller pieces are cut off according to the present necessity. The value of the silver is taxed according to the finer or coarser crystalline figures, which form as the silver gets cold.

16.—I obtained some plants unknown to me. I described two kinds of *Contorta*, as I succeeded in finding both their fruits and pericarp. They grew frequently in such places which are at times flooded by the sea. What is peculiar in the blossoms, I mention in my description. One of these plants, which had thin threadlike twigs, I found climbing among the bushes specially on a very thorny shrub, and as I searched carefully for the pericarp. I found a fruit which was three cornered pointed and smooth and I first thought it to be the fallicles of this *contorta*; but what struck me as peculiar was that no milk came out as I broke them. The smell which they exhaled was a strong smell of orange. In this manner I discovered the tree which Rumph describes in the 2nd volume of his "Herbarium Amboinense," and calls *Simorelli*; he has given a drawing of the same on the Tab: 32.

I afterwards saw many of these trees but did not find a single blossom ; therefore this kind remained unknown to me.

17.—We had again rain all through the day, and I had news, that my boy was still alive, and that he and his companions had lived on fruits and leaves in the island of Pullu Panjang, where they had been for 5 days.

18.—I went out to get some insects. I found several, but most of them escaped to the top of the high trees.

19.—I described a new peculiar *Pentandria*. In the afternoon, after it had rained a little, I found the biggest *Phalena* just crept out of the chrysalis.

20.—I described two *Epidendra*, and found some insects ; the weather continued to be showery.

21.—I went out again to search for insects, but as I was lucky enough to find a new *Pteris* and the *Acrostichum Digitatum*, I stuck to botany. I found moreover a *Pentandria* with creeping stalks and with white, funnel-shaped blossoms, which I described. Its leaves resemble those of the *Hydrocharis Morsus-ranae* or the *Cochlearia, Psychotria*.

22.—I took the road, leading to Cockreu, which was very muddy and often intersected by rivulets. I found a large *Scirpus* a *Laurus* with sky-blue blossoms, which at times had seven and at other times eight stamens ; generally two or three of these stamens were connate in each blossom. In a very dark wood, often traversed by the rhinoceros, I found on their dung a special kind of *Boletus Stipitatus*. The roots consisted of a bulb ; it was club-shaped, irregular, covered with a black skin on the outside and inside it was quite white, rather hard, and as thick as the point of the little finger. The stalks were about eight inches long, smooth, bending, stiff as thick as a straw, black, brown, and white underneath the hat. The pileus was umbrella-shaped, round, and had a small hole at the top. It sends out a sort of white dust. I found *Clerodeudron flamma Sylo. Maximum* under a *Sagestrocmia*, with perfect blossoms. The first time, I saw this plant in Kara Nicobar, and afterwards near Cockreu. The *Polygate*, which I have often seen in India, the one with the yellow blossoms grew here frequently in the meadows, but the rainy weather had spoilt it.

23.—I went again to the place in the wood which is often flooded by the sea and found several *Epidendra*, two of which

I described. One of them had a Hypomochlion like that of the Contortis, but the glandula was more fastigiate in two bundles, each of these bundles containing three glandulas.

24.—I described some *Epidendra* and searched for insects in the afternoon. We had still some showers, but they were of short duration. A tiger visited our house, but was satisfied with only one goose for this time, which he carried away with him to his hiding place, which was about 200 yards from our house in a dense opening wood at the back of the house.

25.—I collected some insects and described the smallest *Epidendrum*, which was of the kind called *herba supp.* by Mr. Rumph. The leaves are swordshaped, and one sheathes the other. The blossoms grow together in a single thin fine spike. They are verticillate, very small and red in colour; the fruit is ballshaped.

26.—I went after some insects, and had the good luck to catch two couples of *Papilio Priamus*. I saw several large *Papilios Achivi*, one of them was twice as large as the *Priamus*. The upper wings were black and those underneath were white, with black veins and red spots. I also saw another very large species with black upper wings and yellow underwings with black veins.

27,-28.—I continued to collect insects. Towards evening I met a wild elephant, from which I had to escape. The bishop of these parts told me that the leaves of the *Sussa Radja*, Rumph: Amb. P. VII., pag. 29, Tab. 15, are used as resicatories.

I described a kind of laurel, the flower-stalks and calyx of which are of a beautiful orange red colour. The corolla was only small and violet; it had only eight stamina. The anther had a lancet-shaped spur, which was a so purply-red.

29.—I went again to search for insects, and among other rare specimens I caught two *Priami* and some very pretty *Sphinxes*, the wings of which were quite like those of the *Phalina pyralides*. I described an *Alisma*, the Cotyledon-leaves of which were lancet-club-shaped and fleshy; the others were heart-shaped, only the broader ends were not round but pointed. The calyx consists of three seahs and therefore the whole blossom forms a triangle. The corolla also consists of three petals, which are larger than the calix and white. There were not more than eight stamina, three and three growing together, and the remaining

two also grew together. This was the case in most of the blossoms; among ten blossoms which I opened, only one had nine stamina. They have no receptacle for honey; it must be a *Ramunculus*, and grew frequently in pools where the mud was deep.

30.—We went to our ship, which lay in the harbour, but we had much trouble to reach it, on account of the many trees floating in the water, cast there by recent storms; however we arrived at midday.

31.—I went to the larger Pullu Salang, which is only separated from the smaller island by a narrow passage, it is twice as large as the smaller one, and lies parallel with the land, stretching from North East to South west. It was here that I first found some *Kreuz Ostern* and some *ostrea isognomum*. I intended to collect some more of them, and had the luck to find about eighteen of the first kind. Higher up on the shore, higher than the sea-water would rise, I often found that plant which I had seen between Bangkok and Chanthebuhn, and which at that time already I believed to be a kind of palm. I am even more certain on that point now, because under the fleshy skin, which is very smooth and shiny on the surface and of the most perfect sky-blue colour, the kernel is horny and therefore resembles the nuts of the different kinds of palms very much. There were two species here: one of them was the species I have already described before. The second kind had a much longer racine about a span long. The fruits grew sometimes three or four together in a bell-shaped calix: each of the fruits was oblong, smooth and not of the same intense sky-blue colour as the first kind. I searched very diligently for their blossoms, but till now I have not been so lucky as to find any.

On the mountain ridge I found a kind of fern, which had both very large pinnatifid leaves and simply pinnate ones; and they were the largest fern leaves that I have ever seen. The fruit-bearing leaves were somewhat smaller and divided in characteristic lines. The *Papiliones* here were of the same kind as those which always live in dark shady forests; they were of a brown colour and beautifully speckled; they were of an unusual size. The high forests here consisted mostly of very prickly leaves, as Rottan and other kinds of palms; these prickles tear both skin and dress if one wishes to pass through them quickly, and so my servants and I had to desist from penetrating any further.

I found nothing new here as regards the formation of stones, only they seemed to be more intersected with quartz. The hardened clay was also more vivid in colour. After low tide we returned to our ship, which lay three miles from this island.

June 1-2.—I had an opportunity to send some intelligence of my present condition to my friends on the coast of Bengal, as Captain Peters returned thither. Captain Peters is a very merry, industrious, honest, and obliging man, and so I used part of these days to write letters. The rest of the day I cleaned my shells, which might otherwise have proved unpleasant for the ship on account of their commencing putrefication.

3.—Captain Peters took all my letters. His ship took tin from our captain and left the harbour in the afternoon to sail for its destination. My best wishes for a happy and speedy journey accompanied him.

4.—I went to Pullu Jambu, an island, which might rather be called a land-point because only a swamp, which is only flooded at high tide, separates it from the island Junk Ceylon. It has the same direction as the two Salangs and on entering the harbour it lies on the right-hand side. It consists of two middling high but narrow mountains, which are separated by a valley. The front part of this island is closely covered with high trees; there seems to be one place in the valley which is not overgrown with trees, and also a hill, which lies in front of the mountain furthest inland, and seems not to produce any trees, but is covered with a kind of light green grass, which gives a very pleasant view in the distance. Unfortunately however this grass grows to almost a man's height and consists of a kind of sugarcane, which according to my former description is a *Sacharum diandrum*, so it is more preferable to look at it from the distance than to be close by. The foot of the mountain consists of a hardened many-coloured kind of clay, and here and there one can see some schist at the southern side; the rest of the mountain consists of yellow-red clay, much intermixed with mould.

The bamboo and the sugarcane made this island a favourite resort for elephants, therefore as soon as one comes into the jungle, one finds many paths made by the elephants, and that these paths really originate from them is shown by their dung, which one finds everywhere. I was told that there

were specially white elephants with their young ones living here, the latter however were of the ordinary colour; but I should not like to pledge myself for the truth of this assertion. I mention at the same time that the white elephants are considered as especially sacred and valuable among the Siamese and Barmans, and are reckoned amongst their gods. In the picture of their idol Potho, or as the Dutch call him, Budduk, one often finds white elephants drawn; the animal is generally represented with his trunk uplifted in homage of the god.

However, it is a very wrong idea that because this animal is rare it is of greater value, and we also make the same mistake in paying great sums for such an animal, if it can be bought. The elephants are like the white niggers of Maupertius, the white monkeys, rats, mice, sparrows, ravens, beetles, and some such animals. The colour is surely a kind of skin disease cause by the sap of the nerves, and all these animals have something repulsive. I have seen many such animals here in India, and lately the son of the Loximannies, prince of Quedar, presented our captain with a white swallow of the kind that build the celebrated bird's nests. He called this bird the King of swallows, though he was a Mohammedan. These kinds of animals are even hated by other animals, *e. g.*, the white ravens of Ferröi.

Among the special plants which I found here, there was a large tree of a *Cargota urens*; it was not of the common species. The racemes were very long, about two men's length between the lowest leaves, and were divided into small alternate brown sheaths. Most of the fruits were already ripe. They had a smooth, fleshy, blue skin and were as big as pigeon's eggs. The nut had a hard outside. The outside of the kernel was very hard and had dark brown veins, but the heart was very soft.

I obtained here two kinds of *Monandria*, which I had never seen before. One of them is in shape like the *Ingofeher* of Mr. Rumph, but it is not this kind. The oblong pointed cone-like shape is of a beautiful crimson red.

The second kind has its blossoms at the root, growing in a thick bundle; the lower lip, which is the biggest, is of the most beautiful carmine red colour, like the *Amaryllis*

formosissima. The edge is of a beautiful orange yellow, wavy and has sometimes the appearance of being slightly torn. I, described both these plants. People here eat both the blossom and the fruit, which I learned to my disadvantage, because out of four bundles of blossoms, two were eaten by the time we came home. To-day the four English ships lying in the harbour celebrated their king's birthday with many cannon shots.

5.—I was again in this island, and obtained a remarkable big species of *Tradescantia*, which I described. There were many other kinds in blossom, but they had no fruit; among them were two kinds of *Echites*.

I found a peculiar *Epidendrum* with blossoms and fruits, and have called it for the moment *Orchioideum*^a.

In the afternoon I went back to Tarnah, where we arrived late in the evening.

6.—I went out to botanize and to search for insects. I described a peculiar kind of small *Polygala*. I found a very curious *Monandria* which had an oblong narrow spike between the middle leaves, but, as there were only five open blossoms on three plants, I postponed the description.

I obtained a *Lacerta volans* to-day, which I prepared for drying.

7.—I went out to botanize and to search for insects. I obtained three kinds of *Epilendra* with blossoms, and described them. I also found a *Triandria*, with a superior tristyle flower, it cannot be classified among Mr. Linné's classes; the leaves resemble those of the *Vallisneria*.

A Lemur was brought to me to-day. It was of the size of a small cat; the head was round, the mouth black without whiskers. The tongue was broad at the end, rough on the surface, and smooth underneath. Underneath the tongue there was a small hinder tongue; it was lancet-shaped, had stiff straight fibres, was white, horny and much smaller than the real tongue; at the root of the upper tongue it was spike-shaped. The front teeth were all pointed; one of them on each side was longer in the upper jaw as well as in the lower one. It has three pairs of grinders at each side. The eyes are round; the iris is rust-coloured and projecting, the pupil is only small. Round the eyes there was a black ring of short hair.

a. *Aratochilus orchidous*.

The nails of the front feet were round and flat at the end; the hind feet had also the same kind of nails, only the hindmost toe had a pointed bent nail, which was rather long and black. The hind paws were longer and stronger than the front ones. The whole body was covered with soft, rust-coloured hair, which was white at the ends. The hair underneath was woolly and grey. From the forehead ran a dark brown line, ending gradually at the hindmost haunches. The tail ends abruptly and is quite short. The animal has a creeping walk and always bends the head.

It climbs, or better, creeps up, with great agility. When it is skinned the body looks long and thin.

8-9.—I went out botanize and to search for insects. I described a *Contorta* and a peculiar kind of *Epidendron*, with awl-shaped long leaves and a fruit which had almost the same shape as the leaves. Early this morning my boy chanced to come across the haunt of a big tiger, but the animal seeing himself between my boy and myself with my companions ran away from us in great haste.

10.—We had violent rain and a thunderstorm, which ceased in the afternoon; the air was hot and oppressive.

11.—I obtained a *Monandria*, very much like the *Globba*, which Mr. Rumph describes in his 6th part. I frequently found blossoms and fruits of the same and described it as minutely as possible among my monandrists, page. 16. The fruits are almost ball-shaped and as big as a blue plum; the surface is smooth, fleshy, and blood-red. Inside the fruit has three divisions; none of the fruits were ripe as yet. The blossoms are the smallest among the monandrists of Junk Ceylon, which I have described hitherto; they are not longer than the *Lanium album*, but much wider.

The blossoms and calix decay on the ovary, therefore the whole bundle of blossoms has always a decaying appearance, except when they are just in full bloom, or have not attained that stage yet.

12.—At breakfast I was treated to some rhinoceros hide; I tasted some of it for curiosity's sake, but there was little taste in it beside that of the manifold spices, which are used in its preparation. It gets quite soft by being boiled for a long time. It is brown and half transparent and has been cut into long

narrow strips, which have been soaked and boiled for a long time. The boiled hide is about one finger thick. I obtained a piece of raw hide on this occasion. The rhinoceros are said to visit this island from time to time.

In the afternoon I described a *Decandria* which has beautiful yellow blossoms and a peculiar kind of capsule. There are three star-shaped capsules, flat outside and convex inside, growing together in the shape of a pyramid. The number of stamens varies from nine to eleven, but generally they have ten. As it blooms in the rainy season, one finds several *Luxurirendes*.

I also described a peculiar kind of *Epidendrum*, which had only a few leaves growing on the ovary; there are two on each ovary; they have very short stalks and stand in a horizontal position. The blossoms are boat-shaped, growing on a thin tube of three quarters of an inch long, which has some small compressed fragile sheaths instead of a calix. The lower petal is the largest, and encloses all the others. At the obtuse ends two pointed lobes project a little; between them are two erect lancet-shaped pointed small lobes as high as the two others; they form the lower obtuse end and enclose the truncate nectary; the other end rises a little higher, is smaller, a little puffed up, or hollow and round. The end itself is round. At this end a fourth lobe grows which is covered a little by the larger ones; it descends with a bend, is club-shaped, and reaches with its wider end over the end of the truncate body, covers it, and is here stiffer, thicker and of an orange colour. It is moreover convex on the outside and therefore concave inside. The whole blossom consists of a thin milky white Corolla, and has much resemblance to an *Impatiens noli me tangere* not quite open, and is very much like it in size as well. In most of the *Epidendra* it is impossible to consider their blossoms to have several petals and surely they form more than one class. I have made a more minute description of it among my *Epidendra* under the name of *Epidendrum nudum*.

13.—I went to the ship to look after some of my shells and corals, and arrived there towards evening.

14-15.—I went to the big Pullu Salang, where I only found about a dozen of *Kreuz-Ostern*. On a *Cordia Sebastena* I found a splendid large *Papilio* of the genus *Danais*. It is white, the ends of the upper wings are of a splendid orange yellow; the under wings were white and had black edges; they are speckled at the

back with a kind of dirty yellow.

I have already often observed that the wings of the *Papilio* have the same colour as that of the blossoms on which they live. A few years ago I saw a very large *Papilio* sucking the honey of the *Justitia Echolium*; it had the same sea-green colour as the blossoms of the above-mentioned plant. In this instance a great part of the wings had the same colour as the *Cordia*, which is of a beautiful orange colour, and this circumstance made me search the next day for some more specimens, but I only caught six.

16.—I went quite early to Pullu Jambo to botanize and search for insects. I found a big tree, which had funnel-shaped blossoms, which were divided into five lobes at the mouth and were superior. It resembles the family of the *Gardenias*. The fruit is oblong, five-cornered, with irregularly large sides, but underneath a thin fleshy skin is a hard nutshell, which contains a large amount of small rather fleshy seeds, disposed like eggs in a nest; this I have also often observed to be the case in many kinds of wild growing *Gardenias* on the Coromandel coast.

In the afternoon I searched for molluscs, corals, and the like. I have already said before that among other corals, there are many fleshy corals on these shores. When the tide is very low they lie on the stones in a very limp condition, as the fleshy parts of the head lie in the anatomic balls, but as soon as the water rises again they revive and regain their habitual tone. I happened to touch one of these fleshy corals when the tide was high; it had a broad base, the edge was sharply bent and had many inter-sections: it was very fleshy and flesh-coloured; I must have touched it too hard and it broke. At the same moment innumerable animals came out of the cells and pores. These animals resembled *Neries* exactly; they also had the broad stripe underneath and a narrower one along the back, and ring-shaped stripes near the mouth. The mouth was surrounded by eight feathered arms, which were white in colour, while the rest of the body was coffee-brown. Under a half inch microscope they seemed to be about one inch long.

This chance discovery made me repeat this experiment and I tried to vary the manner of breaking the corals. I succeeded best when the water began to cover the coral. Those which had been covered by the sea-water and had dried out several times were rather entangled, but in the one case, which I men-

tioned before there can be no doubt, because the body and eight principal arms had hardly been covered. All the other stony corals had lost their animals, and this circumstance showed me that the animals are most lively in this season. It would be impossible to describe their different species and varieties in colour, and as my researches concerning them are not of very long standing, I postponed my description until I should have time to make closer observations.

In the evening I was fetched out one and a half mile, to the ship of Captain Welsch, which had just arrived on the coast of Sumatra. His child was not well. Although I lost some time in this way, the captain made up for it amply by presenting me with the beak of a bird, which he had received in Sumatra on the Padidir coast. Mr. Grew has described this beak before, but very incompletely. It really belongs to the *Buceros Rhinoceros*. It is not probable that this bird should live on carrion, because the beak is much too weak, it is more likely that the people here are right, and that he lives on fruit like the *Buceros nasutus*, which also lives here frequently. The horn on the beak resembles the shell of lobsters both in substance and colour. The Chinese believe a stone of wonderful virtues is contained in the beak of the *Buceros* and as they buy all the specimens they can get, these birds are very dear here.

18.—I went again to Pullu Jambo. I found a kind of *Amomum*; the blossoms were white and grew in bundles; the fruits were covered with fibre. The leaves are very much like those of the *Amomum* with the single large blossoms, but their fruits grow close to the root. I described the *Amomum*. Near the sea I found here many *Alcyonia*, which were of a pale fleshy colour and had many cylindrical branches. *Holothurians* were very frequently between the stones on the shore, and also the shiny, many-limbed, transparent *Holothurian*, which has a red stripe on either side along the back. The first kind I found during the first days of my return in the island of Cockren, and I have then already made the observation that if one tries to pick them up, everything that they contain in their bodies runs downwards so that they swell out at the lower part and augment in weight, and this causes them to break near the point where the finger touches them. The shiny skin burns the fingers, like that of so many other molluscs. As the weather was fine, I often had an

opportunity of counting their eight stretched-out arms distinctly; they are about two inches long, and between two or three lines thick and are a little compressed, at both edges and at the inner side they were covered with projecting warts; the colour was grey, less transparent than the rest of the body. Many of these molluscs were here hardly as thick as a thumb and about three feet long; those which I had seen before were much larger. Among the many fleshy kinds of corals there were some which were shell-like and cupular. Their projecting edge was curly, with many folds and bends; there were many threadlike arms at the edges which could be stretched out as far as an inch, and as the flood rose they made wave-like movements. The other part of the body was brown on the concave side and red on the outward side. At first I deemed this fleshy growth to be a kind of coral, but as soon as I touched it the arms were drawn in, and when I wanted to pull it out by force it crept deep into the ground, spiriting some water from its centre. I dug more than half a foot into the sand to find the root, but I had not yet dug deep enough. It was without doubt an *Actinia*, but a very large kind, the diameter of some being half a foot, not counting their arms. On some old coral remains polypus had fastened, they were all threadlike, close together, more than an inch long and coffee-brown; they also were soft and fleshy. It was impossible to count the number of their arms in the water, they could only be distinguished on account of their white ends; as soon as they were taken out of the water they formed a tangled mass.

The peculiar thing was that I did not find a single porcelain shell nor an *Ostrea isognomum* in any of these islands.

19.—I went with my captain again to the island Pullu Jambu. He had been ill and wanted to recreate himself. We had many armed people with us, and so I dared to penetrate deeper into the wood of this island, which in reality is only a peninsula. We wanted to go across the mountains, and after we had worked our way through the bamboo and rottan jungle, we came into a forest, which had very high trees and only little undergrowth. I found a shrub, about three or four feet high; male blossoms grew directly on the stem or the branches in horizontal position and they had sometimes not the slightest prominence on which they grew; they were funnel-shaped, the tubes were very thin and about three quarters of an inch long. The limbs spread and

were divided into five egg-shaped lobes, which were about three lines wide. The colour is a beautiful yellow, with blood-red stripes. The male parts are: a thick stamen, standing erect (*Adelphia*), and which first divides into three horizontal parts; at their ends are the anthers, also divided into two parts. The peculiarity of these blossoms is, that in half-grown blossoms the anthers seem to be single and so are only three in number, but when the blossoms have reached their perfection they split and then they form six anthers with very delicate furrows, their colour also being yellow. The female blossoms grow on a high stalk, which grows erect, somewhat compressed, striped and smooth, and has one or two alternate ovate leaflets, and at the end grow one or two, rarely more, female blossoms, which are almost sessile. They are distinguished from the male ones by the greater thickness of their tube; all the rest of the corolla is like that of the male ones. *Pavetta*, which was just in bloom, grew here also frequently, and some other shrubs unknown to me; most of them seemed to be *monandrias*, among them the splendid cone of the *Amonim* showed to perfection. I have described it among my *Monandria*, page 9. It has a carmine red colour, and is often eaten by the Siamese, who call it Kalch. I observed that the ripe seed, which is oblong, angular and black is often eaten by animals, who open the cone. The Siamese told me that the elephants too are very fond of this cone. I saw a peculiar kind of palm-tree, with prickly stem and stalks, which resembled the rotan very much. The leaves were simply pinnate apices undivided or confluent distichous; each pinna had a long rhomboidal shape, and was rather longer at the base and ended in a narrow point; this last observation, and that they are Sargentite on two sides, distinguish this plant from the kind of palm-tree which I described on my journey from Cockren to Tarnah, which was about the 26th March. Afterwards I saw many of the above described trees, but their stem was quite small, and they had neither blossoms nor fruits. We now reached the opposite shore, and saw many large trees of the already described *Gardenia*, the blossoms of which refreshed our invalid with their sweet smell. We turned back to the wood, and after a few steps my captain discovered some beautiful red blossoms, which grew in large quantities upon a very high tree. I soon saw that it belonged to a climbing plant, and my boy, who was

trained in climbing, soon brought down some blossoms and fruits. The calix had the same peculiarity as most of the *Bauhinias*, it split irregularly on the upper side. The corolla was like those of the *Bauhinia*, but there were three stamina, which spread out on the petals; the style was like that of the *Bauhinia*. The pods were threadlike, compressed, pointed, a little hairy, indented and woody. The leaves also were serrated at their ends. I was told that the natives of Pegu eat this pod, which has a bitter taste, and causes an indigestion if eaten in great quantity. Not far from these plants, which covered several trees, grew a large tree, of the *Sontarum syloster*, Rumph: Amb, Par 11, page 53, Tab. xi. It had no blossoms at this moment, and the fruits lay on the ground, part of their flesh having already decayed, they were of the size of a gunball and most of them were germinating where they lay. I made a small collection of the best among them.

We then came to some high trees, and saw many thread-like stalks which climbed along their stems. These stalks were three-cornered, about as thick as a quill, wood-like, dark brown and full of projecting prickles. Close to the bark they had short strong fibres with which they clung to the tree. The leaves only began to grow at a height of three or four fathoms, and by their form I could see that it was a kind of fern. After many vain attempts, I succeeded in detaching one of these stalks and managed to pull down a good amount of leaves and fruits. I discovered it to be an *Osmuda*, resembling the *Lonchites valubites*, Rumph, amb, p. vi, page 73, tab. 31. However I have seen all the varieties he mentions in Siam, Malacca, Sallangor, and here, and so I cannot consider this to be a variety as well. The stalks are half round, prickly, dark brown, and equal in size almost to the end; the inner side is flat; between the leaves it divides into a few branches. The leaves are distichous petiolate, simply pinnate, and three feet long. The pinna are alternate, bifarious, lanceolate, acute, spreading, shortly-lined, membranaceous. The fruit-bearing leaves have the same shape, and the dust almost covers most of the round leaflets entirely; some of them have at their base leaflets like the other leaves not covered with this dust.

At a little distance from here I found the *Pothos pinnate*; the leaves end obtusely, they are fleshy, and I rarely saw one un-

touched by the insects. The stalks or roots which climbed upon the trees had not those burning fibres, which Rumph mentions. I only found cones which had already fruits but no blossoms.

As we were descending the mountain I found a small shrub, about as high as a finger; the stems are woody and the blossoms grew in a corepub. The corolla was funnel-shaped, divided into five small pointed lobes; the mouth was bare, deeper, inside the tube there were five athera. The tyle was divided at the end; it just began to bloom and had no fruits yet.

About midday we turned back to our ship, and I tried to arrange my conquests as best I could.

In the afternoon I sent my boy and some of the Siamese to fetch me some beetles of which they had spoken. They said that this beetle builds its nest one foot deep in the ground, by preference in such places where the wild elephants have left their dung. In the evening they came back with fifteen beetles of a very large kind, which resemble the *Scaraboa actecn*. The Siamese wash these insects, fry them, and eat them with great appetite; they assured me that they had an excellent taste, which opinion my captain confirmed, who had himself eaten them, prepared in some other manner. I am convinced that they contain many particles of fat, and that they decay with the most deadly of smells. I am equally convinced, that they are eaten by monkeys and other quadrupeds, which fact I conclude from observing their dung.

The Siamese call these insects *Fhu-zi vel Tzuh-tzhi*.

The weather had continued dry for eight days, the air was cool, and we had east wind, circumstances which much favoured my researches.

20.—I went again to the large Pullu Lalang, to enrich the collection of my beautiful *Papilia*, which I found here on the Cordia, but I was not as lucky as I wished. The weather changed to-day and we had strong westerly winds with rain, and the beautiful *Papilions* flew so high, that it was not possible to catch any. So I continued to botanize and went across the forest to the other side of the island, where I found a bay far reaching into the land. There was very little water in this bay and as all was very quiet I saw many *Scolopaces Pheopi* and monkeys searching for food in the muddy ground, which contained many shells and small fishes.

The monkeys were specially delighted with the oysters, which they knew how to open very dexterously; on my arrival the whole society was frightened and fled away in all directions. Meanwhile I went on to botanize and found a great number of parasitic plants, more than I have ever seen together in so small a space. There were many kinds of *Epidendra*, among them one species which I have never seen before. They climbed with their roots to the very tops of the trees. The leaves came out of a compressed somewhat tessellate wrinkly green shiny bulb. The flower stalk grew out near the base on the edge of the bulb and this stalk as well as the outer pericarp were covered with a brown sort of wool. For the detailed description see: Lit. B. between pagina 52 and 53. *Liter. J. Epidendrum retusum* had fruits here. I also found here frequently another kind of *Epidendrum*, with egg-shaped wrinkly bulbs; it had no blossoms.

I also saw another plant, which I thought to be an *Epidendrum*; it was a climbing plant with white jointed thread-like stalks, which had opposite leaves without stalks; they were oblong, eggshaped, pointed, and had bloodred serrated cross-stripes; the rest was dark green. They did not have any milk when I broke them, and I looked in vain for blossoms.

Among the ferns I found a very large *Oteris*, with linear leaves, three to four feet long, growing together in large bundles; their pericarp seemed to grow almost on the edge of the leaves. I have seen this kind often before, but never so large and in such numbers together.

Among these I found three specimens of *Acrostichum cornutum*. *Acrostich: heterophyllum*, *Polypodium lanceolatum*, *piloseloides*, *comosum*, *Quercifolium*, *Asplenium Chinense*, *Caudatum*, *philippense*, *Osmunda Scandens*, *Ophioglossum pendulum*, *Blechnum Orientale*, *Blechnum Pteroides*, *aspleinum nidus*, *Salicifolium* and many more were here in great number. The creeping *Bromelia aborescens* Y. *Zeylon*, the common kind, the kind growing as high as a tree, the long broad prickly kind, from which the Indians make their best mats with which they cover their goods, and a kind of palm, grew here abundantly, but only the common kind had a male raceme and a large amount of fruits. The rain-showers continued and the wind grew more and more violent. I had to make a good German mile against the wind and the current with my small boat, therefore, I started on my way back.

I saw two quadrupeds lying on the top branch of a tree, one behind the other; I shot twice at them and so did one of my people, but in vain; they remained where they were, without even moving very much. I only reached the ship in the afternoon, on account of the strong wind.

In the evening I went to see the sick child of Captain Welsch, and I had the good luck to learn from him in what manner the Malacca dragons-blood is made. They boil the sap of the flower of the cane *Dsiernang Rotting*, which forms a dark substance when boiled; then they take three or four parts of Damar resin and pound it in their usual wooden pounders until it forms a fine powder: then they mix it with the equally pounded genuine sap of the dragon's blood, pour boiling water over all, form it into a kind of molass by stamping it well and take it out while it is still soft, putting in into proportionately sized little sacks, made of matting. Then the water is pressed out and the whole substance allowed to dry. This furnishes the best kind of dragon's blood. The inferior kind consists of inferior sap and a greater addition of Damar resin. He told me many things concerning the Damar, as he has been trading with it for a considerable time in Sumatra and the Malay coast. He told me that the clear fine Damar is often found among the common damar resin in Quedah, and that just now he had entered upon a special contract with a merchant living there, who who was to pick out a pikul for him, which he could sell in Bengal for a much higher price, as the commercial houses there use it instead of the powder of the *Laudracis*, to cover spots in the paper. He said that when quite fresh this Damar was greenish white and quite transparent like venetian glass. In the course of time however, and specially among the large amount of inferior Damar, it turned more and more yellow. He had experienced, much to his loss, that this Damar could not be dissolved with common oil, that it burns into hard lumps, and could not be lighted in the fire, at least only with great difficulty. At this occasion he showed me a piece, five ounces in weight, which was quite transparent and yellowish green.

He also said that according to his experience, the Chinese Damar was very much superior if used for ships, but I will not assert that he is quite right in his opinion that there was a difference from eight to ten parts to two parts of oil, and that the Chinese

one was much more liquid.

He told me moreover that on the coast of Padri, in Sumatra, gold was hewn from the steep mountains by means of small instruments, and that there were often medium sized grains to be found, rarer real nuggets. He showed me one nugget which was of the weight of eighteen Spanish Dollars. The mountain range where this gold was found was called Laboh, and lay about three days' journey inland. The people living near there were mostly uncivilised, and at times pay for opium with equal weights of gold.

21.—Early in the morning I made preparations to go to Tarnah in the afternoon, and then I went for a short time to Pullu Jambu. I lost my way a little and found a kind of grass climbing on the trees. The leaves and stem were so completely like those of the bamboo, that I first thought it to be this kind, specially as it also crept along on the ground and grew erect in other places. I did not see one among many hundreds bigger than my little finger. I also saw a *Panicum*, the blossoms of which however had all dropped, but eventually I found many ends of this plant hanging down from the trees. The stalk was joined and rough on the surface. Inside it was woody, and hollow in the middle. The joints were about one foot long, and near the end several branches grew out of the points; there were only a few leaves at the end of these branches.

I found another tree resembling the rotan, with a fascicle of fruits, the spadices of which were bright red. The fruits were oval, oblong, smooth, sessile and fleshy inside; they were of a beautiful blood red colour, and were twice as big as the ordinary sized quills. The fleshy part encloses the kernel with a layer of prickly stiff fibres, which were rather loose at the top part. The kernel consisted of an oblong nut, which was exactly like an nut when cut, and contained some red juice, which dyes the linen red when brought in contact with it. Soon after one of my people brought me the male blossom, which had the spathe; it was oblong, bicarinate, membranaceous, white, simple. The blossoms were sessile on the beautiful carmine-red spadix and consisted, like those of the Betelnut, of three semi-orbicular sepals. The corolla consisted of three oblong petals; this blossom was bright red in all its parts. The stamens of this blossom were not quite distinguishable because it was still

very small. The tree is well known by the natives here who call it *Gkottschoh*, and use these nuts sometimes instead of the ordinary Betel nuts.

I came to a path in a bamboo jungle, which evidently was a favourite resort of the elephants, and succeeded in climbing down again the steep shore, where I found some buds of a *monandria* hitherto unknown to me, but they were yet too young for any examination. I found here the female blossoms and fruit of a shrub of which I had only as yet found the male blossom. It was the shrub with the three leaves, and so I completed my description thereof. I went round the island and found a kind of large tree, which was frequented by several *Buoceros*, probably *piperacius*. The Siamese call this bird *Nock Nang*; it only lives on fruits and seldom flies low. The remarkable thing in this bird is that it makes a peculiar noise with its wings as it flies along. I think the chief cause of this is its having at the ends of the large feathers of the wings small points, standing apart from each other, with which they cut the air when flying and produce this rustling noise. I cannot decide whether there are other causes contributing to this noise, as I have only seen them flying along singly or three to five at a time, or rarer still, sitting on very high trees, and I have observed that their feet are very short and most of their plumage black, except at the beak, which is surrounded by a skyblue colour, but I cannot say whether they are feathers of this colour, or merely skin, and the description which the people here give is too uncertain. At my return I got an *Albuca* which I described, and the blossoms of a kind of fruit resembling the *Strychnos Nux-romica*. I looked about for fruits of the *Echites*, but all blossoms had dropped without leaving any ovary. The *Phylliea* however had many blossoms and fruits and also the *Erythroxylon*, which grew as a rather large tree. In the afternoon I went from the harbour to the shore, sad that the fine weather was passed, and that we were again threatened with storm and rain.

22.—I arranged my newly collected things and my other plants, which were almost decaying during the time that I had not been on the ship. The *Scarabei* had such a disagreeable smell, that I got a very strong headache; I only wished the ants had eaten the delicate fat, which is in such favour with the Siamese, but however often I offered them this Siamese delicacy they

would not touch it.

23-24.—The continual rain made it very difficult for me to preserve my collected treasures, which continued decaying. I described the above-mentioned *monandria*, which had leaves of beautiful red underneath, but had no fruits as yet; and also a shrub, which was a *monandrist* and had a very aromatic bark.

25.—I obtained a few insects. A beautiful bird with a blue beak had come here; it seemed to be a *Inuscicapa* and was of the size of a pigeon. I described a tree, which was a *Matthiola*.

26.—The atmosphere on land was rather unsafe for Europeans during the last days, on account of some quarrels between some English captains and the king; I was therefore called back to the ship. Before I left the land I botanized a little and found a very pretty small *Epidendrum*, which I described still to-day, page 52, lit N.

A Chinese merchant, living at Tarnah, told me that tin was also being found on the height of the mountains, because the violent rain washes the earth away and so uncovers the tin and sometimes even washes this down as well. The old women collect it, and bring it to the smelter, who renders them $\frac{4}{5}$ of what they have brought him, because the prevailing custom here is to give the smelter $\frac{1}{5}$ of whatever he smelts, which is the only payment for his trouble.

All the tin in Pullu Panjang had formerly been collected in this manner, and was not dug for as they do here, and there was enough tin there to furnish many people with an occupation. But Malay ships had often killed and robbed these people, so that in the end they had fled.

On the whole Malay coast people are said to collect the tin in this primitive way and not to dig for it as they do here.

27.—I looked at all the plants which I had lately collected, and found them, to my greatest grief, almost all decayed. The feeling on land was so dangerous, that I preferred to return to the ship, in order not to be exposed to any annoyance, or to the danger of being illtreated by the tyrannical government.

28.—I examined some of the infusory animals of the corals. The weather was rainy and it was cold in the evening, which began to be very bad for my health. During the earlier part of the day it was hot, and all my pores were blocked up.

30.—The weather was again a little better and I went on

shore in the afternoon and saw some branches of the big *Lagerstroemia* tree blossom; they grew too high for me. In a swampy place grew the *Lycopodium cernuum*; it was very high and had some filicibus, but I have not been able yet to find out their fructification. There were also some kinds of *Sictaminis*.

July 2.—I went again on shore and caught some *Papiliones*. I saw a shrub which had three leaves; the blossoms grew in a spica about one finger long, there were two fruits from each blossom; they were oblong, puffed up and as big as a pea.

5.—I spent this day in Captain Light's company, and we could dare to penetrate deeper into the wood, because we had many people with us who were armed with guns.

The first new discovery which I made was a small shrub, which grew like a little tree with only a few branches at the upper end; it might have been two yards high. The little stem and the branches were covered with a black, grey bark, and they were strewn here and there with orange-yellow blossoms, which had the shape and size of the *Primula*; they grew on a small peduncolo squamuloso, only about half an inch long. I could not make any description of it as yet, because the blossoms were all male ones; the female blossoms which I found were not perfect. The capsulas were tricoco and so resembled the *Fatophis*.

We went right across the island, which was covered with a dense forest, consisting of many very high trees; the ground was strewn over with their fruits and we gathered some of them. I found a kind of palm growing in great abundance on the other side of the shore; the stems were high and strong and resemble the *Borasso*. Most of the fruits had already fallen off. Those fruits which had still their fleshy parts were oval, and had the size of a pigeon's egg. The skin of the fruit was smooth and blue. The fleshy part brown, sharp and stringent in taste, and as thick as the back of a knife. The nut was less oval.

9.—We had had rain and storm during some days. I went out in the afternoon to examine the polyps more minutely than I had hitherto done. At this occasion I found some *Actimi*, which had been left behind in some hollows of the shore as the water fell. Their arms were stretched out, and they measured more than one foot in diameter. The arms were so closely

pressed together at their base that I believed the whole animal to be an *Asterias* from the distance. These arms were striped in many colours—white, red, yellow, and blue on a grey ground. I found several more, and tried to dig them out, but they sat more than one foot deep in the sand and clung to some stones, so that I only succeeded in unfastening two different kinds. The body of one of them is covered with a rather hard skin, which has the brightest red colour, and when the animal has drawn itself together it is two inches in diameter and is as long as a hand is wide; the skin of the other kind was grey and soft and it had half the size of the other. All others broke before I could unfasten them from the stones.

I could not make out the different species of corals on account of the rapid flood, but their little infusory animals were all hydra. The stretched body is brown and the arms are white and eight in number. These infusory animals clung to different small stones or pieces of wood, and they form large lumps in the sea, but as soon as either the stones or the wood was taken out of the water there was nothing to be discovered upon them than a yellow crust full of small warts. I saw a coloured *Doris*; the back was almost quite flat, the lower edge was projecting and wavy; the surface had fine scars, the size was one and half inch long by one inch wide. The whole body was black, only the wavy edge was white and had black stripes. I also saw the common Indian *Doris*, which I have so often found near Jaffnapatnam; both these species do not have the usual opening on their back. The infusory animals of the sea amaranth, *Madrepora Amaranthis*, had all stretched out their arms, which were of a splendid green on the upper side; underneath they were ash-grey. All these arms, which stand in a circle-shaped mouth, are very numerous and like fingers. I have seen them as long as half an inch and even one inch. This mouth in the disco consists of swollen grey lips with fine milk-white stripes; the thin body is underneath this mouth. There are as many different animals as there are little holes in every amarantho, which shows clearly that they cannot be counted among the Medusas, but much rather among the Actinia; all the different kinds of polyps, which live between the stones and were as thick as a finger and one inch long, belonged to this same kind.

I obtained several *Gorgonia*, the animals of which had come

out; they were hydra, their body was snowy white and had eight arms which spread out.

12.—The dreadful weather, combined with a feeling of weakness and a disinclination against any work, kept me in for a few days. As it seemed to be fine to day, I asked Captain Light to let me have a boat and a few men; we rowed to a part of the island which did not make it necessary for me to climb. I had already at different times seen a *Bauhinia* in this place; its stem is as thick as a hand, and it first climbs up the trees without forming any branches, only on reaching the top it divides itself into a great number of branches, which spread all over the tree. The bark is dark ashy-grey, the leaves are orbicular, a little divided or cut in front: they are bigger than those of any other kind of *Bauhinia*. The blossoms were a big *Panicula* and were in all their parts a perfect *Bauhinia*. The petals were like the *Iscorolocc*, bright red, but it had only three bending stamina, which were blood-red. The stylus was bent like that of the *Bauhinia*, the *Legumina* linear was thread-like, round, pointed and longer than a finger. One of my people, who had lived in Pegu for some years, told me that poor people there boil the silices and eat them; they have however always a bitter taste and remain hard even when they had been boiled in several fresh waters, therefore if eaten too often they cause a Dysentery or Mal de terre.

I went a few hundred steps up the mountain and found to my great astonishment two kinds of *Areca* trees. I had often given much money to the natives to procure me some parts of these trees, but they had always asserted that they only grew deep in the wilderness. There was a whole wood of them here, white ones as well as the red kind. At first I found the white kind; it grew as high as a man; the stem was single, thick, striped like that of all palms, without prickles; the bark was green. The crown was moderately large, the leaves pinnate, the leaflets linear, convex at the top, had three strong nerves; the ends were obtuse. The edges of the leaves were smooth and not sharp; the colour was light green. Many trees had fruits and the male spadix still hung down from them, dry and without blossom. All spadices consisted only of a few branches, five or six, seldom more. They divided at the base and not any further up, were strong and not quite a span long.

Many of the fruits of these white Areca nuts were quite small, others were almost ripe and began to turn white. They were egg-shaped, pointed at the outer end, smooth and shiny; the kernel contained some sap and enclosed a nut which had the size of a laurel. The calix, the corolla, and the stylus were like those of the areca nuts.

The second species grew thrice as high; the stem was as a strong hand, the leaves were like those of the other kind and had three nerves. A small young spadix had its spatha membranacea cymbi formis nivea hanging on it still; the spadix was blood-red, and consisted of few branches, which were about one foot in length. They grew underneath the crown, where a leaf had fallen off. The female ones had their spadices a little longer and on them grew some blood-red, oval, smooth fruits, having the size of a plum. From the nuts I judge that it must be an areca, because I found the same characteristics in all the new-found specimens; there was nothing remarkable about the stamina and stylus. The calyx and the corolla have been wrongly described by Mr. Linné. They all have the prickly fibrous substance enclosing the kernel.

I also saw here a peculiar kind of tree which resembled the Calamo Rotan. The stem grew in a slanting manner, and like that of all Rotans it was covered with prickles. It was about one and half man high. The leaves were simpliciter pinnate, and three feet long; their pinna were Rhomboidal, and grew with one side of the Rhombi on the common stalk. They were quite flat, striped with nerves, a little leathery and smooth. The point of the leaflets was lengthened, both edges running down were integerrima, the upper ones lacerodenta. They are eight inches long and four inches wide. I took some of them with me, and also some leaves from the Areca trees, but the negligence of my people and my present weak memory let me only keep a white Areca tree and a leaf of the Rotan, because I carried both in my own hand.

13.—I was seized with a violent bilious fever, combined with cold shivers and general weakness. This sinking of my strength was an even stronger proof of my illness than all external signs. I therefore took an emetic in the evening and I vomitted an unusual amount of gall. The day after I used Tart: emet. gr. uj. in Hij. dissolved in water. and continued taking this

during the two following days, repeating the emetic again in the evening and again vomiting a large quantity of gall. The violence of the illness was broken, but the total want of purging medicines prevented a perfect cure. Meanwhile my great weakness, loss of appetite, and a rapid decline, threatened to kill me. Therefore I resolved to go with Captain Scott's three-masted ship, which was bound for Malacca, my Captain readily made all arrangements for my passage, as he feared to have a corpse on his ship, while Captain Scott could easily make funeral arrangements at sea; and late in the evening of the 17th I went on board of Captain Scott's ship, called "Prince." We sailed still the very evening. The movement of the sea soon excited the marasmatic quietness of my blood, and the fever broke out with greater violence. I had no other means of cure, than frequent water-drinking.

23.—I went on deck for a little while in the morning; we passed a long-stretched island, called Pullu Trotto, which consists of steep mountains overgrown with trees, and only showing white spots in a few places. The stone must be weather-beaten. We were only one English mile far from it, and could distinguish everything very well through a Dolland telescope. I was told that no people live in this island on account of the many tigers having their resorts in it, but this tale was immediately contradicted by the other statement, that there were many wild boars and many stags living here at the same time.

However many people go to this island, both from the mainland, which is about two German miles far, and from Pullu Lada, which is only separated from it by a channel about half a German mile wide. People gather the Damar, which is found here in large quantities. If these people are obliged to sleep in the island they climb upon high trees. A *Diodia* was caught at midday, during the calm generally prevailing in the channel. The back was green, the stomach was white, quite smooth without Spina, only near the Ano there were some slightly projecting warts. It was about one span long, and had a very bad smell. I had exerted myself too much to-day by going on deck, and had to pay this with an attack of extreme weakness, followed by a critical fever.

24.—I was slightly better in the morning and could not bear to lie down any longer, although my weakness often made me

sink down. I got an *Aphrodita*, which is different from the *Aculeata*.

In the afternoon when I was alone, I tried to go down some steps about four yards long, but I fell down these steps and it was very lucky for me that someone just came to meet me, who prevented my breaking any bones at a wall near to me. However my shoulders and elbows were badly bruised. My usual fever was not as bad this evening, the pain from my fall had taken its place.

25.—We passed the high country of Pullu Lada, which is said to be very populated. The inhabitants live by agriculture, fishing, gathering bird's nests and *Holothuriis*, and at times they make hunting of men their business, whom they sell as slaves to the Dutch. There is rain or a thunderstorm almost every evening, on account of those high mountains, and so the island is very fertile. We happily left this channel in the evening.

26.—We arrived to-day in the harbour of Quedar, where the anchor was cast. Captain Scott went on shore for trading purposes. I felt worse and could not go about much, but had to lie down a good deal. The pain from my fall was very bad.

28.—Captain Scott came back on board and brought with him some tins and provisions, which can be bought here very cheaply. They consisted of pigs, ducks, birds, and chickens; he had bought them from a Chinese living here. The anchor was weighed in the forenoon still, and we left the harbour without taking any fresh supply of water. That which had been in barrels was consumed and we were now obliged to drink that from the cistern, which was very bad and had a horrible smell on account of many thousands of insects having been drowned in it and decaying slowly in the water. The water was passed through a filtering stone for cabin use. My right side, and specially my right arm, was paralysed, so that I could not lift the latter, and if I tried to do so with force I suffered terrible pains in all muscles. I abstained totally from drinking any water, because it was so very bad. I also felt some rheumatic pains in my left shoulder, which were very annoying, but I could at least move the arm with some effort as much as to make eating possible. My illness increased, as I had used all remedies, during our long journey, and for want of any purging medicines the illness assumed the character of an apoplectic slumber, with inclination

to bend the neck down very low, but I tried to fight down this desire for sleep as well as I could. A great longing for heating drink made me take several glasses of Madeira wine during the day, they were the only remedy I had. My food consisted in the middle of the day of chicken broth and rice, there was no Aromata on board, and in the evening I had some boiled Sago with Madeira poured over it, which looked and tasted equally bad on account of the bad water, but this was a case of eat or die.

A glass of Dutch beer drove away all paralysis for a few hours, and this circumstance convinced me that my pains were more marasmal or paralytical than rheumatical. The continual contrary south wind made our journey very slow, but Captain Scott, who used every possible advantage, succeeded in bringing us to the harbour of Sallangor on the

2nd of August.—We found there two other large English ships, which had arrived before us. Our captain went ashore directly; we were only two English miles distant from the land, and I sent for some better drinking water to one of the English ships. I obtained some the same evening, which was very welcome to me.

4.—I was refreshed with some excellent fruits, and found the interior watery part of the cocoanuts highly beneficial. I also obtained some purging remedy, which gave me considerable relief, so that I tried to get up a little, although I could lift nothing with the right, and very little with the left, hand; I could scarcely lift the spoon to my mouth.

5.—The captain sent among other things a great quantity of Stock Lack (varnish), which was particularly good and came from Pegu. The gum in many places was more than three inches thick on the little pieces of wood, where it had been heaped up by insects. The surface was rough, like much used Shagreen, and had not the same bright yellow colour as the artificial one from Hamburg. When one breaks it it looks almost like wax in a beehive, only the intercepting spaces are larger, and there is only one single layer. Each cell is linear; the sides are of undetermined outline, but rather inclined to form corners. In many of them there were still the dried up insects, and in some others from which the insects had gone there was some white woolly substance at the end, as is usually the case with the Chermes and Caccos. I picked out a few pieces, which I shall

send to Europe as specimens. An Armenian, Mon. Lathier, who had lived in Pegu for a number of years, and had devoted much attention to the insects and the making of this varnish, assured me on his word of honour, that he had often seen these insects building, specially on the bank of the river which flows to the capital Tavoy. According to his version he has seen many very small, unwinged ants run along the ground in thousands, and when they had arrived at the special place they had nodded their heads as if they were pressing something against the wood, whereupon they had come down again. When he contemplated the place where they had been he found a tiny spot. The most peculiar assurance he gave me is that the gum-varnish is quite green in the beginning, and looks like the stalks of garlic. When he took this green gum and rubbed it between his fingers he could press out a red sort of juice; the varnish itself was very elastic and soft.

An English captain, who trades yearly on this coast, says that he has not observed this, but he has seen that the inhabitants sprinkled the shrubs with honey in places where they stood very closely together in order to attract these little insects.

4.—There was a great quantity of *Sango Draconis*; it was white and had the appearance of flour. It was said to be produced in this shape by nature. There were some sacks a little torn, and I examined their contents. I found some fruits of the *Ca amo Rotang* which were oval, and contained the same kind of flour inside. I examined some others and some broken fruits; they all contained this flour, but it was of a darker colour in some of them; at the same time I found some small pieces of Pedicelli of the *Racemo*. I had been frequently told that it was taken from the fruits, and here I was convinced of the fact. It also forms an article for trade, and is as red as the Sappan wood, which they use for dying purposes in China.

5.—We got to-day some tin on board in small square pieces. The tin from Sallangor is considered superior to that of Junk Ceylon, but that in the kingdom of Rhombo is considered to be the best, and is paid with the highest price. There is still an inferior quality, that from (missing in M.S.).

6.—We got some water and provisions on board to-day, and soon after our captain also arrived, who commanded the anchors to be weighed instantly. We sailed towards the Straits of

Calang, and from thence to Malacca.

7.—Early this morning we were at the entrance to the Strait of Calang. This strait is peculiar, as it seems to be situated in the middle of a forest, as the low shores on either side, which are covered with water at high tide, are overgrown with high trees, which were mostly of the kind of *Rhizophoris* and *Granatus littoralis* Rumph *Aricenna*; on the shore grew also the kind of palm without stem called Nipa or Nipang by Rumph. I had found their fructification here for the first time where I went on shore on my journey to Siam. The Strait is generally only a gunshot wide and there was a strong echo which made the song of the birds resound agreeably. I saw here Pica and some Garuli, together with some monkeys, a special kind of Sciuri, with a rust-coloured stomach, also some pigeons, but I only saw them flying. This Strait forms many minor channels and as the water often covers a great part of the land it is very dangerous for everybody not knowing it very well. The length is about four miles, and the ships are only carried through by the high and low tides, which rush through this strait very rapidly. The wind can help very little, as the channel winds very much and is very narrow.

As soon as we had passed the strait the wind was contrary, and we only advanced very slowly along the Malay coast.

11.—At last the current carried us as far as Malacca in spite of the wind (for when the current was unfavourable, we cast our anchor), and with great trouble we managed to reach the harbour towards evening, and we sailed straight up to the town. At low tide the current flows from the Strait of Dragon towards the Bay of Bengal, and high tide brings back the water from the Bay of Bengal through the strait as far as the Strait of Dragon. This same direction of the current is visible as far as the narrow passage between the two island Rabbet et Canni; from there the current takes an opposite course towards the Chinese Sea.

As soon as I came on shore I went to the Governor v. Schilling, who gave me many varieties of — ore, which had been brought to him from Pera, and also many different kinds of dragon's blood, which he had grown himself, so that I had a complete collection of these two things from the Dutch governor; they deserve a better description than I can give of them here for want of space.

16.—I went with the Governour v. Sch. to the country house of one of the richest merchants in Malacca. On my way I saw the wild *Cardam*: and also *Apluda Mutica*. In a swamp grew a *Mimosa folovatis*, and in the ditches stood *Atriculoria*, *Schoenus aureus*, etc.

The two miles of this journey had made me so weak that I could neither sit nor lie down. Towards midday I recovered a little. The master of the estate told me that the women make everlasting flowers out of the marrow of the *Scœvola*. The young leaves are eaten by the Malays as remedy against indigestion, they have a very bitter taste.

20.—All these days I had to keep indoors and to take medicines. The lameness of my right hand and especially of the fingers hindered me very much in any examination of plants or in writing. I described a peculiar kind of *Buceros*, and also stuffed it. But I am not sure whether it is a new species, as I have not got the first volume of Tine's system.

28.—During all these days I was busy writing letters to Dr. Soländer, to whom I sent a short description of my journey; also to Professor Früs, and other good friends in Copenhagen. I sent all these letters, both those for Denmark and for England, with a ship passing here on its way to China.

30.—I made a minute description of the *Amono Zinziber*, *Amono Cardanom*, and another kind of *Monandrist*. It is astonishing how different all the existing description of *Monandrist* are from the reality, and that one has not observed the long cylindrical Nectarior.

Sept. 1.—I changed my quarters; in the former one there was too much noise, because many people went in and out.

In the afternoon I went to the garden of a Chinese captain living here. I found many flower pots and flat iron vessels containing many *Epidendron ensifolium*, which lately had ceased blossoming; three pots were covered with the *Oscalis corniculata*, and the *Hydrocotyle Americana*, which were agreeable to the eye on account of their star-shaped shiny leaves; they were also being cultivated on account of their medical virtues; the Malays call them Pangagar-China. There was a beautiful kind of dark red rose on very short and slender stems; they were planted both in pots and at the borders; the description can be found in my *Enchiridic*. *Chrysanthem indic*. grew in pots, and had remarkably

large blossoms. Two *Bromelias*, the leaves resembling those of the large Aloe, grew at the entrance of the garden; one of them had a beautiful wide band along the leaves, which was of a light yellow colour. *Ischora Coicinea* had orange coloured blossoms on one side and white ones on the other. They were a kind of (missing in M. S.) A kind of *Scitaminis* filled two large beds; it it was only cultivated on account of the medical virtues which it is said to possess. The leaves are like those of the *Curcuma*, the roots were only thin and yellow. The people said it had no blossoms, and that the fruit grew underneath the earth. The common Chinese rose grew here everywhere.

In beds along the walls grew a stiff kind of grass, which had narrow, dark green leaves; I was told, that it never had any blossoms, but can easily be transplanted by the roots.

3.—I obtained the permission to visit the high mountain of the fortress of Malacca. As I went up I saw, as I had already often down in other places, the *Polypodium*, which Burmann has drawn in three or four parts in his Fl. Zeyl. This plant undergoes great changes. At first it has single, oblong leaves; soon they divide on one side, and later on they divide into five or more pointed lobes. The green root is as thick as a quill and creeps along the wall; it has every now and then some rust-coloured thin dry scales on its surface.

When I had almost reached the summit I saw, lower down, some *Cassialata*, *Clerodendr. paniculat*, among them a kind of fern, which I held to be a *Tricpomenes odinth?*

The real avenue leading up the mountain is lined with two rows of trees, which are all *Pterocarp*. On the top of the mountain stands the real flag staff of the fortress, near it a massively built, beautiful church, which however is not used any longer because there has been a new one built at the foot of the mountain, close to the house of the governor, which is easier accessible than this one. The gravestones of the governors, commanders, and consuls are ornamented with such elaborate coats of arms that one might think those buried here to be members of the Nassan and Hanoverian families, though in reality most of them have been peasants or artisans in Europe, and their only merit was that they served as soldiers under some noble master.

I was taken to the governor's garden; the way thither wound through a dense shrubbery of *Conyza balsam*, *cassia oriculatis*,

and *Guillendia Bondus*. The real purpose which had brought me there was to find the different species of *Aries* in blossom, but I was not so lucky as to find any. Between the stones of the garden grew *Urtica Alienata*; the *Capsicum* with blue black stalks, leaves, and fruits, and some beautiful blossoms grew in abundance near the gate of the garden. The arrangement of the garden did not show any thing remarkable, although there was much opportunity to build beautiful terraces. A little hill was surrounded by a wall three feet high, and on this hill in a hedge grew the *Institia Coccinea*, which looked splendid with their profusion of beautiful orange-coloured blossoms. There were some Tuberoses here with seeds. The tree *Boa Cross Rumphii* grew here and had blossoms, but I only described the male ones.

5.—I went to the garden of an old Chinese woman, who kept several kinds of aromatic plants, which she had brought here from her former large garden after her husband's death. Among them was the Cardamom, a wild kind of *Zinziber*, two other kinds of the *Scytaminis*, one of them leaving lost all its blossoms, the fruits having the shape of a pear, and resembling a bell. The other kind resembled the young Bamboo in its growth, but the leaves were very aromatic. People told me that the blossoms grow near the root, but they are only transplanted from the root to form new plants. *Acmella* grew wild near a *Zugher* bush; the *Polypodium Phyllitis* grew abundantly on an old Sago tree; people took the leaves and put them between their clothes which were agreeably scented in this manner. In a Malay garden I found, in a wood of Mangastang trees, a very beautiful specimen of *Epidendron*, which had an ear at the point, and resembled the *Lycopadio* very much. I obtained the male and female blossoms of the *Strecca Ripa*. This tree is very useful on account of its wood, which is very hard and resembles that of the black palms. It is cut into very long pieces, which are two inches wide and three-quarters of an inch thick, and these pieces are sent to the coasts specially, where they are called Riper and are much used for building roofs.

The collection I obtained to day gave me plenty of occupation during the next day, because I dried, examined, and described the different specimens.

7.—The rain, which had fallen in the night and continued in the morning, prevented me from using the early hours: it

caused moreover much decay in the fields and also in my collection.

In the afternoon, I walked for about one German mile towards the north east of the town, and saw in a garden the coffee tree with fruits. I collected some of the less ripe ones for sowing purposes, some blossoms I kept for my collection. The way led continually past gardens, where the Chinese plant all sorts of vegetables; their beds were all long, raised, and about two feet wide, so that the water of the frequent rains could easily flow off. They did not observe any other rules in their gardening than those imposed by necessity. Their houses stood near the gardens and were built upon poles, but the cause of this way of building was not so much the water as the fear of wild beasts.

Their fences consisted only of thin pieces of wood, standing apart from each other.

The most frequent shrub here was *Melastonia letis*. I found the two kinds of European *Utricularia*, some kinds of new *Filicibus* which I took home to examine ere it grew dark.

8.—To-day I found in the garden of a Malay a small Monandrist, of the class of *Scitaminum*, which was in blossom. The plants grew in tufts with knotted twisted roots, and have long beard-like fibres at their base. The leaves lie on the ground, they have short stalks and are sheathed one into the other. Between these sheath-like stalks grow the blossoms in small bundles sessile near the root.

The blossoms have a tube of half an inch long, which reaches over the leaves; it is double at the top. The outer corolla is divided into three very narrow parts; the inner lobes stand flat and spread out; two of them are club-shaped and stand near together, the third is much wider, concave and much stiffer, specially towards the middle, it is again divided into four parts. The two parts at the side are small delicately obsolete serrated, and round at the ends. The middle one is divided down to the middle, the lobes are club-shaped, the incision is linear and the edge lightly serrated. At the base before the division it is yellow, the edges of the incision are purple at their base; all the rest is snowy white. The blossom has the size of a large pink. The detailed description is to be found among the Monandrists. It is cultivated in the gardens as a medical plant, and is said to bloom rarely. The root is quite white and has an aromatic taste and smell.

9.—To-day I described the Monandrist more in detail, after I had received some better specimens from the garden. They are kept for medical purposes. It is a pity that most of the Monandrists have no fruits now, so that it is not possible to classify them correctly. This kind has of all those I have seen the most spreading Petala, and I was in doubt whether or not to classify it among those which have the crown divided into four lobes; I have however not done it because they grew together a long way up like in an Ungue; the others hang directly at the tube and have almost a kind of Unguis.

10.—I described to-day a new species of the family of Phyllonthos. I have often found them in Siam, but never with such perfect leaves and fructification. The leaves are here used in medicines for children against any bronchial illness, because they have a sweet after-taste. The fruit has the shape of a pear, but only the size of a cherry, it is snowy white and has no taste, there is just a faint salt or acid flavour. They look very pretty with their blood-red lasting calyx.

12.—I went this morning along the southern coast to botanize and found several kinds of plants which I had not seen before. I found an *Epidendrum ensifer* amongst many hundreds, which had lost their blossoms. *Pterocarp: Dracc.* was still blooming.

In the garden of a Portuguese, where I wanted to examine a Sago-tree, I found a great quantity of *Ostea pleuronect*, which plant is often fetched out of the water at low tide just in this month. They are preserved like all the other *Osteas* and eaten like them; their animals are however very small and many of them are required for ore meal. I was told that one can only get them at two periods of the year, because at all other times they go down to deep parts of the sea.

After I had passed many gardens, I found a beautiful Monandrist at the foot of a mountain. The blossoms grew in a Strobilum, which was sessile at the root and which had a somewhat spreading edge at the end. It was as long as a hand is wide and half an inch in diameter and the spathes, which were in great number in this Strobilum, and were of different ages, were all of a beautiful red colour.

The stalks with the leaves were, like those of most of the monandrists, biforia, only the leaves were more leathery than

those of all others, and have dark stripes. This I have observed in no other species until now. I had often seen *Grevia Miccrocos*, but always without fruit; here was a pretty thick tree, which had both blossoms and fruits.

There were many Malay graves at the foot of the mountain. There is a superstition that whoever comes near a grave, or worse who steps upon it, will soon die, or at least will have some dangerous illness. I took the risk however, and gathered some fruits from a shrub, which was a *Monandrist*.

14.—During these two days I was very busy examining and describing my new plants. To-day I received four green pigeons, which I described; I stuffed a male and a female one. In the afternoon I botanized a little, and found a very rare *Epidendrum*, which had *folia biforia*, *sessilia compressa*, and a *Spica* at the end, which resembles that of the *Lycopodia* completely. I had to postpone the more minute description till the next day, because it had grown too late.

16.—I examined the water of a warm spring, which is situated near the sea, a few miles from Malacca. The water was already a few days old and contained no vestige of *fixed air* (*sic* in M. S.); nor did I find any iron; and there were fewer particles of salt than I have found in any other water. The only thing I could discover were a few alkali minerals. The smell had nothing peculiar either.

17.—I received from the place where the hot spring is said to be some pieces of black, white and red striped *Petrosilex*; in the middle was a wide white stripe, which seemed to consist of some quartz sand. Very likely it came from the mountain which the Dutch call *Ophir*.

From some place near here I received some specimens of white Porcelain clay. I tried it with my tongue, and found that it exercised a certain adhesion but did not effervesce. It was not heavy but very fine and does not form a very firm substance. I could not detect any glimmer or nitrogene parts, through a half inch microscope. During the night I put it in some fluid and the liquid did not change in liquidity and colour, neither did the clay. I could not make any examination in reference to fire. The clay can easily be shaped into balls and dries hard, but breaks when one rolls it. It stains the fingers very little.

19.—We had remarkably fine weather yesterday; it was

Sunday. An English ship arrived here yesterday; it is bound for China, but it is doubtful whether it will accomplish this journey because the change of the monsoon in the Chinese sea is so near.

The fruits of the *Cysto Malaccènsi*, which are called karamuntin here, were being sold in the streets; they have a sweetish-sour agreeable taste and are filled with many seeds. They are smaller than the common European plums and more eggshaped and preserve their calyx. The surface which is really red, looks white on account of a woolly substance covering it; the juice is red. It is considered an excellent remedy against dysentry and is given to the invalids to cure them of this illness.

20.—I botanized on the high hill, which lies a cannon-shot from the town in the south east, and which is generally called Bukit-China by the Malays, because the Chinese bury their dead here. It is higher than the Paulus mountain inside the fortress, is long stretched, and slopes off towards the south. It consists of red mountain mould and various porous red tufaceous stone. The mountain is quite bare now; formerly it was covered with shrubs, specially with *Melastoma listus Malaccènsis*, *Suffa-Radja Rumphii*, *Cassia alata*, etc; now there were only small plants, among them a beautiful *Polygala* with red or white blossoms, a new *Stedyotis Leonurus tartarica Teylonica*, *Cassia Thora*, etc. On the opposite side is a large swamp; in it I found many things interesting for botany. All five spec. of *Utriculariis* grew here often, and both my new plants, one of which I believed to be a *Gynandrist*. I found that they had only female blossoms at the top, and that the male ones grew lower down. The detailed description is in Lit. A. pag. 13.

Nepenthes Cissus, *Smilox*, *Cattukurus*, a kind of *Ophioryza* were specimens for my Malacca Chloris, with which I shall be busy during the following days.

23.—During the last few days I was very busy with the plants, which I found on the 20th. To-day I hired a man who was to show me a real shrub of the *Rais de Madre de Deus*. We went to the forest for this purpose, and found the first shrub half a mile from the town. It was a real *Gmelinia*; the leaves were large, orbicular and ended in a point. The upper side is somewhat rough, the lower side is woolly. The thorns

are as long as a finger and the fruits are quite round instead of being obverse ovate like those of the others. The man whose real profession it was to dig for the roots and to sell them, told me, that the further inland this root was dug, the more aromatic it was; he said one had to dig it out at least so far from the sea, that one could not hear the noise of the waves any more.

He further maintained that the root must be dug according to the compass, and that only those growing northward were good, the others had just the reverse effect.

The use of this root is very general amongst the Portuguese, although it has no taste and only a faint sweet odour. They specially use it against any kind of headache. They either grind it with a grater or with the skin of the ray; they then mix it with the urine of very small children, and with this mixture they rub their forehead and temples. They use it in the same manner against eruptions of the skin and against rheumatism. I have not heard that they use it for any internal purpose. The root is sometimes as thick as an arm and has a bark, which is white outside and brown on the inside and about as thick as the back of a knife; it is spicy, salt and very brittle. The woody part is fibrous, shiny, pretty hard, white-grey and resembles the birch-wood, only it is not as white. I for my part believe that the name of the root and the urine have more effect upon the old women, specially the Roman Catholic ones, than the root itself. This has had the effect that the root is often dug for here in Malacca and has been sent to Goa and other Roman Catholic places, but as this creed is rather in decline at this moment, the belief in this consecrated remedy is also in decline.

24.—At last this morning I got some small plants of the *Limones*, which Mr. Obeck describes in his voyage to China, pag. 129 in the German translation. He calls it Pompelnut, like the people of Java, but the Malays call it Limau Burroh, I first saw them in Sallangor being sold for washing purposes, as they have such agreeable odour, stronger than all the other kinds of Lemons. Their leaves are like those of orange trees: only the divisions are still deeper than those of the oranges and the smell of their leaves is much more agreeable.

I prepared myself for a journey to the Water islands,

which lie two German miles to the south of Malacca, and consist of several islands lying close together.

25.—At four o'clock in the morning I set out in a hired boat for the Water islands, and ere dawn we had almost made half the journey. At sun-rise we were just opposite Mr. de Wint's country-house, who has ordered some trees to be cut down, so that one has a good view of the principal building. The high mountains, which are called Ophir mountains by the Dutch, lay in the North-east, and were clearly distinguishable. They consisted of some lower and several high pointed mountain ranges. The second range seemed to be highest; the highest mountain was steep and looked as if it hung over the others, pointing northward, which circumstance is used by the Malays to know what direction they have to take.

The mountain is called in the Malay language (missing in M. S.)

At seven o'clock we came to a small island which lay foremost, having the lowest shores at the side nearest the Water islands, and here lay some debris of a ship lately foundered here. The low shore was quite overgrown with *Sacharum dandrum*; higher up were many kinds of Filicices, specially the *Polypodium distichum*, which Burm. has drawn in his Fl. Zeyl, which tried to out-rival the *Osmunda* as regards climbing. I saw many trees without blossoms or fruits which I had not seen before, and so I collected some parts of them. Strong continual rain made my way through the high grass very troublesome. I found many climbing plants, specially the *Cissus cordifolia*, *Smilax laurifolia*, the common large Glycine, which frequently entangled my feet. The grass was almost of a man's height.

I picked up a fruit, which resembled a blue plum, but it only consisted of a kernel and was not as large as this kind of plum generally is. The cliffs were covered with Epidendris, of which I had until now not had any blossoms. *Convolvulus Macrorhizon*, *Convolvulus pes Capro* were entwined in some shrubs, these being mostly Melastoma. Near the shore there were some Fuci of the kinds already known.

I then went to the large island which lies about a cannon shot distant from the smaller one. They are almost joined together by a long sandbank. We landed at the north ea

side, where the shore was low. Near the shore was a pond which had been surrounded by tufaceous stone.

The seashore here was overgrown with *Vite* and *Negundo* *Scorala*, *Pungu Hort malab* : *Hibisc liliac*; *Bromelia Arbor*; *Fl. Zegl.* some kinds of figs; *Guettorda*, etc. The more sandy parts were covered with *Apluda* *Cystus Malaccensis*; *Xyris an nov. Spec. Hedy-sarum Viscosum* and a new kind of *Scirpis*. In more shady parts grew the *Dracena ensifolia*; the *Fuirena* had fruits.

Eriocaulon quinque angulare grew two feet high. Here grew also *Nepenthes distillatoria*, several *Scirpi*, amongst them one resembling the *Corymbosa*, but the stalks and leaves climbing up the trees differed too much from the *Corymbosa*. The plant is a wonderful kind of *Contorta*, which has been amply provided by nature that it should not easily die. The real root is in the ground, but when the stalk has climbed a few feet, it clings to the tree by means of kidney-shaped leaf supports (*Blatscuitzen*) which cover some fibrous roots. The leaf supports themselves are concave, fleshy, and some are larger than a Spanish Dollar and though they grow alternate, they stand so close together that the edge of the one covers that of the next. This row of leaf supports extends sometimes for more than one foot. After this the thread-like round stalks divide into many long climbing and twisting branches, which at times hang down or cling to other plants in their reach, from where they continue to climb. Other branches ascend and twist round the branches of the trees. But in order to give them proper strength, nature has provided them with other means. Instead of the afore-mentioned leaf supports (*Fulcra*) the stalk in some parts has many small bladders growing close together; they are heart-shaped and of a somewhat leathery substance. Their surface is smooth or sometimes has small scars and yellow; inside they are blood-red, a little compressed, have sharp edges, hollow inside and puffed up so that the smaller ones can hold three ounces of water, the larger ones even more. At the base there is a large hole, larger than a quill is thick; the edges of this hole are compressed round and smooth, they slope inward like a funnel, but the end of this funnel widens, and bends slightly. Behind this funnel-shaped edge grow some of the principal roots, which send out many minor roots, these again subdividing into numerous hair-like fibres and forming quite a bundle of fibre. These

bladders grow as well on the real stalks of the plants as on the stalks of other plants quite closely together, so that the rain can flow into them and fill them. I have first seen this plant in Sallangor, but they had neither blossoms nor fruits, and those I saw there had only the one root in the ground, the branches were nourished by means of small bladders. Perhaps these are the little bladders filled with water which Burman refers to in his travelling description.

These plants here had both blossoms and seed. In some places I saw some seed on a rock, which the wind carried off towards midday. I climbed these rocks and succeeded in getting some ripe seed in a follicule; my opinion is that this plant together with two other form a new family, because the Inbus of their corolla is ball-shaped and puffed up, and the limbus is erect and does not widen; moreover they have a peculiar kind of Fulcra standing round the Corpus Truncatum, which is not to be found in any kind of Contortis; furthermore they have a *Stigma prominulum* in *Disco opicis corporis truncati*. I have dedicated this plant to Professor Friis, because I think he has the greatest right to any new discovered specimen of this class, on account of his little book, which treats the Contortis so much in detail.

A new kind of Lauro, which I had seen in Junk Ceylon, I found here growing between the cliffs, only the stalks were not of the same bright orange colour. At low tide I found again the feathery Fucum, which I had already discovered near Ceylon. *Utra paronis*, *Corallina opuntia* as well as *parasitica* and *bubosa*, stood here in the muddy soil but not in such abundance as in Junk Ceylon. I also found here a *Spongia bobbosa*, *erecta orbiculato Blana margine acuto, viridis*. It is hardly thicker than the back of a knife and the largest have hardly an inch in diameter: rarely they consist of two such leaflets. I often found them near Junk Ceylon formerly.

The town was at a good distance; the weather was changeable, because the rainy season had begun, and all these circumstances, combined with the fear of robbers made me return, although we had weapons with us. The robbers, who come from one of the neighbouring Malay islands, killed and robbed some Chinese a short time ago.

We arrived in town at 8 o'clock.

On our way we passed a place which the crew, who were

Roman Catholics, would not approach. It was the grave of some Moorish Saint, who was said to have stood here with one foot, while he placed the other on a cape which lies at some distance towards the north-west. It is strange that the Roman Catholic Christians have more fear of certain places than the Malays, who in spite of all the errors and superstitions went to this Mahometan grave without fear.

Coriandrum arboreum.

A Happea.

A very beautiful climbing plant resembling the Cassia, without fruits and blossoms.

The wonderful plant, the large root of which resembles a cat in shape; vide figura in Rumph., Tom 6., pag. 120., Tab. 55, F. 2.

Also the *Nidun germinans* of Rumph; the former had no blossoms, but many minor Bulbi, which I broke off and took to Madras quite fresh still, and they continued to be so till the end of the following year.

The second kind I have already described in Junk Ceylon; it belongs to the 4th class of Mr. v. Linn, has *Flor; rupèri*, *Corolla Hypocrateprisormes alba*, hardly bigger than *Oldeul. Umlullata*. The fruit is an oblong, smooth, orange-coloured berry, having double the size of a grain of wheat. Two oblong seeds, pointed at the ends, lie in the juice in very little fleshy substance. I have moreover described them in detail. They seem to me to belong to a new family.

Vid. Rumph; Amboin. P. vi., pag. 120., Tab. 55, Fig. 1.

SECOND PART OF Vol. II.

Third Continuation of my Journey to Siam.

MALACCA.

Sept. 28.—The previous days I had busied myself in classifying the plants and in making a description of them. There was one tree of medium size; it had branches which were almost straight, and they had no leaves except at the end of the small twigs, branching off from the larger branches. There were many leaves growing close together, having no stalks. It belonged to *Polyadelphia pentajguia*. I did not obtain any ripe fruits, although the tree grew here very commonly. The blossoms resembled those of the *Cystis*, were pretty large and rose-coloured. There was another peculiar tree; it was about the high of four men and only as thick as the arm; it has no branches, and the stem was covered with a bark with many scars. The corolla showed that it belonged to the *Umbelliferae*. The seed is round, ball-shaped, crowned, and as big as a nut. I placed it among the Coriander family, although this will hardly prove correct.

There were some others which I have either mentioned in my description or in the definition; some others I could not decide upon and deferred their classification till some other time. The big Filix does not seem to be anything else but a *Pteris aquilina*, it was sometimes more than the height of a man.

The kind of stone was granite, intermixed with some white and black mica, and some felspar, there was no trace of any other kinds to be seen wherever I went. A little more inland I found some sand of a quartz-like nature.

29.—To day I obtained at last good ripe seed from the plant of the Gambiers. The pericarp remains closed at both ends, and only splits in the middle at both sides to let the seed out. The seed itself is very small, flat, oblong and winged at both ends, and so it seems to be a *Cinchona*. A third kind I have as yet undecided, although the blossoms have in all details the same character, even as far as the leaves are concerned; only they are

cut and have stipula which are winged, bent, and pressed together like the *Hugonia Mystox*, but the young fruits were perfectly oval, although crowned like that species, but they all were also pear-shaped.

To-day all the upper classes prepared for a feast given by the Governor in honour of the now ruling Dutch Governor General of the Indies. His appointment had just been brought by a ship coming from Holland and this arrival was celebrated with many gun shots from the ramparts as well as from the ships of all the different nations which lay in the harbour. All the captains of English ships showed their respect for the Dutch nation, and fired their guns voluntarily; the number of shots varied according to the size and importance of the ship.

30.—The festival which had begun last night continued till early morning. I had the honour to be among the guests, and can only admire the wonderful order which was kept up throughout. This is the more to be admired as there are often excesses committed by hasty natures on such occasions, when there is a superfluity of good things. But the presence of the Governor sufficed to keep everything and every one in order.

Now, after the full-moon, strong rains have begun to fall, and I fear that my newly-gathered specimens of Malacca flowers will be spoilt. I shall not be able to prevent it if the present weather continues.

Oct. 1.—I sent some people to fetch me some *Fucus kali* from the red island in the harbour. Late in the evening they brought me very little of it, and asked to be paid with three Spanish Matten. The people here, who have so seldom opportunity of any extra earnings, always charge disproportionately high prices for any service which is different from their daily occupation, and this is the reason why one always hesitates to engage other people for such occasions and prefers to do everything oneself.

This *Fucus* is greedily eaten by the Malays in its natural condition. The Chinese put the plant on their tiled roofs and let it be bleached by the sun, and the more rain falls during the night the more thoroughly the plant is bleached. When it has turned quite white they let it dry and keep it in this state. They also make a refreshing jelly of it in the following manner:

a. Agar-agar.

They take a good handful of it and wash it in water, so that as much dirt as possible is removed; then they boil it in a proportionate amount of water, until it is quite dissolved, which process takes several hours, the vessel always being covered. When it is quite dissolved they add so much sugar as is necessary to give it the nature of jelly. Some add some spice besides, as pieces of cinnamon or lemon peel. This jelly is also made of other kinds of Fuci as of the *Fucus Mussoides*. I had the misfortune to obtain very little of this plant for a great deal of money, and moreover this little found great favour with the Malay slaves, who feasted on it.

4.—I went to the gardens of Mr. Clas de Vents; they lie almost immediately under the walls of the fortress.

I found a peculiar kind of Areca tree here; the natives attach a special superstition to its fruits, because they believe that they cannot be hurt by anyone when they carry one of these nuts upon them. To my great annoyance the tree was not yet full grown, and therefore it had neither blossom nor fruit. I was told that the fruit is a little bigger than that of the common Areca trees. The single leaves were not folded, but quite flat; they all ended in a rounded point and were much narrower than those of these kinds of palms generally are; they had three nerves. The colour of the leaves was yellow-green, as that of the common kind. This is the third kind of Areca tree with three-nerved leaves which I have seen on my journey. The tree really does not grow in these parts as a rule, but it was brought over from the Bornese islands as a rare specimen. The Malays call it Pinang-Pennardar^b (Arecca Olevacca). A Malay told me that there was another species, which according to his belief had much greater power still.

The front part of the garden was full of all sorts of fruit-bearing trees, as Areca, Cocos, Mangos, Jambo, Cynomorium, Cauliflorum, Mangostangs, etc. Behind this garden there was a kitchen garden and then followed yet another garden which beside Coco and other trees, contained several medical plants. Among these were a great quantity belonging to the family of Mr. Linné's *Scitamina*; they were: *Cardamum Curcuma*, a specially big species of the latter, *Zinziber vulgaris*, and *Zinziber Spurium*. One specimen of this class was very peculiar. It was taller than

b. Prob Pinang Penawar *Actinorrhysis Calapparia*.

a man; the stalks were single and had leaves which did not stand more than three inches apart; they were spreading, oblong, and pointed, of the same character as those that all these plants have. Near the end the stalks were bent in a spiral and bore a spike which was as thick as a fist and about a span long. The blossoms grew close together and formed nine regular rows, being separated by deep furrows, which were due to the fact that the calyx was thinner at the end; these furrows terminated in a spiral. The colour of the calyx was blood-red, smooth, and shiny, and looked very pretty. The blossom was big. I only found one on every spike which was in full bloom; they are bell-shaped, opening wider at the end and having an irregularly serrated edge. At the back it splits as far as the tube near the ovary, and the left folds over the right, and so gives the appearance of a paper bag, but in the calyx they open again wide over the back of the stamen and join the outer corolla. This corolla which I have first described is only the inner one, but it shows more on account of its size. The outer corolla consists of three equal lancet-shaped parts; they are pressed to the inner one, pointed, and have smooth edges. They are beautifully white, smooth, fleshy, and shorter than the inner ones. There is still to be added that the shorter corolla curves a little, so that it stands quite horizontal, and has the appearance of a convolvulus blossom. The detailed description is among the description of the Monandristis.^c

I obtained many specimens of all these plants to dry and describe, and also some roots for transplanting.

5.—During the whole morning we had a strong storm, so that the lightning seemed to come from all directions and there were also some heavy showers of rain. I examined my yesterday's conquests, and put them as much as possible into proper order; but the plants dried very slowly in this rainy weather. For a few weeks there has been continual rain, either in the daytime or very strong showers during the night. At midday it is very hot, and the mornings and evenings are cool. This has great influence on people's health, many of them feel ill by the constant change of temperature. Some of them had great pain in their feet combined with fever, others suffered with dysentery.

This atmosphere also affects the plants which I meant to dry;

c. Evidently *Costus speciosus*.

it makes them decay and makes spots on them, although I took infinite pains to keep them locked up during the damp weather.

7.—In these days I obtained a *Didymia* of the second order, which by the natives is used against leprosy, an illness frequently occurring here, specially among the poorer people. One sees them at times begging in the streets with bent swollen fingers; at times their fingers have even quite fallen off.

The government here has a hospital for these people further inland, but I could not learn what progress the doctors are making there. The use of this remedy was unknown to the man who had brought me the plant, as only the negroes know of it. I made a botanical description of it. The flower calyx has only four leaves; the two outer ones are connate heart-shaped and big; the inner leaves are quite narrow, bent back, and small. The blossoms resemble the *Columna* (ringars).

The capsula is compressed, round, and resembles the *Rhinanthus*. What is more remarkable in this plant is that the anthers are attached to the longest stamens and run down to the tube for an equal distance. They are ball-shaped and produce a sort of yellow dust. The shorter stamina grow in a half circle at the lower part of the blossom, and afterwards also run down in the tube. At the end they are connate and the anther form a kind of cross or an English \times , but so that they separate in the middle. They are white with a blueish tint and the pollen has the same colour. The leaves have some resemblance with the *Corchoris*; they are light-green and veined. The taste is sharp and stringent; the effect is diuretic.

8.—I obtained some new plants, among them a *Psychotria*, with partly sweet, partly ill-smelling blossoms, of which I made a short description. The difference of the *Kaldeer* which Mr. Rheede in the *Hortus Malabaricus* p. 2, tab 1-2, calls *kadi*, drew my attention to this kind of palm. Mr. Linné has in his *Flora Zeylonica* placed them with the *Bromeliæ* on account of the the-different anthers, but they are very different from them. The ordinary kinds, which are very common here, and are those which Mr. Rheede has drawn, belong, according to my observation, to the *Dis* plants, and only form a variety.^d

I found quite a different species in Junk Ceylon, when I wandered over the mountain. It climbed on the highest trees;

^d He is here speaking of *Pandans*.

the stem was not much thicker than a thumb and had also raised parts in ring-shape like the common kinds. The leaves grew in bundles growing far from the next; they are attached to the stem and grow upwards. I only found fruits which were almost ball-shaped; the female blossom was prickly. To-day I got some fruits of another kind; they grew on a stalk, which was one foot long and as thick as a finger, it curved, was smooth, and woody; near the end there are four or five round, pointed, long, and woody styles, close together. The fruits are prickly, blood-red, and of the size of a full-grown apple. The fruits are sessile, alternate and do not grow close together. The stigma grows at the side of the styles and is a long slit. I could not obtain the male blossoms yet. But as I had some male blossoms of the first species, one of them nearly always being in bloom, but generally only one at a time, I described that. There are indeed many varieties; the bracts of the one smell deliciously, and the Portuguese and Chinese put the blossom among their clothes; while the anthers have a somewhat sickening smell and produce a great amount of white dust.

A second kind does not smell at all, therefore the Malays call this kind by a different name. I do not know the fruit of the unscented one; the leaves are only slightly different in the two kinds.

There is another kind here, treasured by the Chinese on account of the lovely smell of its leaves. This is specially strong when one cuts the leaves into strips and dries them; the scent then surpasses that of the bracts of the first-mentioned kind. The stem is exactly like that of the other, but the leaves, though sword-shaped, are almost quite flat; it has no prickles, either on the edges nor at the back, but everything is smooth and much more delicate. The point of the leaves is quite short. There is a general idea prevailing that it never has blossoms in the gardens, but that it has both blossoms and fruits in the jungles, but it has no smell there; this gives rise to the belief that there must be a different species still. I have already mentioned before that I have seen such a little tree in Kar Nicquebar, and that it had no prickles. The Malays call it Pandang.

12.—The frequent rain, which falls now almost daily, hindered me from making any botanical excursion. I got however some *Epidendra* of a tree, the front part of which was

projecting and looked like the point of a shoe; upon it grew an anther which bent back and yet preserved the obtuse part of the nectary; they were rather large and yet as long as they were fresh I could not perceive any pollen. I sent my people in vain searches for the male blossom of the species of Kaldeer which I had seen lately; I saw them often enough from a distance in deep swamps. Their crown forms a bundle as thick as the arm; the leaves stand erect, are long and sword-shaped, with very long points; their colour deteriorates into blue-green. I got many blossoms of the *Amomum Scyphifolium* instead, very good specimens, and a kind of Languash, which grows in the water. It has black pears, which contain five three-cornered grains, being three times as large as the common Cardamons. My people also brought me some kinds of moss, among them the *Hypnum Bryoides*, the *Jungermania platyphylla*. Also some leaves they brought, but as they had not taken any fruits with them as well, I could not decide to what plants they belonged.

13.—The illness prevailing here began to kill many of the Coromandalians living here, who are partly Mahometans, partly heathens. The most general illness is dysentery, which begins with pain in the knees, fever, and sometimes loss of blood. The common native physicians are so unconscious, that they give the people powdered Mangostang bark, or they take peels of unripe pomegranates, roast these with some other ingredients which they make a secret of (in some cases I know that they added alum), and this mixture was given to the invalids. Some healthy strong natures are cured by it, as I had the opportunity of seeing in the case of two boys in the same house with me. They were cured after three or four days. But with weak natures it generally has sad consequences, the least of them being that they have to suffer from a general hardening of the digestive organs for several months. But I have seen other cases that the invalids died suddenly from inflammation of their bowels.

There is another illness, frequently occurring among the European soldiers here; it begins with rheumatic pains in all extremities, which pains sometimes spread all over the body. But the surgeon, who by the way is a very clever man, told me that this illness could be cured by using remedies favouring perspiration, as relaxing salts, and that there were never any

fatal consequences attached to this illness.

The rain which fell during the night was so strong that it seemed as if we were to have had a general flood. After 8 o'clock this morning the weather was fine, but cool; we scarcely had sixteen degrees Réaumur.

15.—I went into the jungle after botanical researches. The swamps were full of water on account of the heavy rainfall yesterday, and although I saw many beautiful blossoms from a distance, I could not reach them. I therefore remained in the mountainous region, and was amply rewarded, as I found many kinds of trees and shrubs and obtained some of their blossoms. Among them was a new *Phyllanthus*. It is an erect *aufstiegender* plant, with two stamens and resembling the *Chionanthus*. I found an *Eythroxylon* which I had frequently seen in Ceylon, a *Hamelia*, and a *Morinda* with four stamens, which resembled the Ragac, as it is partly erect and partly creeping. Moreover I found a new kind of plant with beautiful light green leaves and white blossoms; it grew in the wood and belonged to the Polygamia. There were many other plants besides which enriched my Flora Malaccensis.

16.—After I had classified the plants I found yesterday, I accompanied my Malay servant in the afternoon, who went out shooting and shot for me some flying lizards with a blow pipe a few days ago. At the same time I wanted to see the way in which agriculture was handled in these parts. About a quarter of a mile from the town I saw the first lizards with spread wings high up in a coco tree in a Malay garden. They were of the same colour as the stem of the coco tree. At the first shot, which hit the branches near them, they began to nod their heads, and then they put out a keel of bone—this grows on a skin which is flexible; at both sides of the head there is a shorter thinner rib, (Ribbe in M.S.) to which this skin is fastened. The animals continued to put this bone out repeatedly; it is lemon-coloured. After a short while they puffed themselves up and at last they flew to the next tree, which was about ten feet distant. The wings consist of a thin skin, which is black-grey, and has round red spots on the upper side; underneath it is blue and has some long black spots. This skin is intersected by six ribs, which almost reach to the edge, and both wings put together almost form the shape of a heart. As they nodded their heads they uttered a faint squeak, almost like that of the

house lizard. They live on ants, which frequently creep up the coco-trees after the honey of their blossoms. Most of these ants were of the kind which have a heart-shaped head, which is at the same time flat round and shiny. The back has two pairs of prickles which stand erect, the front pair being the highest. There is yet a third pair of prickles growing in the middle of the body, which are the smallest. The whole body is black as far as the root of their back body, the feet are brown. The animal is of medium size, but may be reckoned among the ants.

The lizards changed their colour like chameleons and some other kinds of lizards. As I was dressed in black, they turned black in my hand, and blue in the hand of my servant, whose clothes were blue, some, which had been wrapped in a red pocket handkerchief, turned red. The colour, as far as one could see, came on gradually, but I want to see whether, with the help of the microscope, I can make any further discoveries.

17.—After divine service I went to some gardens and looked at the Areca tree idolised here. It had only some very young fruits and some which were quite ripe. The former had no real style, but the stigma was divided into three three-cornered parts, which were egg-shaped, woody, black-brown and easily recognised. The ripe fruit is a little larger than the common nut and those who eat it will find a particularly agreeable taste in it. I split one, and could not find any remarkable difference from other Areca nuts, only it seemed to be speckled with a faint red.

There were no male blossoms at present, but the two large spadices were almost on the point of bursting. In shape and size they resembled the common Areca spadices. The stems are also alike only the leaves are quite pointed. I was told that many of these Areca trees grow in the island Pullu Dinding.

In the evening I prepared for journey up stream. Mr. Clas de Vent had invited me to go by boat to one of his country houses lying some miles inland.

18.—Before four o'clock this morning I was ready for my journey, and we started shortly after. The weather was not favourable on account of the continual rain. The stream moreover made so many bends, and rendered our progress very slow; first the stream was very broad, but then it grew narrow on account of the waterplants growing in it; at times it was so

narrow that we could not use our cars on either side. The plants which had the longest roots underneath the water were the kaldeer with the brilliant red, prickly fruits, the points of which fall off like an apercu!um. Their roots went down as deep as two fathoms, and to them stuck some kinds of grass, as *Oryza arivum*, *Tizania*, etc. We passed the place where the beautiful white clay is found; the water was very high, and so the shore formed by the clay was only half a foot high. The Chinese export this clay to Java and China, and pay the proprietor, who is a Malay, a certain amount for each pikul.

In Batavia this clay is said to be used for forming face masks, but I could not learn in what way they use it in China.

After we had passed many narrow places, we had at last a wider stretch of water though it was overgrown with a high kind of grass which was a *Scirpus*. The *Involucre* was two leaved spreading with a three-angled point and the flowers crowded in panciles, and further in the stream everything was covered with *Melalenca Leucadendron* which is here used as agricultural wood, the transplanting of which is managed in the following manner.

In the dry months, which according to the opinion prevailing here are from January to the end of March (though it rains at least once a week), they hew down the full-grown trees and cut off the branches bearing the seed; they let these dry, together with other shrubs and grasses, and then set fire to them and let them all burn down; it is said, that this burning makes the *Melalenca* grow more luxuriantly. One could distinctly see the trace of fire on some half-grown trees by the black bark. It is certain that the seeds, roots, trees, etc., can stand fire in India. I have had a proof thereof in the Palliattie mountains, where a special kind of *Euphorbia*, with a bulby root, a beautiful *Ba'eria*, the trees of the *Myrobalanus Citrinus* and the *Santalum rubrum*, had been exposed to the same treatment, as the bark showed still traces of burned coal.

At last, at ten o'clock, we arrived and I went immediatly into the jungle, where I found many new kinds and species, which it will take me some time to classify.

Specially I found a kind of palm with simple feathered-leaves; it had no stem, and the stalks of the leaves were very prickly. To my annoyance, I could not detect any male blossoms. The

young fruits grew in a spreading panicle, which much resembled the Elate, but the calices, which stood at the first partition, were peculiar; they were obverse ovate, about a hand in width and almost one span long. I also found another kind of palm, equally stemless with no leaves, fitting one into the other at the root; between them grows the fruit-bearing stalk, about two feet high, which has a few leaves sheathed one into the other. It has an erect panicle, closely pressed together and obtuse at the end, which was not as thick as a man. Upon it grew the male and hermaphroditic blossoms in great quantity. The fruit has the shape of a European pear; the peel is scaly, very hard, and woodlike on the inside. The kernel is a short cone, broad at the base, and pointed at the end; it has deep furrows, and consists of a blueish white horny substance.*

I also discovered a monandrian by the smell, because if one touches these plants in passing they fill the air with an odour of clover. The leaves are oblong like those of most of the *Scitamina*, but their surface is more shiny than that of any others. All along the edges the leaves are lined with fine gold shiny fibre, which fact distinguishes them from others. The blossoms have a spike like a kind of cone, which grows at the side of the root; it is hardly as long as the width of a hand and as thick as a finger, being thinner at both ends. However the resemblance which this plant has with the *Amomo Scyplieform*, which I have mentioned and described, is great. The blossoms are only little raised above the ground, and almost the whole spike grows underneath the soil. The blossom of this specimen was dark red; that of the former is very light red. This one has a very wide open labiate corolla, and therefore deserves the name of *Leonurus*.

As the blossoms are fleshy, they decay after the two or three days of their bloom, and therefore the ear or cone is dirty and sticky when one picks it up. After I had wandered about in the deepest forest and come across the fresh track of an elephant, I hurried back to my host, who offered me excellent refreshments, and about 5 o'clock we started on our journey back, and arrived at 8 o'clock in the evening.

22.—All these days I was busy classifying my lately-found plants, among which I found much interesting matter for descrip-

* Probably Bertam. *Enquissona tristis*.

tion. As the weather was so beautiful, it tempted me to undertake another botanical excursion in the afternoon. I intended to examine three kinds of *Utricularias* thoroughly, and I brought home six different kinds, in order to compare them the better. They grew nearly all in the swamp at a little distance from each other.

23.—My *Utricularia*, which I brought home yesterday evening, were all in bloom this morning, because I had put them into water. I found that the large *Utricularia* was a variety of Rivins, which Mr. Arch Linné mentions in his Spec. Plant. The lower petal of these Malay specimens is much wider than any I have ever seen before, and is of a bright yellow colour. The other three, of which I spoke already yesterday, were new species. Unless the description of Osbeck is incorrect, the yellow blossom was bifid. The other two kinds were the *Utricularia Coerulea* and the *Utr. Minor*.^a

I also described a shrub, which I called Magnolia, to which plant it bears much resemblance. I found it often here in bloom, but could not obtain any fruits.

24.—In the afternoon, after divine service, I went out with an English man, a Mr. Hay, who is here on account of his health. We went out to see the tombs of the Chinese, specially that of the present chief of the Chinese living here. The tomb is being built on a mountain in front of the fortress on the southern side. The different partitions of the tomb were only as yet indicated by ditches; when finished it will occupy a large space.

My botanical treasure I found was an Indigo, which grew on that mountain and spread several feet wide. It resembled the *Enneaphylla*, although there are many differences to be found. The greatest difference can be recognised in their pods which in the one case are short, round, thick, and not pointed, while in the other they are four-cornered, furrowed, pointed, bending back. The one plant only grows one foot long, and is covered with leaves; the other has a round, red and smooth stalk, and is more than two feet long, and the leaves stand apart from each other, etc. Vid. Defin. pag. 71.

I also stuffed a beautiful bird to-day; it lives on our coast also, but its colours are not so vivid there. It is of the size of a young guinea fowl and belongs to the kind that have naked knees.

a. No doubt *H. exoleta*

A more accurate description can be found in my *Enchiridion*, pag. 27.

25.—I was presented with a Juno bird^b by Mr. Clas de Vent, who bought it for one piaster from a Malay. It was a male bird of the size of a peacock. The bill is black, conical and the upper part only projects slightly. The head is oblong, covered with thin black feathers; on the forehead these feathers grew thicker and were a little longer; they ended in a stripe down the neck. The skin showing through the feathers was blue. The back and lower part of the neck were covered with feathers of a rust-brown colour, having black spots. The wings had twenty-two large feathers, eleven at each joint, the longest growing on the second joint; on the wider side of the feathers there were some kidney-shaped eyes. These eyes were near the traversing quill on a grey and black spotted ground. The shades of these eyes were: first a narrow white stripe, then a black one, which changed at the side nearest the quill first into dark-brown, then into a greenish tint, which shaded into yellow and it ended with a blue white shade; at the other edge the brown began again, followed again by black. These eyes took up the third part of the wider side of the feather. From the outer edge of the feather to the eyes there were some black and brown stripes of different width; further from the eye these stripes were intersected and the black ones changed into a series of big round spots, one close to the other, finishing at the edge of the feather. The other part of the feather has first at the side of the quill a narrow black line, and then a white one; after this follow round black spots with fine circles round them; later on there are only these spots on a white ground. The spots nearest the edge are oval and small. The rays of the feathers increase in size towards the end; they are obtuse and have white star-like dots on a black ground. The quill itself is first of all black, and has then at both sides white lines enclosing the black; shortly after the outer half is white the other remains black; the black disappears entirely towards the middle but the end is black again.

The whole length of the feather is more than two feet; the end is half a foot wide and at the beginning it is about two inches wide.

The front feathers have a beautiful blue quill, turning into

b. Argus pheasant.

white towards the end ; the rays are rust-brown and have first white dots, which change afterwards to black oval spots. The after-wing or thumb is at the edge of the upper joint and has five short feathers.

The tail-feathers were twenty-four in number, two of them being twice as long as the whole bird ; their colour is black, strewn over with fine white specks.

The breast is rust-coloured, the stomach lighter. The feet are like those of the chickens and have a beautiful red, shiny colour, the eyes have a yellow ring, otherwise they are black. The nostrils are oval.

Everything points out that this bird is a kind of pheasant ; it lives in the woods and eats all kinds of fruit, at the same time digging for worms in the manner of chickens. The cock puffs himself up like the Calcutta cock. They are caught with bait in cages.

I intend giving a more minute description of this bird, when both the cock and the hen, which are kept in Mr. de Vent's garden, have grown a little tamer.

27.—I described some plants, which I collected yesterday. In the afternoon I went to visit the hospital, built here for the lepers, especially for those attacked by the disease called here, Mal de Lazar. The hospital lies half a German mile northwards from the town on the shore, in a place highly fit for it, as from there one has a beautiful view over the whole of Malacca.

Behind this hospital is a small wood with some swamps which stretch out at the eastern side not very far from the hospital.

This hospital has been founded by the Compagnie, and is kept up by alms money ; the second councillor has the supervision. At first they intended to build the hospital on a much larger scale, for there is still a gate to be seen with two wings, and solid sloping walls close to the sea, which bears the date of 1697. But after this gate had cost so much, they did not continue to use bricks for the whole building. It is now enclosed by a fence of thin poles, which measures about 150 steps square. There is a so-called doctor there ; he is a Portuguese born out here, he is old and pretty ignorant. His house stands in the first enclosure. It is at about forty steps distant from the hospital and by as much from the outer fence. The building for the invalids is a Malay

Pallote ; the inmates live about half a man's height above the ground ; it is small, and only has light from the north east, at which side the building is open. The side looking towards the sea is closed. Beside this building they have still a sort of shed, which stands on poles ; in it they prepare their food. The inmates at this moment are only twelve in number, all of them being native Portuguese, Malays, and Chinese, of both sexes. Among them was a boy of 16 years, who was quite merry.

I tried to find out what remedies were used, but the doctor could not tell me more about them than that they went to town from time to time to fetch different things with which they bathed the ulcerated parts. The intention of curing these miserable beings was not combined with this hospital.

I felt the pulse of some of them, and could find nothing remarkable ; in the worst cases it was slow and weak. The skin in the healthy places was soft and moist. I inquired into their taste, tongue, sleep, and pains, all was as in a healthy state, only when a part was falling off they felt pain, but they had no pain in their extremities, which are really the seat of the illness. Their lungs were perfectly free and I could detect no vestige of hoarseness as in the case of the Kakerlacks and the Iceland lepers.

This kind of illness consists of a sort of shrinking of their fingers and toes. The fingers and hands begin to dry out, they are quite stiff and insensible, so that they can even touch fire without feeling any pain. After this state appears a small inflammation and a malignant matter detaches the joints by degrees. At the feet there is generally an oedematous swelling to be observed ; the nails produce a malignant moisture and the limbs fall off with much matter.

Here, like elsewhere, the belief is general that the illness is contagious, but none of the present inmates had caught it in that manner. The doctor had indeed lost his teeth and only a few still remained and stood out like those of a squirrel, but he assured me that there was not a sign of leprosy in his whole body, though he had spent the greatest part of his life in this hospital.

It is more likely that this disease is produced by taking indigestible and unnatural food, as many kinds of tortoise shells,

land-snails, amphibians (lizards), rays, sharks, and several kinds of molluscs, such as Holothurians, Medusae, etc., which custom prevails with the Chinese, who suffer most from this disease.

I could distinctly see that these people either did not know anything about diet, or did not want to keep to it, because one of them had bought a *Monoculus polymorphus* for his supper, and they told me themselves that whoever did not know how to prepare it risked having much headache, giddiness, and depression, from eating the intestines. From a European surgeon, who had formerly had the charge of these invalids, I heard of the only remedy. He had put some spirits of wine and a few drops of oil on the wounds of one of the invalids, whose hands were in a high degree leprous; the malignant festering ceased directly and the wound soon after healed. I asked him why he used this remedy; and he said that he knew no better one and had just wanted to try. He added that the illness had never recurred in that hand.

There was no mortality attached to this illness; the invalids could grow pretty old.

I looked about in their little garden, which had not much interest for me, especially in the present season. There are some trees growing in it, among them a very big tree of the *Cassia Fistula*; it sheltered the building entirely from the north-west winds, which are said to be very strong here at times; there were some other smaller trees of the same species. Also some *Pterocarpus Draco* trees, some Coco trees and Papayas, etc. Among the plants they had some wild Lanquos with a kind of leaf very large, heart-shaped, pointed, intersected by many nerves, shiny, and of a bright green colour; the tree had neither blossoms nor fruits. According to the oblong bulb-like root it seemed to be a Dracontian or a Calla. Moreover, I found here a stinging *Acolypha*, the leaves of which were like those of the common European nettle, but the fruit was different. The male blossoms grew at the end of the ears; their corolla consisted of four petals, which were very small. The Involucre was kidney-shaped, and serrated at the edges. The capsule was three-cornered and contained three round seeds. There were three wells in the enclosure, but they only had common kinds of moss on their walls.

29.—I received a splendid big *Gorgonia*; some swallows'

nests had been built upon it. *Fucus* grew on the rocks like the *Coctis* in an angular sort of fashion. Underneath the water its colour is dark green, but in the air it is yellow and looks as if enamelled. I often saw this kind of *Fucus* in the Straits of Ceylon at no great depth and only one foot high; but here it had been fished up from a depth of thirty fathoms by means of a fishing line. There were all broken on account of the rough handling they had undergone.

30.—I went out to botanize and obtained a quantity of new plants, which I must describe during the next few days. There was specially a great number of the family of the *Phyllanthi* and if one wanted to classify them properly, one would have to distinguish several families. They are in this country what the numerous *Salices* are in the colder parts of Europe.

Nov. 1.—I examined the family of the *Phyllanthi* more minutely and found the specimens, which in the main points were like most of the *Phyllanthi*. Their styles however were erect and cylindrically grown together, they were club-shaped and at the end divided into three parts, each of which was subdivided in its turn. I also found a simple shrub, only one and half feet high; it had large egg-shaped leaves and large hanging bell-shaped blossoms, and their fruit was a long four-sided pod; this shrub evidently is one of the *Gynandria*, and in remembrance of my friend, Professor Brannicke, I called the plant after him.

4.—I went to Pringi, and found there some blossoms of the Rambutang; those I found were all six stamened and if the rainy season had not done too much damage, I could have classified them also on this occasion. There were also many fruits on the tree in various stages of ripeness. The Dutch call them Serjants or Hunde Kloten, because two fruits always grow out of one blossom.

7.—I went out specially to see the tree from which the Lign aloes is gathered. They showed me four pretty big trees, but I searched in vain for some blossoms. These trees grew really in a Malay garden hedge. I left the detailed description until such time as I could perhaps obtain some blossoms.

10.—I found a special kind of fig tree, which distinctly showed the parts of fructification. The male ones consisted only of a single tube and a stamen, which projected a little with the

anther. Many of them covered the whole surface of the fruit, which was bigger than a cherry and of a dark purple colour. The female ones are green on the outside, but the fleshy part of the inside is also of a beautiful purple. Their stigma is also single. The detailed description is in the definitions.

12.—The rainy weather continued more steadily than ever before, and the lower part of the country was inundated. I waded to a place where grew a big fig tree, which had ripe fruits on one side of the crown. It was much frequented by monkeys and by many kinds of birds, as the black Martins with the yellow ear-lobes, many kinds of pigeons, and specially the long beaked Buceros. I could not get near enough with my rifle, because the monkeys soon became alarmed and frightened all the birds away by their yells.

16.—I botanized a little; nearly everything was under water. The principal thing I found was a *Dillenia* with yellow blossoms, which Rumph has down in his Herb. Amboin.

A tiger had come down from the mountains and had caused much damage.

22.—Up to now we had most terrible rains, everything was saturated and my collection suffered greatly as everything began to decay. Captain Banton arrived in the harbour to-day with the war frigate "Sea Horse," coming from China.

24.—To-day I sent away whatever was dry in my collection by the war frigate "Sea Horse," which starts for Madras to-day. I trusted my plants to the special care of Mr. Stuart, doctor of the frigate.

25.—We had an eclipse of the moon last night, and all the Chinese were about with light and fire in order to help the moon.

26.—I had the pleasure of Captain Light's arrival, who came from Kedar, and will only stay here for a short time.

29.—I went on board of our ship to look at all my things, which had suffered very much from the moisture, not only my collections, but also my books. It took me some days to repair the damage, because the uncertain weather continued.

Dec. 2.—I went out to botanize and found the *Asplenium*, the peculiar kind of pepper with the fat, lancet-shaped, oblong leaves; the blossoms were monoicous.

There was a large climbing kind of fig with beautiful look-

ing fruits. As their parts of fructification were big, I had no difficulty in describing them.

3.—During the last days we have had some north wind and the weather was better. I still collected many plants, specially fruits, which I had not yet got. In the middle of the day I dried my plants in the sun and obtained some beautiful specimens.

4.—I obtained many kinds of corals and a new species of *Holothuria* and a special kind of mollusc. I also went to Pungul to-day, where I made as many inquiries as I could concerning the Gambier and made a description. It seems to be a peculiar fact that the seed cannot be kept for very long. The place where the boiling was to be carried on was just being built. There were three large holes, surrounded by a wall, they were three feet in diameter and two feet deep. These holes were made to contain the boilers and they were dug into the mountain quite straight; there were some other holes to contain the fire-wood. The edge of the boilers was surrounded by a certain bark, forming a circlet about $\frac{5}{4}$ of a foot high. There were also some gutters manufactured of wood which was $1\frac{1}{2}$ inch thick; the gutter itself was three feet wide and four feet long. These gutters lay in perfect order on a slanting stand and were destined to bring the lie into the boiler.

The merchant and architect living here will give a perfect description of this boiling establishment to the Ravi society, but I content myself with the above-mentioned facts, on account of my short stay here, and because of the false information which people are so apt to give about such matters from suspicion or jealousy. The ways of boiling are different, but the Chinese is said to be the best. The whole place is fourteen paces long and eight paces wide; the roof is covered with the bark of the *Melalenca* tree, and I was astonished to see that the house was situated in such dense jungle, and that people were allowed to stay here, on account of the tigers. Only at one end of the house they had a small partition which could be closed; it was scarcely the height of a man and this was their sleeping place. It was peculiar that from underneath the fire hole of one of the boilers there came out a beautiful clear spring. This may however only have been originated by the rainy season, which had begun uncommonly early this year, and still continued.

I went a little deeper into the dense jungle, which was now

transformed into a swamp, and saw some small trees of the Gambier, which had been planted on a hill. Some of these trees, the oldest were about a span thick above the root, but soon after divided into branches, which grew slantingly upwards, and towards the end they bent down again.

They require a stony grassy soil with mountain mould, like that of the hill were they grew in this instance. The stones were nothing else but porous tufa in small pieces, at least I thought them to be, so as far as I could judge from their appearance. The mountain mould and the stones were much intermixed with a fine sort of yellow mica.

Wild Cardamoms grew among the shrubs, also the *Nutans alpinea* with the bending stalk, but I could not find one single blossom. Deeper in the jungle I found many *Amomum Scyphiferum* and *Amomum Leonurum*. The latter has a beautiful smell and the edges of the leaves are of a beautiful gold yellow, but the leaves of the *Scyphiferum* are slightly wavy. There was another Monandrist which had leaves half as long again as a man. The Malays whom I had taken with me, said that the blossoms grow at the end of their stem or leaves; the plant was unknown to me. The Chinese bamboo grew wild, but it had neither leaves nor blossoms. I saw many kinds of wild Mangas; they were just beginning to have new leaves and were developing the buds of the blossoms. There were also many climbing plants; they held firmly on to the trees; and seemed to be several kinds of Pothos and of the beautiful fig. A shower of rain put a stop to my zeal in botanizing. Afterwards I made a little excursion to the sea-shore, which however one could not reach, on account of the deep mud. On a fig tree, which had beautiful orange-coloured fruit, not larger than a small cherry, I saw a Buceros; my presence did not seem desirable to him and he flew away into the wood. There was a small kind of the so-called kaldeer, it had fruits, but I was not so lucky as to get a male blossom. The whole tree was not as high as a man, and the stem hardly as thick as a hand. I tried to find some peculiarities in the leaves, but could see none, and so I had to stick to the fruits, which are almost as round as a ball. Many of these fruits grow on a common stalk; at one end they have a horny style, with bent ends, which when the fruit is ripe drops off like a *Calypton*. These Racemes were yet young and had therefore not the beautiful

red colour which they usually have.

There was a second kind growing here as well; it stands erect and the stem is high, naked, jointed and red. The leaves form an erect *Fascicle*. They always grow in damp parts, at times even in deep water; their fruits are single like those of the common kaldeer, but they are completely parallel. Standing closely together at the banks of the rivers, they make a nice show with their slender red stems. Their leaves are more blue-green than those of the others. The creeping kaldeer also grows here frequently in the wood, but I have not found any of its fruit, except in Junk Ceylon.

6.—In the last days I arranged my things, and dried and packed as many of them as I could in this weather. I found some *Nepenthes* in blossom, but they were only male ones. They have separate male and female blossoms, and are polygamists.

7.—I saw a corpse in the house of a Chinese. It was that of an old rich woman who two days before her death had distributed 500 piasters and 300 rupees to be expended at her funeral. She had died from old age, and had foretold the exact hour of her death. The body was already in the coffin, and this stood in a front room between two rows of curtains, which had been hung across the room. They were looped up in the middle. The coffin stood on a special bench, the feet of which were like those of a carpenter's bench. The coffin was peculiar. It had a kind of foot about a hand high which slanted inward, then it bulged out at the sides and was half-round, but the lid projected again in slanting manner over the edge and was as thick as the foot of the coffin; the same plan was followed at both ends. The end for the head was somewhat thicker and was convex at the top, being slightly raised at both ends. The whole coffin was three feet high and covered with a thin shiny varnish on the outside. At both sides stood two candle sticks with wax candles, which burned continually. In the middle of each side stood two idols, Josses of $1\frac{1}{2}$ foot high, they were placed on a three-cornered pedestal, which also had three feet. The coffin was said to have been covered with many layers of paper inside, so as to let no manner of smell of decomposition pass. The body itself was clothed in eleven different kind of garments, so that this old woman might have an ample supply of clothes if she should soil some of them on her long journey. In front, outside the curtains

stood a square painted table and upon it stood an idol on each side; they were dressed in the same way, only their dress was white with artificial flowers; they held in their hands white staves, longer than the whole Joss, and at the end of these staves were fastened streamers. Everything had been removed from the room except a few chairs standing at the sides. In front of the door there was a strip of yellow paper three feet long and scarcely one foot wide; on it were painted black Chinese letters. Up in the room there hung first some green squares of paper and underneath these were narrow streamers of many different colours; they were one foot long and two inches wide. There were many streamers of black, green, and pink paper. From the roof of the house hung down longer streamers of red colour without any letters, and also two big lanterns about $1\frac{1}{2}$ or $1\frac{3}{4}$ of a yard in diameter; they were round and made of fine rotan covered with varnished paper bearing large Chinese letters.

8.—The dead woman was buried with many ceremonies. First of all a table with many viands was spread, among them were a capon, very fat pork and different kind of comfits. There were small and big flags, and all sorts of big lanterns. Two idols, one clothed in green, the other in red silk, were being carried about, on a three-cornered pedestal, also one idol sitting in a litter. They were nearly all of one size. The coffin stood on a bier, which was covered with blue linen. The nearest relatives walked before it; they were clothed in a sort of thin straw-coloured linen. Behind the coffin followed the women, who were most nearly related to the dead; they were surrounded by a screen of white linen fastened upon sticks. Behind them came many other women. The ceremony was interrupted by a heavy rain, and some discorder ensued. The coffin was let down into the earth at the side of a mountain, the grave being about one man's height deep. Underneath the coffin they put some money and layer of dead embers mixed with chalk, and from the mountain mould and Q, a kind of mould Q was prepared, which was laid over the coffin, before the other earth was put upon it.

I botanized here a little and found often the *Frisea Nummularia* and the *Mirifica* in blossom. The latter also had fruits. A kind of *Epidendris* amongst the shrubs had finished blooming, I therefore could not examine the blossoms. The root consisted of long furrowed woody bulbs; the leaves were oblong, lancet-

shaped and spreading, growing half down the stalk. It had had blossoms, but I could now only find some oblong petals pointed at both ends. The *Viscus opuntia* grew here frequently on the *Memicylon capitellatum* and among them climbed *Cassytha*.

10— During the last days I was busy drying and packing my things, which was very difficult on account of the frequent rain; the corals, which I wanted to dry, gave me much trouble.

11— I went out again to find the blossoms of the *Nepenthes*, because for a long I have had doubts whether they are hermaphrodite. I often came across their male blossom, but the female ones were too ripe. On the Chinese graves I found a special kind of *Pteris* and *gilongifolia*, *Burm. Fl. Seyl., Tab.* and *Pteris triphylla*. There ought to be careful researches made in order to find out whether they are not hybrids among themselves.

The *Echites Candata* began to bloom; it is of a peculiar construction. The long ends of the blossoms, which are of the size of the *Nigellastrum* hang down as much as three inches and are dark blood-red in colour. It is a kind of shrub which grows on other trees and spreads very much. The pericarps are the biggest of any kind of contorta which I have hitherto seen.*

12— I sent all my things on board, and tried to overcome my disappointment about the failure of the journey, and my anxiety about the many troubles which I might yet have to overcome on account of the war. I went on a botanical excursion to a plain situated between the western suburb of Malacca and the leper hospital. I frequently found *Schoenus Cruciatum*, *Agrestis Matrella*, *Stemodia* and three species of *Utricularias* which are very common here, viz: the *nivea*, the *aurea*, and the small purple-coloured one. Among them I found a beautiful *Didynamist* of the second order of this class, and of the third sub-division. The blossoms are bell-shaped and are cut into four equal round lobes at the end, before these lobes divide they grow crossways and are pressed together, the outside is yellow; inside, underneath the lobes it is bearded with curly white fibre, and the colour is here of an even more vivid hue than on the outside, and there are some fine orange-coloured stripes. The stamen are shorter than the corolla and stands close to the stylum; the anthers are white, compressed and heart-shaped.

* *Strophanthus*.

VOLUME XV.

DECEMBER 15—30, 1779.

QUEDAR.

Dec. 15.—I went on board in the afternoon.

16.—The pilot and all my travelling companions came on board. In the afternoon at 4 o'clock the anchor was weighed and we sailed past Tanjong Cling.

17.—We came as far as Cape Rachado; had some wind and rain and saw Sumatra. Strong thunderstorms and rain during the night.

18.—Saturday. We came to the Porceller mountain, and towards evening we cast anchor at the mouth of the Strait of Callang. The weather was fine; there was very little rain.

19.—We passed the afore-mentioned Strait almost entirely, but near the last bay the current turned against us. The weather was fine, some rain, but very little wind.

20.—Quite early the anchor was weighed; we passed the two rocky islands Niodd and Joss which lie close together; this was still in the morning; also the three islands called the Bontsilies, and cast anchor at Sallingor towards five o'clock in the afternoon.

21.—I went on shore but obtained very little. The heat was very great; *Hedysorum Strobiliferum* had blossoms; there were a kind of *Polypodium* with simply pinnate leaves and scandent stem, *Bryonia* with hastate leaves. The mountain ranges of this country were very high and enclosed in mist. At four o'clock we went on board again and sailed on.

22.—Towards evening we saw the Dindies, and not far from them the Sambilangs.

23.—We passed the nine Sambilang islands and the Dindies. Pullu Perah we saw in the distance; it is very high and enclosed in mist. It is a remarkable fact that the Sambilang islands lie all in one direction with the small island Pullu Issarah, which is

at six miles distance, and another island which is near Sumatra and is called Varella; this direction is East N. E. towards W. South W. We had much lightning in the evening.

There is much dragon's blood collected on the Dindies, and according to what Captain Schilling told me the cane cut here is the very best. We saw a Malay Proh close to the shore. The islands are not inhabited, for fear of slave dealers.

24.—On account of the calm, we still were near the Dindies and Pullu Issarah; in the distance we could see the high mountains of Pullu Pinang, rising out of the sea. At nine o'clock the wind began to be very favourable and we soon lost sight of the Dindies; we passed Perah, which is always wrapped in a blue mist. In the evening as the moon rose there arose also a strong north east wind, which lashed the sea. The high waves hindered us very much in our progress during the night. The weather was fine after we had a rain-shower, which cooled the atmosphere considerably.

After the moon had risen there was a rainbow-like circle round it at two degrees distance; there was a spot of the same rainbow hue at the side.

25.—Early this morning we were near Pinang island, which has a smaller island at its side. The high mountains have many cliffs; at the north-western extremity they are dome-shaped. The length of the islands is about three leagues; they are said to be uninhabited on account of the kidnapping which the Malays exercise upon one another. Judging from the blue mist, the mountains must contain various metals. The name has been given to this island on account of the Areca trees, which are called Pinangs in the Malay language. In Malacca I had been told that here, as well as in the Dindies, many *Areca Clitoria* grow wild.

At eight o'clock we had the high mountain straight before us; it has the shape of a cone; we had seen it quite distinctly from old Quedar, being on land then. These mountains are called Girai by the Malays, and it is here that much tin is dug out and melted.

26.—We had to cruise between the island, Pinang, with the high mountains, and old Quedar, on account of the contrary wind. The weather was fine during the day; in the evening we had calm, followed by some showers, and in the end the contrary

wind returned with its full force. The depth of the sea in this bay varied between twenty-two and twenty-six fathoms.

26.—In the course of the morning we saw the long narrow rocky islands in front of Quedar, which are called the Peers, and also at some distance from Quedar, a mountain which is called the “Elephant,” on account of its resemblance to this animal.

27.—We arrived at last in the harbour of Quedar at half past nine in the morning, after we had been cruising for a long time on account of the contrary wind. The weather was fine. In the afternoon I went on shore and to the town, which in the maps is called Queda, but this name really belongs to the whole country.

The town is only very small; a fortress has been built at the mouth of the river. A wall, which is almost built in one straight line, shows some intersections for cannons. They had some six pounders; apparently they were either not loaded or loaded very insufficiently.

The stream divides the town; the houses, which are nearly all Palliots, are built on either side of the river; they are scarcely fifty in number, those of the Chinese being the best among them. The shore is very low, and in the rainy season the whole country is flooded at high tide.

I took my quarters in the compound belonging to the pilot of our ship.

The country is very low everywhere and consists of a very muddy soil, intersected by yet muddier canals. In the higher parts grow *Agolloss*, *Xyloaloes*, *Volkameria*, *Rhizophora*, and some other shrubs and trees that like a muddy soil; they are interlaced with *Volkameria Paderia* and a new species of *Contortis*. There was a raised path on the south side of the river, leading towards the south, and from it. I could see that the soil underneath the mud consists only of *cardia*. My curiosity was too great to be satisfied in seeing only those parts which were fenced in on account of the wild beasts, and so I went on. The path was lined with dense shrubbery on both sides, chiefly consisting of *Phyllanth. Siam.* (*Cusio*) *Verbesina biflora*, *Baccharis indica*, etc.

A few steps further on I saw some Christian graves near the path. I could see from the thrown up earth, that the soil consisted only of *cardia* and was little intermixed with clay.

28—Early this morning I went to the bazaar, just outside

the gate, which consisted of low straw huts with open walls, built at half a man's height on bamboo poles. They sold only fruit, as some kinds of *Musa Chauneris*, *Radices ari exulenti* and others of the same common kinds.

By chance I found to-day many Pholades with animals, which are said to be fetched from the sea near Parlys when the tide is low and the water only three feet deep. The neck of this animal is like that of an ascidian, but the rest of the body resembles a zethis.

These animals were boiled like the other Mytyli and are used here in curries and stews. On our table the neck was prepared separately. In the same way *Sepia officinalis* is used here for eating purposes; the smaller ones are generally preferred, and the bladder with the ink is removed and they are well washed. I went along the way I discovered yesterday as far as possible; it really leads to a newly planted rice-field, lying about a good quarter of a mile from the town.

I passed two muddy streams with great difficulty, as there were only two small sticks laid across upright poles which stood about one man's height above the mud and this primitive bridge was sixteen or twenty steps long. The bridge was enclosed by dense shrubs on either side, consisting mostly of *Gmelina* entwined with a new *Phyllanthus Verbesina Pæderia*, *Ceitoria Convolvuli*, *Dioscoreus*; these shrubs were a resort for many animals, because they both sheltered them and provided them with food, among them was the small Capulla. Before I reached the field I had to pass a place which was overgrown with the *Saccherum diandrum* growing to half a man's height; among them were some *Triumfetta Hedyssarum Coreopsis*, etc.; they grew close to the path.

The rice was very good, had rather large ears, and was almost ripe; it was of the kind which has the black-brown husks. There was a great number of birds invading this field, they seemed to be of the *Loxia* kind; their bills were very big and well built to crunch the rice. They flew about in great swarms. There were many small huts built on high poles in this field, which was scarcely one-third of a German mile long. A row of sticks had been planted amongst the rice, and they were connected by a kind of coarse string, which caused them to make a noise when this string was pulled. They were pulled whenever a swarm of birds wanted to settle.

The soil of this field consisted of a little grey clay and many particles of cardia, but nevertheless the rice grew very well and had large ears. The field was surrounded by a high, thick wood. I did not find anything new, only the seed of a tree, the wood of which is considered to be the best for building purposes in Ceylon; I have however not succeeded yet in finding any of its blossoms,

29.—I went with our captain and the passengers of our ship to the capital, which lies about three German miles from this town. We made the journey in a large covered boat. The shore on either side was very low, muddy, and flooded at high tide, and closely overgrown with such trees as like salt-water and a muddy soil, as *Rhizophora Granata*, *Littorea*, etc.

Underneath these trees lay several crocodiles sunning themselves and swallowing some mud from time to time. Their back is almost as grey as the mud; their peculiarity is that they have a flattened body. Their stomach is white. I was not so lucky as to get one of them, as they live in muddy places which are unattainable either by boat or by walking. Nearer the capital, where the water is less salt, there grew on either side of the shore the new kind of palm, *Nipa*; they stood so close together, that one could not see beyond, but they offered an agreeable and strange aspect. The stream now divided into two arms, which ran parallel for some time and so doubled the agreeable view. I have already mentioned what use is made of the leaves, and I only add that the Chinese preserve the grains of these fruits in sugar; they are transparent in this state, but have no special taste, except that the spice added may give them some flavour.

After ten o'clock we arrived in the town; the shores were a little higher and we saw every now and then a Malay house.

The town lies on the left bank of the river; it is only small, and irregularly built. The king's dwelling is somewhat apart from the town. The real buildings are surrounded by a fence about two men high, and as much as one could see from the outside, it consisted of many small separate houses, built of planks and rafters. Only the building serving for audiences stood outside the fence. It was built on poles which stood at man's height above the ground, and was covered with the leaves of

the afore-mentioned palm tree. It was open at the sides, only the floor was lined with two feet high planks. Outside, at one end, two ladders of five steps each had been constructed of narrow planks. Between these ladders was a kind of throne, consisting of square rafters, connected above and below, and crowned with a conical red painted top. These rafters stood a little higher than the raised floor of the audience room; they were thicker than an arm and only planed smooth, without any other ornament. The four foremost rafters stood just so far apart that His Majesty could sit on his feet between them; the two other rafters which were joined to the floor of the room had one step, by which he had to mount on his throne. Round about there was a simple fence of planks, which were hardly two feet high. The size of this throne was scarcely two yards square, the steps leading up to it were not as wide. But this time the king gave his audience in front or at the right hand of his throne.

He is young and rather good looking, his skin is very light. He was sitting on an old Bengal carpet. His dress consisted only of a cotton Cavay (Kabaia?), and a red silk cloth tied round his body after the fashion of his nation.

This red silk belt had a shield in front with raised work; it was as wide as a hand and about one span long.

He had tied an ordinary handkerchief round his head, in so negligent a manner that the crown of his head remained uncovered; they nearly all wear this handkerchief in the same fashion.

His questions and conversation only touched uninteresting matter. When he saw the gold watch of one of our passengers he showed a great wish to possess it, but none to buy it.

His ministers sat behind him in a half circle. Although this nation is very uneducated one could detect some court ceremonies.

I botanized in the rice fields near here. A kind of *Apinia* bloomed frequently near the ditches and grew to half the height of a man.

In the ditches bloomed two kinds of *Arusus* with oblong leaves; they were peculiar and in my opinion new.

In the evening before sunset we went back. My attention was caught by a peculiar sound like that of a trumpet, which arose from underneath the boat. I made enquiries and was told

that it was caused by a small fish and that I could buy this fish in the bazaar near our compound.

The darkness of the night, and the salt water caused the track which our boat left behind to look like fire, and also the fish escaping before us left big stripes of fire in the water.

30.—I went to the bazaar and asked for the fish, which had produced the strange sound underneath our boat yesterday, but there was not one to be had. The people however promised to try and find one for me.

END OF VOLUME XV.

End of Journey.

A BIBLIOGRAPHY OF MALAYA,*

FROM JUNE, 1892. TO JULY, 1893.

BY

C. DAVIES SHERBORN, F.Z.S., R.G.S.

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IN compiling this Bibliography, all sources of information have been utilized. Inserting therefore, every publication that has come under his notice, the compiler hopes that the entries will prove of considerable assistance; but, as a large proportion of the literature of his district, either never reaches England at all, or else arrives so long after as to be too late for examination for this purpose, he begs the reader's indulgence for any error that may be present. His thanks are due to M. Martinus Nijhoff of The Hague for information as to some of the more recent books.

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AALTSZ.—see Quarles.

* By “Malaya” is here meant that part of the Archipelago enclosed in a line drawn round the north of Siam and the Philippines, through Macassar Strait, between Lombok and Bali, round the outlying islands of Java and Sumatra, and the east of the Nicobar and Andaman Islands.

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