

**Account of the Simia syndactyla, or Ungka ape of Sumatra; the anatomy of its larynx / [George Bennett].**

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... from the original which is now deposited in the British Museum. The object of this communication is to relate the habits of the animals observed on board the ship Sophia during the passage to England. The measurement of the animal was as follows:—From the os ciliaris to the vertex of the head, 2 ft. 4 in.; span of the arms, 4 ft.; length of the arm from the acilla to the termination of the fore finger, 1 ft. 10½ in.; length of the leg from the groin to the os ciliaris, 1 ft. 11 in.; length from the xiphoid or costiform cartilage to the crest of the

... in the upper jaw the canines were placed the last incisor giving an appearance as if a tooth was deficient; this did not occur in the lower jaw. The teeth of the animal were in very bad condition. The colour of the animal in an



*Account of the Simia syndactyla, or Ungka Ape of Sumatra; the Anatomy of its Larynx, &c. &c.* By GEORGE BENNETT, Esq. F.L.S. M.R.C.S. &c. &c.

(From the Magazine of Natural History.)

DURING a visit to the Island of Singapore, on the 13th of November, 1830, a male specimen of this interesting animal was presented to me by E. Boustead, Esq., a mercantile gentleman resident at that island, and who evinced a great and laudable desire of forwarding pursuits of natural history. The animal had been recently brought by a Malay lad from the Menangkabau country, in the interior of Sumatra. The Malays at Singapore called this animal the Ungka; by Sir Stamford Raffles it has been stated as being called the Siamang among the natives; and the Ungka ape is described by F. Cuvier as the Onko, in his splendid work on the Mammalia, plates v. and vi. On making enquiry among the Malays at Singapore, they denied this animal being the Siamang, at the same time stating that the Siamang resembled it in form, but differed in having the eyebrows and hair around the face of a white colour.

The *Simia syndactyla* is described and figured in Dr. Horsfield's *Zoology of Java*; but the engraving does not give a correct idea of the animal. The following sketches (figs. 42, 43, 44.) are taken from drawings made by Charles Landseer,

Esq., from the original, which is now deposited in the British Museum.

The object of this communication is to relate the habits of the animal as observed on board the ship *Sophia* during the passage to England. The measurement of the animal was as follows:— From the os calcis to the vertex of the head, 2 ft. 4 in.; span of the arms, 4 ft.; length of the arm, from the axilla to the termination of the fore finger, 1 ft. 10½ in.; length of the leg, from the groin to the os calcis, 11 in.; length from the xiphoid or ensiform cartilage to the crest of the pubis, 7½ in.

The teeth are twelve in each jaw; four incisors, two canine, and six molares: in the upper jaw the canine were placed widely apart from the last incisor, giving an appearance as if

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a tooth was deficient: this did not occur in the lower jaw. The teeth of the animal were in very bad condition. The colour of the animal is entirely black, being covered with stiff hair of a beautiful jet black over the whole body; the face has no hair, except on the sides as whiskers, and the hair stands forward from the forehead over the eyes; there is little beard. The skin of the face is black; the arms are very long, the radius and ulna being of greater length than the os humeri; the hair on the arm runs in one direction, viz. downwards, that on the forearm upwards; the hands are long and narrow,



fingers long and tapering; thumb short, not reaching farther than the first joint of the fore finger; the palms of the hands

and soles of the feet are bare and black; the legs are short in proportion to the arms and body; the feet are long, prehensile, and, when the animal is in a sitting posture (*fig. 42.*), are turned inwards, and the toes are bent. The first and second toes are united (except at the last joint) by a membrane, from which circumstance he has derived his specific name. He invariably walks in the erect posture when on a level surface; and then the arms either hang down, enabling him sometimes to assist himself with his knuckles; or, what is more usual, he keeps his

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arms uplifted in an erect position, with the hands pendent (*fig. 43.*), ready to seize a rope and climb up on the approach of any danger, or on the obstruction of strangers. He walks rather quick in the erect posture, but with a waddling gait, and is soon run down if whilst pursued he has no opportunity of escaping by climbing. On the foot are five toes, the great toe being placed like the thumb of the hand; the form of the foot is somewhat similar to that of the hand, having an equal prehensile power; the great toe has a capability of much extension outwards, which enlarges the surface of the foot when the animal

walks; the toes are short, the great toe is the longest. The eyes of the animal are close together, with the irides of a hazel colour: the upper eyelids have lashes, the lower have none: the nose is confluent with the face, except at the nostrils, which are a little elevated; nostrils on each side, and the nose

united to the upper lip : the mouth large : ears small, and resembling the human, but without the pendent lobe. He has nails on the fingers and toes ; he has two hard tubercles on the tuberosities of the ischium, but is destitute of a tail or even the rudiments of one.

His food is various : he prefers vegetable diet, as rice, plantains, &c., and was ravenously fond of carrots, of which we had some quantity preserved on board. He would drink tea, coffee, and chocolate, but neither wine nor spirits : of animal food he prefers fowl to any other ; but a lizard having been caught on board, and placed before him, he took it immediately in his paw, and greedily devoured it.

The first instance I observed of its attachment was soon after the animal had been presented to me by Mr. Boustead. On entering the yard in which he was tied up, one morning, I was not well pleased at observing him busily engaged in removing his belt and cord, at the same time whining and uttering a peculiar squeaking noise. When loose, he walked in the usual erect posture towards some Malays who were standing near the place ; and after hugging the legs of several of the party, he went to a Malay lad, climbed upon and hugged him closely, having an expression, in both the look and manner, of gratification at being once again in the arms of him who, I now understood, was his former master. When this lad sold him to Mr. Boustead, whenever the animal could get loose he would make for the water-side, the Malay lad being usually on board the prau in which they had arrived from Sumatra ; and the animal was never taken until, having reached the water, he could proceed no farther. On sending him aboard the ship (*Sophia*), he on arriving, after rewarding his conductor with a bite, escaped, and ascended the rigging ; but towards the evening he came down on the deck, and was readily secured. We sailed from Singapore for England with him on the 18th of November.

He is not able to take up small objects with facility, on account of the disproportion of the size of the thumb to the fingers. The metacarpal bone of the thumb has the mobility of a first joint ; the form of both the feet and hands gives a great prehensile power, fitted for the woods, where it must be almost impossible to capture an adult animal alive.

Under the throat is a large black pouch, a continuation of the common integument, and very thinly covered with hair : this pouch is not very visible when undistended : it is a thick integument, of a blackish colour and corrugated appearance. It extends from the under part of the chin to the throat, and is attached as low down as the upper part of the sternum, and is also attached above to the symphysis of the lower jaw :

its use is not well known, but it is not improbable that it is an appendage to the organ of voice. Sometimes, when irritated, I have observed him inflate the pouch, uttering at the same time a hollow barking noise \* ; for the production of which, the rushing of the air into the sac was an adjuvant. The inflation of the pouch was not, however, confined to anger ; for, when pleased, he would purse the mouth, drive the air with an audible noise into the sac ; or when yawning, it was also inflated ; and in all instances he would gradually empty the sac, as if he derived a pleasure from it. When the sac has been distended, I have often pressed on it, and forced the air contained within it into the mouth, the animal not evincing at the time any sign of its being an annoyance to him. When uttering the barking noise, the pouch is not inflated to the same extent as when he yawns. It has been stated in an American publication, that the use of the air-sac is for a swimming-bladder. It may be said in refutation (if the assertion is not too absurd to be refuted) that the animal being one day washed in a large tub of water, although much frightened, did not inflate or make the least attempt to inflate the sac. He is destitute of cheek-pouches as a reservoir for food.

When sleeping, he lies along either on the side or back, resting the head on the hands, and seemed always desirous of retiring to rest at sunset ; but would often (I suppose from his approximation to civilisation) indulge in bed some time after sunrise ; and frequently when I awoke I have seen him lying on his back, his long arms stretched out, and, with eyes open, appearing as if buried in deep reflection. The sounds he uttered were various : when pleased at a recognition of his friends, he would utter a peculiar squeaking chirping note ; when irritated, a hollow barking noise was produced ; but when angry and frightened, or when chastised, the loud guttural sounds of *ra, ra, ra*, invariably followed. When I approached him for the first time in the morning, he greeted me with his chirping notes, advancing his face at the same time, as if intended for the purpose of salutation. He had a gravity of look and mildness of manner, and was deficient in those mischievous tricks so peculiar to the monkey tribe. In only one instance did I experience any mischief from him, and that was in his meddling with my inkstand : he had a *penchant* for the black fluid, would drink the ink, and suck the pens, whenever an opportunity offered of his gratifying this morbid propensity. He soon knew the name of *Ungka*, which had been

\* When the barking noise was made, the lips were pursed out, and the air driven into the sac, at the same time that the sound was uttered, the lower jaw was also a little protruded.

given to him ; and would readily come to those to whom he was attached when called by that name. His temper was mild, and not readily irritated ; his mildness of disposition and playfulness of manner made him a universal favourite with all on board.

When he walks in the erect posture, he turns the leg and foot outwards, which occasions him to have a waddling gait and a bow-legged appearance. He would walk the deck, being held by his long arm, and then had a resemblance to a child just learning to walk. He has an awkward manner of drinking, by which the liquid is much wasted : he first applies his lips to the liquid, throwing the head up, which may in some degree be attributed to the prominency of the lower jaw ; and if the vessel in which the liquid is contained should be shallow, he dips the paw into it, holds it over the mouth, letting the liquid drop in. I never observed him lap with the tongue when drinking ; but when tea or coffee was given to him, the lingual organ was carefully protruded for the purpose of ascertaining its temperature.

He usually (on first coming on board), after taking exercise about the rigging, retired to rest at sunset, in the maintop, coming on deck at daylight. This continued until our arrival off the Cape, when, experiencing a lower temperature, he expressed an eager desire to be taken in my arms, and indulged by being permitted to pass the night in my cabin, for which he evinced such a decided partiality, that on the return of warm weather he would not retire to the maintop, but was always eager to pass the night in the cabin.

He was playful, but preferred children to adults ; he became particularly attached to a little Papuan child (Elau, a native of Erromanga, one of the New Hebrides group) who was on board, and who, it is not improbable, he may have in some degree considered as having an affinity to his species. They were often seen sitting near the capstan, the animal with its long paw around her neck, lovingly eating biscuit together. She would lead him about by his long arms ; and it was very amusing to see him running round the capstan pursued by or pursuing the child ; he would waddle along at a rapid pace, sometimes aiding himself by his knuckles ; but, when fatigued, would spring aside, seize a rope, and ascend a short distance, safe from pursuit. In a playful manner he would roll on deck with the child, displaying a mock combat, pushing with his feet (in which action he seems to possess great muscular power), entwining his arms around her, and pretending to bite ; or, seizing a rope, he would swing towards her, and, when efforts were made to seize him, would elude

the grasp by swinging away; or he would drop suddenly on her from the ropes aloft, and then engage in various playful antics. He would play in a similar manner with adults, but always seemed to have a preference for children. If an attempt was, however, made by the child to play with him when he had no inclination, or after he had sustained some disappointment, he usually made a slight impression with his teeth on her arm, just sufficient to act as a warning that no liberties were to be taken with his person; or as the child would say, "Ungka no like play now." Not unfrequently, a string being tied to his leg, the child would amuse herself by dragging the patient animal about the deck; tired, however, of such practical jokes, without having himself any share in the fun, he endeavoured to disengage himself and retire: on finding his efforts fruitless, he would quietly walk up to the child, make an impression with his teeth on one of the members that were the nearest, soon terminate the sport, and procure his liberty.

There were also on board the ship several small monkeys, with whom Ungka was desirous of forming interesting "conversaziones," to introduce a social character among them, to while away the tedious hours, and to dissipate the monotony of the voyage; but to this the monkeys would not accede, and they all cordially united to repel the approaches of the "little man in black," by chattering, and sundry other hostile movements peculiar to their race. Ungka, thus repelled in his endeavours to establish a social intercourse, determined to punish them for their impudence: when they again united to repel him, by chattering and divers other impudent tricks, he seized a rope, and, swinging towards the nearest, seized his "caudal appendage," and hauled away upon it, until the agility of the monkey obliged him to relinquish his hold. But it not unfrequently happened that he made his way up the rigging, dragging the monkey by the tail after him, and if he required both hands to expedite his ascent, the tail of his captive would be passed into the prehensile power of his foot. These ludicrous scenes were performed by Ungka with the most perfect gravity of countenance; having no caudal extremity himself, he knew that he was free from any retaliation. As this treatment was far from being amusing to the monkeys, they afterwards either avoided him, or made so formidable a defence on his approach, that Ungka was obliged to refrain from indulging himself in "*tail-bearing*." He had, however, such an inclination to *draw out tails*, that, being obliged from "peculiar circumstances" to relinquish those of the monkeys, he cultivated the friendship of a little pig that ran about the deck, and, taking his tail in his hand, endeavoured, by fre-



quent pulling, to reduce it from a curled to a straight form; but all his efforts were in vain: although piggy did not express any ill-feeling at his kind endeavours. On the dinner being announced by the steward, he invariably entered the cuddy, took his station near the table, and "scraps were thankfully received." If when once at dinner he was laughed at, he vented his indignation at being made the subject of ridicule, by uttering his peculiar hollow barking noise, at the same time inflating the air sac, and regarding the persons laughing with a most serious look until they had ceased, when he would quietly resume his dinner. He disliked confinement, or being left alone; when shut up, he would display great ebullitions of temper, but would be perfectly quiet when released. At sunset when desirous of retiring to rest, he would approach his friends, uttering his peculiar chirping note, beseeching to be taken into their arms: his request once acceded to, he was as difficult to remove as Sinbad's Old Man of the Sea, any attempt to remove him being followed by violent screams; he clung still closer to the person in whose arms he was lodged, and it was difficult to remove him until he fell asleep. His tailless appearance, when the back is turned towards the spectator, and his erect posture, gives an appearance of a little black hairy man; and such an object might easily have been regarded by the superstitious as one of the imps of darkness.

The limbs, from their muscular and strong prehensile power, render the animal a fit inhabitant for the forest (*fig. 44.*); enabling him to spring from tree to tree with an agility that we have frequently witnessed him display about the rigging of the ship; passing down the backstays, sometimes hanging by his hands, at others by walking down them in the erect posture, like a rope-dancer, balancing himself by his long arms; or he would spring from one rope at a great distance to another, or would drop from one above to another below. Being aware of his inability to readily escape pursuit when running on a level surface, his first object, when about to make an attack, was to secure a rope, and swing towards the object he was desirous of attacking; if defeated, he eluded pursuit by climbing out of reach. He was very fond of sweatmeats, dates, &c.; some Manilla sweet cakes that were on board he was always eager to procure, and would not unfrequently enter the cabin in which they were kept, and endeavour to lift up the cork of the jar: he was not less fond of onions, although their acridity would cause him to sneeze and loll out his tongue; when he took one he put it in his mouth, and eat it with great rapidity. He could not endure disappointment,

and, like the human species, was always better pleased when he had his own way; when refused any thing, he would display all the ebullitions of temper of a spoiled child, lie on deck, roll about, throw his arms and legs in various



directions, dash every thing about that might be within his reach, walk about, repeat the same scene as before, uttering during the time the guttural notes of *ra, ra*: the employment of coercive measures during the paroxysms reduced him in a short period to a system of obedience, and the temper was in some degree checked. He had not an unapt resemblance to a spoiled child, who may justly be defined as papa's pride, mamma's darling, the visiter's terror, and an annoyance to all the living animals, men and maid servants, dogs, cats, &c., in the house that he may be inhabiting.

The position of the feet, when the animal walks, is turned outwards, and the great toe, which has a capability of great

extension, is spread out wide, giving a broader surface to the foot; when he walks, to use a nautical phrase, "he sways the body," and stepping at once on the whole of the under surface of the foot, occasions a pattering noise, like that which is heard when a duck or any aquatic bird walks on the deck of a ship.

When the weather is cold, he is seen huddled together, loses all his lively and playful manner, and sleeps much during the day: on the return of warm weather, it imparts life to the animal; his spirits revive, he resumes his gambols and sportive gaiety. Although every kindness was shown to him by the officers and crew, and sweetmeats were given to him by them, he would not permit himself to be taken in the arms, or caressed familiarly by any person on board during the voyage, except the commander, Mr. Hays the third officer, and myself; all those, in particular, who wore large bushy whiskers he particularly avoided.

When he came at sunset to be taken into my arms, and was refused, he would display a paroxysm of rage, but that being unsuccessful, he would mount the rigging, and hanging over the deck on which I was walking, would suddenly drop himself into my arms.\* It was ludicrous to behold the terrified looks of the animal, and half-suppressed screams, if his finger was taken towards a cup of hot tea, as if to ascertain its temperature. He would frequently hang from a rope by one arm, and, when in a frolicksome humour, frisk about, shut his eyes, and have a resemblance to a person hanging and in the agonies of death.

When strangers came on board, he approached them at such a distance as he considered consistent with his ideas of safety. The only lady who had honoured him with her notice was one who came on board from a ship (*Euphrates*) we spoke at sea; he evinced, however, no partiality to the gentle sex, and would not permit her to caress him: whether it was the bonnet, which was *à la mode* of 1828, or other portions of the lady's dress, that excited his indignation, I know not; but he was evidently not eager to become acquainted with her: as she appeared at first timid of approaching the animal, it may in some degree have occasioned the cunning brute to keep up the feeling.†

\* The account of the orang-utan given by Dr. Abel, in the *Narrative of a Journey in the Interior of China*, accords with the habits of this animal, and the comparison is very interesting.

† I was acquainted with a lady in Ceylon, who, having been bitten by a cockatoo, always evinced great terror at the approach of one which was kept in the house: the bird appeared aware of it; for, when he saw the lady approach, he would flap his wings, elevate his crest, shriek out, and at the same time pretend to pursue her, at which she ran away quite terrified.

On the 19th of March (1831) we had reached the latitude  $45^{\circ} 41'$  N. and longitude  $24^{\circ} 40'$  W.; the animal seemed (although clothed in flannel) to suffer much from cold, and he was attacked by dysentery: his attachment was so great, that he would prefer going on the deck, in the cold air, with the persons to whom he was attached, to remaining in the warm cabin with those whom he did not regard. On the 24th he became much worse, his appetite gone, and he had a dislike of being moved; the discharge from the bowels was bilious, mixed with blood and mucus, sometimes entirely of blood and mucus, with a putrescent odour: the breath had a sickly odour, mouth clammy, eyes dull and suffused; drank a little water occasionally, and sometimes a little tea; he generally remained with his head hanging on the breast, and limbs huddled together; he would, however, when yawning, inflate the pouch as usual. On the 29th we had prevailing easterly winds; and he was daily sinking until the 31st of March, when he died, in latitude  $48^{\circ} 36'$  N., longitude  $9^{\circ} 1'$  W.

On examination, the thoracic viscera were healthy; the spleen was healthy, of small size, and lobulated at one extremity; the liver was large and healthy, the difference in size between that organ and the spleen was considerable in comparison with the relative proportions of those organs in the human subject; the gall bladder contained a small quantity of dark, thick, and viscid bile; some of the mesenteric glands were enlarged, some being of a white, others of a dark colour. On laying open the duodenum, it was found to contain a quantity of mucus slightly tinged with bile; the colon and cæcum were full of liquid bilious fæces mixed with mucus, and several small ulcerated patches on the inner surface, and a dark spotted appearance at others; the rectum also contained similar fæces, but mixed with a curdy matter, and there were several large patches of ulceration on the inner coat, more particularly near the termination of the gut: the kidneys were healthy, on the right the capsula renalis was large, but none was visible on the left; the bladder was quite empty, the inner surface scarcely moist. The animal had been castrated, but the spermatic cord terminated in the scrotum in two small oval substances, rather larger than peas; the sacrum and os coccygis were similar to those parts in the human subject. The communication of the larynx was examined; the epiglottis was only indicated by a slight obtuse angular rising; the sacculi laryngis three eighths of an inch in the long diameter, one eighth in the short; their margins were well defined, continued forwards below the body of the os hyoides into a

membranous sac situated internal to the external thick one. This animal has one common sac, and thus differs from the orang-utan, which has two; the lungs also differ from those in the orang-utan \* in being subdivided on each side, the right lung having three, the left two lobes, as in the human subject.† The extremities of the bones of the animal were cartilaginous.

London, January, 1832.

\* See Mr. Owen's dissection of the Orang-utan, in No. I. of the *Proceedings of the Zoological Society of London*.

† The larynx and a portion of the ulcerated intestine have been deposited in the museum of the Royal College of Surgeons in London.

*An Account of the Sandal Wood Tree (Santalum), with Observations on some of the Botanical Productions of the Sandwich Islands.*  
By GEORGE BENNETT, F.L.S., Member of the Royal College of Surgeons in London, &c.

(From the Magazine of Natural History.)

THE sandal wood tree (*Santalum*) is placed in the natural order Santalacæ, class Tetrándria, order Monogýnia. There are several species, but all have not wood possessed of fragrance. Of those from which the scented wood is procured I am acquainted with three species: two have been described, one the *Santalum myrtifolium*, found on the coast of Coromandel; and *S. Freycinetianum*, found at the Sandwich Islands; the other, an undescribed species, at the New Hebrides group; the latter appearing to have an affinity to that found on the Coromandel shores.

The native name of the sandal wood, among some of the countries where it is found indigenous, are as follows: —

Among the Malays, Jeendana. New Hebrides: Island of Erromanga, Nassau; Island of Tanna, Nebissi; Island of Annatom, Narti, niat. The Marquesa group, Bua ahi. The Island of Oparo, Turi, turi. At the Island of Tahiti (where it has been found on the mountains, but is very scarce) and Eimeo, Ahi. On the Malabar coast, Chandana cotte. In the Island of Timor, Aikamenil. In the Island of Amboyna, Ayasru. At the Fidji group, Iarsé. At the Sandwich Islands, Iliahi.

This fragrant wood, valuable as an article of commerce to China, is found in India, Eastern Archipelago (more particularly in the islands to the eastward), the Marquesas, Fidji, New Hebrides groups, &c.; the Island of Juan Fernandez, and has been occasionally found on the high mountains of Tahiti, Eimeo, and Raivavae, or High Island. Mr. Crawford observes (*Indian Archipelago*, vol. i. p. 419, 420.), respecting sandal wood, that it is “a native of the Indian islands, and is found of three varieties, white, yellow, and red; the two first being most esteemed. From Java and Madura, eastward, it is scattered in small quantities throughout the different islands, improving in quantity and quality as we move to the east, until we reach Timor, where the best and largest supply occurs.” And again he observes: — “In the western countries, where it either does not exist at all, or exists in small quantity and of bad quality; it is universally known by the Sanscrit name of Chandana, from whence it may be fair to

infer, that its use was taught by the Hindûs when they propagated their religion in the ceremonies of which it is frequently employed."

The sandal wood tree is most usually found growing on hilly rocky situations; and, when growing on low land, is usually found degenerated. This latter circumstance is known to the Chinese; for, at Singapore, a Chinese merchant observed, that the sandal wood found growing on the rocky mountains contains the greatest quantity of oil, and is of more value than that found growing in low situations and rich soil, as the latter is found to have degenerated. On asking him from whence he derived his information, he stated, "from Chinese books." At the Friendly Islands they use the wood for scenting their coco-nut oil, and a piece of the wood is considered a valuable present by the chiefs; they procure it occasionally from the Fidgi Islands, and call it hai-fidgi. The tree will not thrive at Tongatabu. The species found at the Island of Erromanga (New Hebrides) has ovate, entire, smooth, petioled leaves of a light green colour above, whitish and distinctly veined underneath; some of the leaves varied in being pointed. It is a tree of irregular and slow growth, attaining the height of about 8 ft. without, and 30 ft. with, branches, and about 2 ft. in diameter. I always remarked, however, that after attaining a moderate size it was invariably found rotten in the heart. Sandal wood is very heavy, sinks in water, and the part of the tree which contains the essential oil (according to Cartheuser, 1 lb. of the wood will yield 2 drachms of the oil) on which the agreeable odour depends is the heart, the other portions of the tree being destitute of any fragrance: this portion is surrounded by a lighter wood of some thickness, denominated the sap, which is carefully removed from the heart wood. Sandal wood is sold by weight, and varies in price, according to the size and quality, from 3 to 20 dollars and upwards the picul (133 lbs.). When young, the wood has a whitish colour, and possesses but little fragrance; as it increases in age it becomes of a yellowish colour; and when old, of a brownish red colour, and at that period is most valued from containing the greatest quantity of that essential oil on which its fragrance depends. It is considered the wood is never attacked by insects; this assertion is erroneous, as I have seen the nidus of some species formed in it.

At the Sandwich Islands, the tree is named iliahi or lauhala, signifying sweet wood (lau, wood, hala, sweet); and, when young, the tree is of very elegant growth. At Wouhala (Island of Oahu), I observed numbers of the young trees,

some of which were covered by a profusion of beautiful flowers of a dark red colour; the flowers, however, are often observed to differ in colour on the same tree, and even on the same stalk; they grow in clusters, some having the corolla externally of a dark red colour, and internally of a dull yellow; others having it entirely of a dark red, and others again have the corolla partly red and white externally; the young leaves are of a dark red colour, and give an elegant appearance to the tree. This was not observed in the species found at the Island of Erromanga; indeed, the species found at the Sandwich Islands had a more handsome appearance in its growth than that at Erromanga. At the Sandwich Islands, two varieties of the wood are observed by the natives, depending, however, only on the age of the tree; the young or white wood is called lau, keo, keo (lau, wood, keo, keo, white); and the red wood, lau, hula, hula (lau, wood, hula hula, red). As before stated, the wood, when taken from a young tree, is white, containing but a small quantity of oil; as the tree increases in growth, the wood becomes of a yellowish colour, and the oldest and best is of a brownish red colour\*: the different varieties of the wood depend, therefore, on the age of the tree; and are of three kinds, white, yellow, and red, of which the yellow and red (from containing the largest quantity of oil) are most esteemed in the Chinese market, where the wood is principally used, the expressed oil being mixed with pastiles, and burned before their idols in the temples. The Chinese are said to procure the oil by rasping the wood, and then expressing it through strong canvas bags.

Indigenous to the Sandwich Islands is a species of *Myóporum* (*M. tenuifolium*), the heart of which is fragrant; and, from having been mistaken for sandal wood, has received the name of spurious sandal wood from Europeans, and is called naiho or naihio by the natives. The heart contains a quantity of essential oil; but the fragrance is not so agreeable as that derived from the sandal wood, and for that reason it is not esteemed in the Chinese market: the heart is also surrounded by a lighter wood, termed the sap, as in the sandal wood tree. As an instance of the resemblance this bears to the sandal wood, so as to deceive a common observer, occurred during my visit to the Island of Oahu (Sandwich Islands), in December, 1829. Two large pieces of the naiho, deprived of the sap, were collected for me, and had been placed in the yard of a mercantile gentleman previously to my taking them on board. At

\* The wood is frequently buried, and the sap allowed to rot off: and this is considered to improve its quality.



this time there was some sandal wood, of small size, weighing in the yard, to be sent on board an American ship about to sail for Canton. The supercargo, who was superintending the weighing, seeing these pieces, mistook them for sandal wood; and, anxious to secure two such large pieces among the small kind which he had purchased, placed them in the scales; and they were sent on board with the rest, the person engaged in weighing being also ignorant of the difference. This circumstance was not discovered until some time after the ship had sailed: engaged in other pursuits, I had for some time forgotten my wood; but on enquiring for it, its disappearance was accounted for, after some time, by the cause just related. I was informed that a cargo of the wood was taken by an American ship to Canton; and, on its arrival there, it was only considered fit for firewood.

The name of a "spurious sandal wood" is a source of alarm to those who, engaged in purchasing sandal wood, are not able to judge of the difference, or had only known the "spurious kind" by name. An instance of this occurred under my own observation. A vessel arrived from the New Hebrides group at the Bay of Islands (New Zealand) in July, 1829, having on board some sandal wood. This was purchased by the commander of a ship lying at that place; he had only heard of the existence of a spurious kind when at the Sandwich Islands, but never having seen it, was unable to judge of the difference. When the sandal wood came on board, it was found to consist of the white, yellow, and red varieties, having been procured from trees of different ages; that which was of a whitish colour, and had less fragrance than the other wood, was considered immediately as what he had heard of as spurious wood, and was rejected, much to the annoyance of the owner, who declared it was all sandal wood. This supposed spurious kind was laid aside, and was finally delivered to the cook for fire-wood; and, when burning, a delightful fragrance was diffused over the ship. Some of it was landed amongst the fire-wood from the same ship at the Sandwich Islands, much to the surprise of some of the merchants, who thought that sandal wood must be very common on board when it was used as fire-wood.

The *naiho* (*Myóporum tenuifólium*) attains the height of 15 to 20 ft., and a circumference of 3 or 4 ft.; the scented wood differs, according to the age of the tree, from a light yellow to a reddish colour; the tree is branchy; the leaves are lanceolate, entire, pointed, smooth, and of a light green colour; the flowers are small, solitary, of a white colour, with a pink spot on the internal part of each petal, the corolla five-cleft,