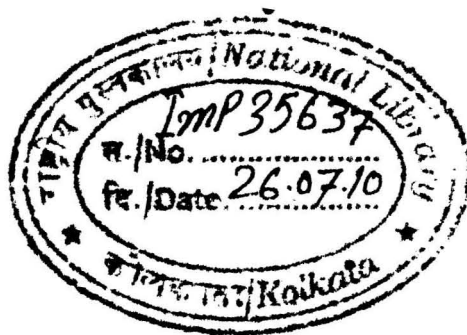


NARRATIVE OF A JOURNEY
IN THE INTERIOR OF
CHINA,
AND OF
A VOYAGE TO AND FROM THAT COUNTRY,
IN THE YEARS 1816 AND 1817;
CONTAINING
AN ACCOUNT OF THE MOST INTERESTING TRANSACTIONS
OF
LORD AMHERST'S EMBASSY TO THE COURT OF PEKIN,
AND
OBSERVATIONS ON THE COUNTRIES WHICH IT VISITED.

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AND MEMBER OF THE GEOLOGICAL SOCIETY,
CHIEF MEDICAL OFFICER AND NATURALIST TO THE EMBASSY.

ILLUSTRATED BY MAPS AND OTHER ENGRAVINGS.

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TO THE
RIGHT HONOURABLE
LORD AMHERST

§c. §c. §c.

MY LORD,

THE high situation held by Your Lordship as head of the Embassy of which these pages contain some account, will, in the public mind, point out the propriety of the present Dedication. Permit me to declare that this consideration has less influenced me than the desire of publicly thanking Your Lordship for your sanction and support to my scientific pursuits, and uniform kindness to myself.

I am, My Lord,

With the greatest respect,

Your Lordship's

Obliged and obedient humble Servant,

CLARKE ABEL.

London, July, 1818.

PREFACE

I HAVE laboured under great difficulties and many discouragements in preparing the following pages for the press. A narrative, having for its principal subject a journey through the interior of China, must derive its interest either from the novelty and importance of the incidents which it relates, or from the quantity of original information which it contains respecting that singular country. In both these respects I am in a great degree anticipated. The tale of the Transactions of Lord Amherst's Embassy has been too well and too circumstantially told by an official pen to leave me much expectation of finding public curiosity unsatisfied respecting them. The close delineation of that part of the country equally visited by Lord Macartney's and Lord Amherst's Embassy, contained in the accurate and laboured work of the late Sir George Staunton, has left very little to tell respecting it, and the production just alluded to has in a great measure described what was exclusively seen by the latter. The work that had for its object the establishing "*the point of rank which China may be considered to hold in the scale of nations,*" has so exhausted the topics which in this view might be dwelt upon, and has so illustrated them by the writings of the Missionaries, as almost to preclude the hope of a further elucidation of the same subjects from similar sources of information.

I am in scarcely less difficulty respecting the natural history of the countries which I have visited. Sickness abridged, and shipwreck almost annihilated the materials which would have afforded extensive scientific communication respecting China. My illness, indeed, was comparatively of little importance, except as it prevented my observation of the country; for the exertions of my friends more than compensated the loss of my individual efforts in making collections. But the shipwreck deprived me of all the fruits of those means which the wisdom and liberality of the East India Company placed at my command; and has only left me the duty of stating, in justice to others, what was the nature of those means, and something of the results to which they led.

My appointment to the Embassy was at first simply medical; but through the recommendation of Sir Joseph Banks to the East India Company, I was permitted to take upon me the office of Naturalist, and received an ample outfit of all the apparatus for scientific research. To give greater effect to my exertions in collecting and preserving the vegetable productions of the countries to be visited by the Embassy, a botanic gardener, from the Royal gardens at Kew, taking out with him a plant cabin, for the preservation of living specimens, was placed under my directions; and to assist generally in my pursuits my brother-in-law, Mr. Poole, was allowed to attend me. With such facilities, it would have been strange, even in countries often trod by scientific men, if I had not gleaned some new and important facts. But in China, scarcely touched by the foot of the naturalist, nothing short of a rich harvest could have been received as a token of my due exertions. The proofs of what these were, of their efficiency or abortiveness, are buried in the straights of Gaspar. But it is incumbent on me to bear testimony to the exertions of Mr. Hooper, the Botanist Gardener, whose industry was equally unremitting and availing. His more peculiar department having been to collect and preserve seeds, he placed, on our leaving China, three hundred packages,

in my keeping, many of which were taken from plants of undescribed genera, and by far the greater number from unknown species. They formed part of the shipwrecked collection.

From the kindness of Sir George Staunton, to whom I gave a small collection of China plants, and of Captain Basil Hall, to whom I gave a small collection of China rocks at Canton, I have derived all the specimens which have enabled me to give the slight geological and botanical notices of China contained in this work. To the latter gentleman, and to his friend, Mr. Clifford, I am also under other obligations of an important kind; and in naming them, have to mention the loss of collections equalling my own in value. In taking leave of the Embassy on its disembarkation in the Gulf of Pe-tche-le, they took charge of a case of bottles with spirit, for the purpose of preserving any interesting marine animal production which might fall in their way; and the necessary means for the preservation of plants. On rejoining the Embassy five months afterwards, they presented me with a collection of Zoophytes and an extensive collection of plants from the Lew-chew Islands. These also perished with the *Alceste*, but do not complete my catalogue of losses. A fine collection of madrepores made by Capt. Maxwell may be added to them, and will still leave it unfinished. Whilst the *Alceste* and *Lyra* explored the Corean coast and the Lew-chew islands, the other ships of the Embassy visited the coast of Tartary. Lieut. Maughn, of the East India Company's service, went with them, and having taken directions as to the mode of preserving dried specimens of plants, surprised me on my arrival at Canton with an extensive geological and botanical collection from the coast of Tartary. These, increased by a collection which had been made from the same part of the world, for Mr. Livingston, one of the surgeons to the British factory at Canton, and which I received from the kindness of that gentle-

After leaving the wreck of the *Alceste*, I had the mortification of hearing that the cases containing these seeds had been brought upon deck and emptied of their contents by one of the seamen, to make room for some of the linen of one of the gentlemen of the Embassy.

man, were also placed in my possession, and shared the fate of my other specimens. But I should fatigue the patience of my readers without doing justice to my own feelings, if I attempted to state all that I owe to the kindness and exertions of my friends and all that they have left me to regret.

After these declarations respecting the loss of materials which would have given value and interest to these pages, what, it may fairly be asked, have I remaining of importance to the public? In looking over my observations on the countries that I had visited, I was of opinion that they contained something to interest, and something to inform. It is not for me to judge how far I may have correctly estimated the value of my matter; but I trust that the exclamation of the Poet,

“————— ibi omnis,
“ Effusus labor.”

will not entirely apply to my pages. I have endeavoured to describe things as I saw them; and when subjects arose incidentally from my narrative, have tried to give them an extrinsic interest by noticing the opinions of others and comparing them with my own. In doing so, I have respected the freedom of my own mind, and have never hesitated to express my thoughts, even when they differed from high authority. I trust that my language has, on these occasions, expressed the deference of my feeling. If, however, it should not always be found exactly suited to my purpose, I beg that my readers will charitably attribute it to my little experience in the niceties of speech. Indeed, it is in what concerns the style of this work that I am especially anxious to bespeak their indulgence. Little practised in composition, I have been desirous to give my own thoughts in my own words, and in doing so have not, I fear, benefited the language of these pages, and have delayed them longer than the merit of their contents may seem to have deserved. In what regards my facts and conclusions I cannot feel much apprehension: the first are, to the best of my judgment, strictly stated, and

the last were drawn because they seemed to follow the premises, and if they be not adopted will only have the fate of others better than themselves.

In making acknowledgments it seems almost superfluous to state that I am under the deepest obligations to Sir Joseph Banks, whose support to my scientific views was the natural consequence of their being laudable and useful. In leaving England I carried with me his instructions respecting the objects to be kept most closely in view during my absence, and since my return have derived from the freest access to his library and herbarium all possible facilities in constructing this work.

Of the assistance of Robert Brown, Esq. the following pages bear sufficient evidence. His description of a new genus, which, in friendly partiality, he has named *Abelia*, and of two new species of plants, the one leading to the establishment of a new natural order, and the other fixing the place in the natural method of a genus hitherto of doubtful affinity, gives unequivocal value to my Appendix.

To Mr. Morrison's journal I owe in a great measure the short account of the progress of the Embassy during the period of my illness, and some interesting notes respecting transactions from which I was absent. Some of these notes would have been incorporated with the text had I possessed the journal at an earlier period. To Mr. Cooke's journal I have been also much indebted, and to the same gentleman I owe two drawings which illustrate the book. The drawings of the *Quercus Chinensis* and *Eurya Chinensis* are from the tried pencil of my friend W. Hooker, Esq. To Mr. H. Raper, an officer of the *Alceste*, I am indebted for all the geological views, except two, of the Cape of Good Hope, taken on the spot, and possessing not their least value in their minute accuracy. The plate of the temple of Quong-ying is from a sketch which I obtained from the kindness of Sir George Staunton. The other drawings, not bearing the names of professed artists, I am answerable for.

For that part of the "Chart showing the track of the *Alceste*," which gives the line of the Corean coast and the Corean archipelago, I have to thank the Rev. Mr. Taylor, chaplain of the *Alceste*. The more general map of China, and the map of the route of the Embassy on the Yang-tse-kiang, are reduced from the great map of the Jesuits. My object in giving the former has been to convey to the reader some notion of that very peculiar character of the country, which arises from its universal intersection by navigable rivers and canals, as well as to show the whole route of the Embassy. Its accuracy of course depends on that of the Jesuits, which we had no opportunity of verifying, but had no occasion to suspect. It so far, however, differs from the map of the Missionaries in containing the names of a greater number of places in the line of our route than the original, and in having the nature of the banks of the rivers passed over by the Embassy marked upon it, when this could be done without producing confusion by crowding the letter-press. The same observations apply to the map of the Yang-tse-kiang and Po-yang lake.

The meteorological tables contained in the Appendix, although very imperfect, will be thought perhaps to have merited insertion as adding to the very few facts that we already possess regarding the atmospherical phenomena of a part of the world so little known. I have scarcely as much to say for the Itinerary of our route. It is of some consequence in reference to the maps, and in containing distances extracted from a Chinese Itinerary: an excuse for its insertion may be found in the small space which it occupies.

In conclusion, I must not forget to point out the fidelity with which the engraver, Mr. Fielding, has executed his department of the work, or to acknowledge the interest he took in the progress of it, and his anxiety that the accuracy of his pencil should correspond with the nicety of my own wishes in subjects not so frequently under the eye of an artist.

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EMBASSY TO CHINA.

CHAPTER I.

DEPARTURE FROM PORTSMOUTH.

AT three o'clock of the afternoon of February 8th, 1816, I embarked with His Excellency Lord Amherst, on board H. M. S. *Alceste*, then lying at Spithead. Getting under weigh at eight o'clock the following morning, in company with H. M. S. *Lyra*, Capt. B. Hall, and General Hewitt, Capt. Campbell, we steered with a fine breeze through the Needles. In passing the shores of the Isle of Wight, my imagination dwelt painfully on its white cliffs and verdant slopes, which but three days before I had visited with friends who gave the best value to my existence, and from whom I was separating, perhaps for ever. But the painful feelings excited by such reflections, too intense, indeed, for long continuance, were quickly destroyed by my share of the bodily suffering which attacked, in succession, the greater number of those, who then, for the first time, felt the motion of a ship at sea. Scarcely had we cleared the western extremity of the island, when an intolerable giddiness, languor, and sickness, drove me to my cot, and had but slightly mitigated, when the mountains of Madeira were descried from the ship.

Early in the morning of the 18th February, going upon deck, I saw this interesting island bearing S. S. W., distant about six leagues.

A thick white cloud covered its mountains, which gradually dissipating as we advanced, disclosed their snowy summits beautifully contrasting with the dark foliage of their declivities. The squadron hove to about ten o'clock in the forenoon, off the town of Funchal, at the distance of two or three leagues from the land.

Having prepared every thing for collecting objects of natural history, I waited impatiently for the appearance of a boat, to carry me to the fulfilment of my anticipations. Examining with my glass the aspect of the rugged shores, I exulted in the geological interest of their appearance, and collected, in imagination, plants which, from number and rarity, would give a long and delightful employment. What then was my disappointment, when I was informed by His Excellency, that he wished no one to leave the ship, lest any chance of delay should arise to the sailing of the *Alceste*, as soon as she had obtained the necessary supplies. As Lord Amherst denied himself, for public reasons, the pleasure which he much desired, of visiting the island, no one of his suite had a shadow of right to remonstrate, and I prepared to suffer my disappointment with all possible patience. After the lapse, however, of two or three hours, Capt. Campbell, of the General Hewitt, came on board, and offered to take me on shore; and, being almost immediately to return, I readily accompanied him.

On approaching the beach, where I had hoped to find some specimens of sea-weed, I found the depth of water up to the shore so great, that a vessel might almost anchor with her bowsprit over the land, and consequently, that no marine production was to be met with. The beach is made up of large rounded fragments of lava, generally of a vesicular structure, very ponderous, and of a bluish colour. Landing to the westward of the town, I found a mountain torrent, having its bed sides formed of huge masses of volcanic matter, as far as the eye could follow its romantic windings. I entered its bed in search of plants, but found very few, as the apprehension of losing my chance of returning to the ship prevented my looking very narrowly. The *Fumaria Parviflora*, which was growing in great

abundance in all the crevices of the rocks, and a few geraniums, ferns, and mosses, composed my collection.

Not finding the boat in readiness on my return to the beach, I walked into the town, which I entered under an archway that led to a long narrow street very well paved with round pebbles, and perfectly clean, and which was intersected by others of a similar character. The houses are lofty, and completely overshadow the narrow streets, forming an effectual screen against the beams of a hot sun. The softer sex, for here they cannot be called the fair sex, were enjoying the air on virandas which projected from the first floor of the better-looking houses, and were enabled by the narrowness of the streets to converse freely with their opposite neighbours. The young ladies of Madeira, although dark brunettes, possess many charms. Their hair, and arching eye-brows, are of a jet black, and their eyes sparkle under lashes of the same colour; their face is oval and expressive, and handsome rather than beautiful.

The streets were filled with foot passengers, of whom no inconsiderable number were priests, in long loose robes, and without hats. They had evidently fared on the fat of the land; and many of them exhibited in their countenances and deportment, a full share of self-satisfaction and self-importance. But the faces of others seemed to be lightened with a paternal feeling, and physiognomists might have traced in them characters of mildness, benignity, and religion. Neither did they all receive the same marks of respect from the passing populace. Sometimes the hat was simply raised, and the body bowed, without any regard being directed to the object of this salute, which was begun and ended at the instant of meeting. In other cases, an eagerness was shown to catch the observation of the Father, long before he approached, while a deprecating and beseeching manner appeared to implore the blessing of a superior being. It was agreeable to the harmony of my own sentiments, that these last attentions were paid to those alone, whose exterior almost incited me to a similar display of respectful feeling.

On quitting the town, I was disposed to conclude, that it had been much improved since it was visited by its last describers ; but as it was Sunday when I was there, and all classes were enjoying the leisure of the day in their best apparel, and as first impressions are frequently erroneous, I shall confine myself to the remark, that what I saw did not correspond with what I had read.

When I reached the *Alceste*, I found that I might have remained on shore several hours, as some circumstances had occurred, which prevented her immediate sailing ; and she did not leave Funchal Roads till the evening, when we got under weigh with a fine breeze.

As we proceeded on our voyage towards the Line, the tedium of our situation was in some measure relieved, by the amusement we derived from observing the habits of the flying-fish, which continually surrounded us. This animal, equally interesting in its structure, and in the circumstances of its persecuted life, has been so often the theme of the traveller's description, that its very mention comes with the heaviness of a twice-told tale. Yet, although its descriptions are numerous, much is still wanting to the completion of its natural history ; and it is a subject of regret with naturalists, that its species met with by voyagers, are not ascertainable. For these reasons, and because " nature is an inexhaustible source of investigation," I shall state the few observations which I made on a specimen that was brought me on the morning of the 27th February, when in lat. $10^{\circ} 38' N.$, and $25^{\circ} 47' W.$ long. ; and I do this the more readily, as its characters did not entirely accord with the description of any other species.

The colour of its back was a deep blue, which passed on its sides into a yellowish green, terminating in a silvery white, which, near its tail, had a pinkish hue. Several small patches of white reached from above its eye, to the pectoral fin. Its fins were six in number ; two pectoral, two ventral, one caudal, and one dorsal. The pectoral fin consisted of fourteen rays, and was five inches in its greatest length, and as much in its greatest width. The two undermost rays, when the wing was expanded, were very short, and scarcely distin-

guishable from those next them, and the uppermost ray was the longest. Each ventral fin consisted of six rays, and was situated immediately behind the insertion of the pectoral fin. The dorsal fin, the rays of which were so indistinct that I cannot venture to state their number, had its origin about two-thirds down the back. The caudal fin was an inch long, and terminated at the setting on of the tail.

From the above description, it will appear that my specimen resembled the *Exocætus Volitans* in the position of the ventral fins, but differed from it in colour, which in the latter is brownish red on the back. It agreed with *Exocætus Exiliens* and *Mesogaster*, in its general colour, but differed from them in the position of its ventral fins. It was distinguished from them all by the position of its dorsal fins. Should these differences be considered sufficient to establish it as a new species, I would propose to call it *Exocætus* * *Splendens*, from the brilliancy of its colours.

The species which I have just described is furnished with as ample means of supporting itself in air as any of its congeners. Its air-bladder reaches from the pharyngeal bones along the spine to the extremity of its body, occupying eight-tenths of its whole length. The widest part of the air-bladder is situated immediately in front of the pectoral fins, and it tapers gradually towards the tail. It is equal in bulk to about four-tenths of the whole fish.

A particular purpose seems to be answered by the greater dimension of the air-bladder near the head, namely, the compensation of the great gravity of the animal at this part in consequence of its breadth. This compensation is necessary to the support of the animal's body in the air in a favourable position for flight. The situation of the pectoral fins before the centre of gravity in this, as in other flying-fish, also tends to elevate the head, as remarked by Lacépède.†

If the white spots on its head be peculiar, *Exocætus Maculatus* would be a better name.

Histoire Naturelle des Poissons, vol. v. p. 406. Lacépède has made the situation of

It has been stated by a naturalist * of the highest eminence, that the pectoral fins of the flying-fish serve only as a parachute, and by another † that “the animal beats the air during the leap, that is, it alternately extends and closes its pectoral fins.” With this last observation my own experience perfectly agrees. I have repeatedly seen the motion of the fins during its flight, and as flight is only “swimming in air,” it appears natural that these organs should be used in the same manner in both elements. The flying-fish is also much nearer in conformation to the bat, which supports itself in the air by repeated percussion, than to the flying squirrel, and other animals, whose structure only enables them to fall slowly. I may also remark, that when the fin of the flying-fish expands, its rays do not open in the same line, but describing a curve strike the air with repeated impulses.

I found it impossible to satisfy my mind with any probable conjecture respecting the greatest space through which these fish can support themselves in air, but I have seen them fly without once touching the water for fifty seconds, and my eye could not follow them till they fell. I have little doubt that they take to the air, as well for pleasure as to escape their enemies, since they were often seen rising about the ship in all directions, when no foe was visibly near, and when they had not been disturbed by the ship’s motion through the water. Indeed I have been disposed to think myself unfortunate in not witnessing, during the whole voyage, a single flying-fish taken by a frigate-bird, or dorado; and I therefore venture to hope that these poor animals are not so persecuted a race as travellers have been led to imagine.

It is impossible to reflect on the habits of the flying-fish without considering its power of respiring in air. In treating of the respir-

the dorsal fin opposite to the anal fin an essential character of the genus *Exocoetus*. Is it a universal character, or is the situation of the dorsal fin in my specimen a mere exception to a general law?

Cuvier, Règne Animal, tom. ii. p. 188.

Humboldt, Personal Narrative, vol. ii. p. 14.

ation of fishes, the possibility of their air-bladder acting subsidiarily to the branchiæ, has not passed unnoticed by authors ; but I am not aware that this organ in the flying-fish has been pointed out as likely to assist the respiration of that animal out of the water. And yet I had once flattered myself with the belief that I had discovered its communication with the mouth under such circumstances of organisation as precluded any doubt of its aiding the function of aerial respiration. But I had only one opportunity of dissecting the animal when recently taken, and I dare not trust to a single observation. I would recommend however those, whose opportunities are frequent of possessing the flying-fish soon after death, to examine attentively the termination of its air-bladder at the pharyngeal bones. These bones, in all other fish * which I have examined, are two in number, and much apart, their office being to assist deglutition and to shield the blood-vessels which ramify under them on their way to the branchiæ. In the flying-fish their number and position is different, allowing the inference that their function is also different. They are in this animal four in number, two large and two small. The two former in close apposition are situated immediately above and behind the anterior orifice of the œsophagus, and are compressed by the latter, which are united to them by a strong elastic membrane. Muscles are attached to the larger bones so as to separate them by their contraction. The anterior termination of the air-bladder is at the posterior portion of the larger bones. The question to be determined is, whether the air-bladder has an orifice at this part, which is opened and closed by the separation and re-union of the pharyngeal bones.

On the evening of the 4th March we passed the line, and on the following morning shortened sail, to pay the usual homage to Neptune, which being accomplished we proceeded on our voyage.

Since my return I have examined a specimen of the *Exocoetus Mesogaster*, preserved in spirit, in which the two large bones were united, but there was an orifice between them and the small ones ; whether it led into the air-bladder or not I was unable to determine. The same specimen had only eight. instead of ten. rays to its branchiæ.

On the 10th, being in $10^{\circ} 39'$ S. Lat., and $32^{\circ} 47'$ W. Long., the Alceste parted company from the Lyra and General Hewitt, which shaped their course for the Cape, whilst the former steered for the harbour of Rio de Janeiro. On the 20th, we were off Cape Frio, and all those who had never before visited the shores of South America anxiously speculated on the scenes they were about to witness in the New World.

The affections of different minds on first approaching an interesting coast, might form a subject of curious and instructive speculation. When the land indeed appears but as a dark undefined speck in the distant horizon, first reflections cannot widely differ, although their vividness may depend on the sensibility of the individual, and their extensiveness on the number of his associations. But few educated men will approach a country for the first time of their lives, without reverting to the history of its conquest or discovery. On making the coast of the New World, so interesting in the history of man and of the earth, every thought must centre in Columbus. All the circumstances of his situation on the day of his discovery, all the attributes of his mind, and all the heroism of his conduct, array themselves in the imagination. But as the land develops itself, as its larger features become visible, speculation is extinguished in a general glow of undefined but delightful feeling. Never can I forget the pleasing, yet almost awful emotion of my mind, when rising early in the morning I first beheld the shores of South America expanded before me. To describe the scenery by words would be a vain attempt; the pencil of a painter enthusiastic in genius and in feeling, could alone convey to those who have never beheld it an imperfect apprehension of its grandeur.

As objects become still more defined and palpable, various trains of thought arise in different characters. In the commander of a British ship of war, the hope of finding refreshments for his crew, of meeting old friends, of carrying his ship into port in a skilful and gallant style, and of supporting the proud pre-

eminence of his flag, is perhaps on ordinary occasions the leading sentiment of his mind. — In many of his officers, an escape from subordination to the independence of a rove on shore, with all the importance really and in imagination attached to the character of a British naval officer, may be the chief pleasurable expectation. In one or two of them, indeed, very different feelings may arise. Habit sometimes acts so powerfully on a seaman's nature, that all his pleasing associations are of a nautical character, and whatever interrupts their train is to him a positive evil. To such a character the appearance of land, so dear to others, brings with it no pleasing emotion, and is irksome in proportion to his chances of delay. — The professor, or admirer of the pictorial art, dwells on the exterior characters of the scene, collects all the great traits by which a sublime picture is formed, and anticipates the interior beauties of the country of which he contemplates the outline. — The speculator on human character, varied by the modifying influence of climate, religion, and government, takes his own species as the subject of his examination. As the inhabitants of different classes appear, he combines them in an imaginary society, owing its character to his previous conclusions, but which he expects will be found consistent with reality. — Over all these, the naturalist has many advantages both with respect to pleasurable expectation and the chances of its fulfilment. The objects of his studies are infinitely numerous, and each in its simple relations is so completely a centre of observation, that he must always be repaid for the labour of research. On first entering the harbour of Rio Janeiro, he feels unutterable delight. No apprehension of disappointment darkens his prospect. The certainty of meeting Nature in her gayest and most exalted colours, in all her varied and attracted forms, gives him unmixed enjoyment. The brilliant tints of the mountain foliage feed his botanical imagination, whilst the dazzling insects which flutter about the ship tell to him the stores of animated nature. As a geologist, he may almost remain on the deck of the vessel and pro-

secute his labours. Immense ridges of primitive mountains, traversed by deep ravines, and rising in succession to the very boundary of his vision, afford him an ample subject of interesting investigation.

Long before the *Alceste* reached her anchorage, the firing of cannon at regular intervals announced the occurrence of some great public event, and as soon as we communicated with other ships in the harbour, we were informed of the death of the Queen of Portugal. Vessels of all nations that were at this time lying off St. Sebastian, showed their respect to the King of Portugal by crossing their yards, hoisting flags half mast high, and firing guns every five minutes. The *Alceste* followed their example; and as a farther mark of respect, the British Ambassador determined to appear on shore with some outward badge of mourning, and requested the gentlemen of his suite to do the same.

It was the afternoon before we anchored, and dark before I could gratify my impatience to visit the shore. The city of St. Sebastian has undergone so little alteration since it was described by Mr. Barrow, that any account of it which I could give from my limited means of observation would be superfluous. The darkness of the night prevented my seeing much of the inhabitants, but those who did fall under my passing notice were priests riding in their carriages, friars in procession, and ladies peeping from latticed doors. In company with some friends I hastened to the *Caza de Pasto* in the *Rua D'Alfandaga*, the best English hotel in the place, which, although it did not possess the comforts of a similar establishment at home, afforded no ordinary fare, and very civil treatment made us less fastidious respecting our entertainment. Having partaken of a supper at which we were supplied with tolerable claret at three shillings a bottle, we enquired for beds. The house contained no distinct bed-rooms and but few beds; but in a large billiard-room, with the assistance of the billiard-table, chairs, and sofas, our party, though numerous, mustered a sufficient number of separate resting places. The dread of musquitoes, the scourge of Europeans* in hot

countries, did not disturb our repose, and we were glad to find in the morning that we had not suffered from their attack.*

I set out at an early hour on my return to the ship, and on my way through the town had an opportunity of taking a hasty glance at the morning employments of some of its inhabitants. Walking by the chief fountain which supplies the city, I was surprised at the great number of slaves who were waiting with vessels to receive in succession a measured quantity of water, and I witnessed the same scene at whatever hour in the day I passed this spot. St. Sebastian is badly supplied with this article, although numerous springs rise every where in its neighbourhood within the distance of one or two miles. But the Portuguese in this country require some powerful and present necessity to rouse them to any great exertion, and it is less a matter of wonder that they suffer this inconvenience to exist, than that they ever should have attempted and completed so extensive a work as the aqueduct which supplies the city.

In passing the fish and vegetable market at the southern extremity of the town, every sense I possessed became disagreeably impressed. My hearing, by the jargon of the different languages used by the slaves, who were bartering for their masters, and by the old women who were endeavouring to obtain the highest price for their articles of sale. My sense of sight and of smell, by a horrible combination of every sort of filth, which sent forth the most sickening effluvia that ever exhaled from the corruption of a charnel-house. The very air tasted of putridity, and my clothes felt unctuous to the touch from accidental contamination. Some of my companions who were old travellers felt disposed to joke at my squeamishness, and having bought a large quantity of fruit and fish, hired a canoe which carried us and our steaming cargo on board.

A drought had prevailed at Rio for some weeks previous to our visit, which is always unfavourable to the propagation of these formidable insects. I have found that rubbing the skin with camellia oil is the best protection against their attack.

On reaching the ship, I prepared every thing for making collections of plants, and set off in company with some friends on an excursion to the Braganza shore.* We landed at the foot of a small fort, which was in a state of as complete disservice as it is possible to imagine. The guns, from their rust and the rottenness of their carriages, could be formidable only to those who should attempt to discharge them. Yet as the war had but recently terminated, and this fort commanded an important part of the harbour, it might have been expected to be in a tolerable state of repair. From the fort we divided ourselves into different groups, and ascending the rocky hills that surrounded us, entered the woods which every where covered their summits. Taking a road which led through one of the thickest, I soon found myself encompassed by all the beauties of Flora. Sensations never before experienced, for some minutes, entirely overwhelmed me. It was the first time that I had ever seen the glorious productions of a tropical climate in their native soil. Plants, which in England are reared at great expense, and obtain under the best management but a puny and uncharacteristic form, flourished around me in all the vigour and luxuriance of their perfect being. A thick coppice was formed by numerous species of cassia, ~~caesalpinia~~ caesalpinia and bauhinia, whose gay colours and elegant forms were curiously contrasted with the grotesque characters of the aloe and the cactus. The trunks of the forest-trees were covered with beautiful creepers, and parasitic ferns occupied their branches. Emerging from the wood, I entered groves of orange-trees, bearing fruit and flowers in the greatest profusion. I approached them in wonder, and scarcely dared to taste their abundant produce, when I was astonished by receiving permission to gather them in any quantity; and this permission was not confined to myself, but granted to all my companions, who successively visited the place of their growth. Indeed, nothing could surpass the liberality of the proprietors of orange-groves, or of the Portuguese peasantry whom I

The shore on the opposite side of the harbour to that on which the city of St. Sebastian stands.

met with in my different excursions in the neighbourhood of Rio. Whenever they could understand me they gratified my wishes in the most prompt and obliging manner. Having laden myself with plants, I returned in the evening along the rocky beach to my boat, walking at every step over land-crabs and the larvæ of insects, whose numbers gave an appearance of animation to the soil.

On the following morning I again visited the town; and, having procured horses, went with two of the officers of the *Alceste* on a visit to the Sugar-Loaf Mountain, but was unable to approach it very near. I ascertained, however, that it was surrounded by interesting scenery, and determined to revisit it by water the succeeding morning.

Returning from my ride through the city of St. Sebastian, I fell in with a group of negro slaves who were assembled at the corner of a street, listening with great delight to one of their own tribe playing on a very rude musical instrument. It consisted of a few wires fixed to a small square frame, placed over a large segment of the shell of the coco-nut. I requested one of his companions to accompany the instrument with his voice, which he immediately did, in a monotonous, though not unpleasing tone. Another performer accompanied the last notes by wild and expressive gesticulations, in which he was followed by most of the bye-standers. It was more than probable that national remembrances animated both performers and auditors. Nothing less powerful, surely, could excite the strong emotion which agitated their frames; and I was, in some measure, confirmed in this opinion by what followed. Having bought the instrument, I slung it on my arm, and rode with it through the streets to the English hotel. Every slave whose eye caught my appendage uttered as I passed a cry of surprise: it was also one of joy and exultation. His dark countenance assumed the liveliest expression, and his whole attitude marked the strong sensation excited by the appearance of a stranger, a white and a free man, bearing, perhaps, his national emblem, under such circumstances, reviving the recol-

lection of that liberty and that home from which he had been impiously and for ever torn.*

The number of slaves imported into Rio Janeiro has greatly increased during the last year, in consequence of the abolition which is to take place in five years, according to the treaty between the British and Portuguese governments. But although this effect of British interference in behalf of suffering humanity is much to be deplored, the great and beneficial alteration which it has produced in the treatment of its unfortunate objects more than compensates the temporary evil. With the view of obtaining a stock of slaves that may supply the wants of the colony when the trade in them shall have become unlawful, the Portuguese have adopted the measure of selecting from the market the most vigorous and handsome of the two sexes, and establishing them in pairs in different parts of their estates. The object of this plan is sufficiently obvious, and it will probably be obtained. Promiscuous and unrestrained intercourse has been much allowed among the slaves in Rio Janeiro, and experience has of course shown that it is unfavourable to population. Whilst a ready, cheap, and exhaustless supply was open, slave-owners cared very little about the best means of keeping up their stock by breeding; but they have been induced by the apprehension that the trade will become contraband at the expiration of five years, to attempt every possible method of increasing the number of their human cattle; and as this cannot be accomplished without attention to good feeding and general comfort, they will, probably, (without any better feelings on the score of humanity,) render the state of slavery more tolerable amongst them. I blush to observe the phraseology I use in writing of my fellow men, but I can in no other

On the subject of the slave-trade in South America, I had collected some facts during my short continuance at Rio, which I had intended to give as illustrative of its extent, increase, cruelty, and impolicy; but I find in the lucid and ample details of Mr. Koster, so complete a developement of every circumstance which it involves, that any detail from me respecting it, would be equally useless and impertinent.

way express the relation which exists between the master and his slave.

It is affirmed that three-fourths of the population of St. Sebastian are blacks; and, indeed, their visible number is so great, that a stranger unacquainted with the slave-trade, and visiting this city, might imagine that the slaves were its proper inhabitants, and their masters its casual dwellers. He would also be liable to conclude that its municipal laws were not very effective, as he could scarcely traverse a street without meeting troops of Africans chained together, dragging heavy clogs, or exhibiting on their shoulders the marks of lashes.

It was stated that within the last year, twenty thousand had been imported into the province of Rio Janeiro through the port of St. Sebastian, a part of whom filled the markets, and others had not yet disembarked. A ship-load of them was one of the first objects which met our sight on reaching the harbour. They were arranged upon deck, tier above tier, and their bare heads and uniform countenances, (uniform from equal expression of despondence,) exhibited a frightful picture of aggregate misery. It may be thought, perhaps, that since the slave-trade is diminishing, and the state of slavery ameliorating, these remarks are unnecessary; but, in my opinion, the subject is not an exhausted one. Those countries that have consented through the interference of England to its abolition, have done so most reluctantly, and in no instance from principle. They all carry it on in a smuggling manner; and unless the good sense and humanity of the enlightened part of mankind be constantly on the watch against the sordid views of those persons whose immediate interest and opinions favour this bloody traffic, it will rise to all its former capabilities of inducing human misery, although its practices may not be so flagrantly displayed to the world. I much fear, from what I have heard, that in some of our own colonies, human bondage yet exists in its worst form, and still operates in producing its peculiar effect that of hardening the heart of man against the sufferings of his fellow-creatures.

It ought always to be kept in mind that the slave-trade, and not slavery, has been attempted to be abolished; that both exist in several parts of the world in the full possession of their horrid attributes; and, to use the words of an eloquent writer, "that from slavery in its mildest form, oppression, injustice, and cruelty are inseparable. These crimes have, from the beginning of it, formed its basis, and without them it can no more subsist than a house without a foundation."

I visited the Sugar-Loaf Mountain by water on the following day, and forgot, in the delightful scenery of its vicinage, my previous unpleasant reflections. As I approached a small fort near its base, I was challenged by a sentry, who ordered me to land, and to satisfy his officer respecting my object in visiting the coast. I obeyed, and was led into a fortress, strong in itself, but overlooked by the adjacent hills. Its commandant questioned me at first rather roughly as to my intention in coming there; but as soon as he ascertained the nature of my pursuits, and that I belonged to the British embassy, he became very civil, and described to me the nearest way to the foot of the mountain.

The Sugar-Loaf Mountain is a huge entire rock of granite, seven hundred feet in height, and owes its name to its conical form. It stands by itself, and the side facing the harbour is nearly perpendicular throughout. I had hoped to ascend to its summit, but the appearance of its precipitous sides effectually prevented my making the attempt. The scenery about its base was more pleasing than any other which I had an opportunity of seeing while at Rio Janeiro. Other parts of the country afforded views more imposing, from the immensity of their features; but they rather disappointed than satisfied the mind, from its incapacity to grasp their extent. On the contrary, in the neighbourhood of this mountain, they are on a scale within the compass of the mind's observation, and yet possess those characters of wildness, richness, and grandeur, which mark the landscape of this country. Standing on the beach, with my back to the sea, I had immediately before me the dark face of the mountain rising from a

wood of flowering trees. On my right hand, the same wood climbed, in a curve, the sides of precipitous ground, and was intersected by winding paths leading to a rugged rock. On the verge of this hung a picturesque cottage, and at its foot, groves of orange trees afforded a retreat from an unclouded sun, whose beams, darting through the intervals of their foliage, exhibited beautiful contrasts of light and shade. On my left, the land sloped in gentle undulations towards the sea, into which it ran in a narrow and rocky promontory: on this was built the fort near which I had landed. The effect of the scene was much heightened by the cooling sea-breezes; which, blowing over fields of flowers, came charged with delicious fragrance.

Having satiated myself with the contemplation of the objects around me, and collected many interesting birds, insects, and plants, I returned to my boat, and coasted along the rocky shore, which runs in steep declivities to the water's edge. I gathered on my way several specimens of *Fuci* and *Confervæ*, which included a greater number of species, than from the reported barrenness of these shores I had been led to expect. I doubt not, that a botanist, with a sufficient command of time, might collect from them treasures that would more than repay him for the trouble of his research. It is true, that as the shores are rocky and steep, they are seldom thrown upon land, and must therefore be gathered from their places of growth, which cannot be accomplished without frequently wading; but this, in a hot climate, is both wholesome and pleasant.

My next excursion led me to the Botanic Garden, distant about six miles from the town of St. Sebastian. The day was excessively hot; and my walk was through a deep sandy lane; but small houses of refreshment were numerous on the side of the road, which afforded the means of allaying thirst, at the most moderate expense: for three half-pence, as much lemonade, or weak brandy and water, was handed to me, as I could prudently drink. Such beverage would have been more grateful, had it partaken less of a local character; but as a traveller, I did not scruple to swallow, at every draught, a considerable number of ants, and a proportionate quan-

tity of dirt. On reaching the Botanic Garden, I received from the kindness of Senhor Gomez, its curator, refreshment of a more substantial and attractive kind.

The Botanic Garden is of considerable extent; and if its support by the Portuguese government was proportionate to the zeal of its superintendant, and the means of its improvement, it would become the first establishment of the kind in the world. The climate would favour the growth of all the plants of the east; and there can be no doubt, that such of them as afford commercial produce, might be cultivated with success and profit. But it has no other care bestowed on its management than what it receives through the judgment and exertion of Senhor Gomez, whose particular appointment is that of superintendant of some powder-mills situated in its neighbourhood.

This gentleman has, notwithstanding the defects of its establishment, contrived through the aid of a few Chinese gardeners, to cultivate the Tea-plant with great success. It was in seed at the time of my visit, and its leaves had been repeatedly and effectively manufactured. The process pursued is very simple. The leaves are gathered in the month of January, after heavy falls of rain, before they are wholly expanded, care being taken that no foot-stalks are mingled with them; they are then put into an iron vessel, and exposed to heat till they begin to shrink; when they are taken out, and rolled between the hands till they become spirally folded. They are then returned into the vessel, and again exposed to heat till it becomes intolerable to the hand, which continually agitates them, to prevent their burning; and thus the process is finished.

Many other Chinese plants, besides the Tea, were growing in the garden in full vigour. Amongst these, the Tallow-tree (*Stillingia Sebifera*), the Wax-tree (*Ligustrum Lucidum*), and *Camellia Sasanqua*, were the most conspicuous. The last-mentioned plant, Senhor Gomez was disposed to call the *Thea Oleifera*, from the belief, that it is not a *Camellia*, but a *Thea*, and that it is the Oil-plant of the Chinese. In the former opinion, he is probably correct; in the latter, he accords with the statement of others; but in another part

of this work, I shall have occasion to show, that the *Camellia sasanqua* is not the oil plant of the Chinese. The *Cactus opuntia*, which was formerly cultivated in this garden for the purpose of rearing the Cochineal insect, is now altogether neglected.

The Ipecacuanha plant of the Brazils grows in great quantity in the woods in the neighbourhood of the Botanic Garden, whence it is collected by the country people for the market. I lamented much, that the shortness of my stay at Rio di Janeiro prevented my obtaining this plant, of which so many confused accounts have been given. The difficulty of determining the plants producing the Ipecacuanha of commerce, appears to have been occasioned by the supposition, that it is entirely derived from one species; whereas there can be no doubt that it is afforded by two at least of different genera. A short history of the descriptions given of these by various writers, will perhaps be decisive in showing from what plants it is all obtained.

Piso and Margraave were the first who described the Ipecacuanha plant of the Brazils, but neither their figures nor descriptions were sufficiently precise to determine its genus. In 1781, Linnæus published a description which he had received from Mutis, governor of Santa Fe, of the Ipecacuanha plant of New Spain, under the genus *Psychotria*.* In 1801, a complete monograph of the Ipecacuanha plant of the Brazils was published by Brotero†, at Lisbon, from specimens furnished to him by Bernardino Antonio Gomez, who accompanied them by a dissertation on the characters, properties and culture of the plant. It was named by these authors *Callicocca ipecacuanha*. The plant of Gomez and Brotero has since been confounded with that of Mutis: in other words, the *Psychotria emetica* of Linnæus, and the *Callicocca Ipecacuanha* of Brotero, have been referred to the same plant‡ by Persoon, who has described

* Linn. Supplem. Plant. p. 144.

† Memoria sobre A. Ipecacuanha Fusca, p. 57.

‡ Persoon, Synopsis, p. 203.

it under the genus *Cephaelis*. That they are essentially distinct, however, will readily appear from the comparison of their descriptions given in the Appendix.* Humboldt† and Bonpland have also very lately described and figured the *Psychotria emetica* as the Ipecacuanha of New Spain.

The *Callicocca ipecacuanha* grows, according to Brotero, in shady and moist places in Pernambuco, Bahia, Rio di Janeiro, and other provinces of the Brazils. The *Psychotria emetica* according to Humboldt "is cultivated in the warm and humid valleys of the mountains of San Lucar, near Simiti and Giron; and also in the district called La Vara de Guammoco, to the west of the river Magdalen." It is therefore evident, that two plants of different genera, one a native of North, the other of South America, produce the Ipecacuanha of commerce. The first reaches Europe from Carthagera in America, by the way of Cadiz; and the latter probably from the ports of St. Sebastian and St. Salvador, through Lisbon.

The plant which grows in the neighbourhood of the Botanic Garden was, indeed, supposed by Senhor Gomez, to be the *Psychotria emetica* of Linnæus; but the description with which he favoured me proves, I think, that it is the *Callicocca* of Brotero.‡

Two other plants also grew in the immediate vicinity of the Botanic Garden, which possess emetic and purgative properties, but in a less degree than the *Psychotria* or *Callicocca*. These are also collected for medicinal purposes, and are sometimes confounded with, and sold for the true Ipecacuanha. They are the *Richardia scabra* of Linnæus, called in Rio the White Ipecacuanha, probably the

* See Appendix, A.

† Plantes Equinoxiales.

‡ "Calix — Involucrum *tetraphyllum*.

Corolla — Infundibuliform: 5 fid.

Stamina — 5 intra tubum. Antheris simplicibus.

Pistillum — Germen ovatum. Stilus brevis. Stigm: bifid:

Pericarp. Bacca flaccida 2 sperm. Semina, arillata, sulcata, contorta, hinc convexa, inde plana."

Ipecacounha Blanca of Piso, and the *Viola Ipecacuanha* of Linnæus, known under the name of the false *Ipecacuanha*.

During the time I remained at the Botanic Garden, I received every possible attention from S. Gomez, and lamented much that the advance of the day obliged me to quit it when I had seen only a small portion of its treasures.

As I returned to St. Sebastian, my path was illuminated by myriads of fire flies, whirling in the air, or lighting on trees. At a distance these insects resembled stars of great brilliancy, but as I approached them, their rapid and varied motion, and their vivid scintillations amidst dense foliage, disclosing patches of its most attractive hues, exhibited a transporting scene of novelty and beauty. It was perhaps equalled by the waves of silvery light, over which the boat glided that carried me from the shore to the *Alceste*.

One more excursion completed my opportunities of examining the scenery and productions of Rio. In this I visited many of the islands, scattered in great numbers over its harbour. These are much diversified in their forms, but are all of a similar geological structure. Their basis is granite, with large flesh-coloured crystals of Felspar. Their surface is a thin but rich soil of a red colour, and formed by the decomposition of the rock beneath. They are clothed with a luxuriant foliage, mingled with blossoms, whose colour and fragrance is only surpassed by the flavour and refreshing qualities of their fruits. Oranges, bananas, Cashew apples, and water melons, are their common produce.

These islands vary very much in size, being from 200 yards to one mile in diameter, and are frequently occupied by a single habitation. The oranges which grow on them were larger, more juicy, and of a better flavour than any I had tasted from the main land. The sailors were permitted to gather them in any quantity, with no other request on the part of their owners, than that care should be taken not to break the branches of the trees.

These well clothed islands are in some respects less interesting than the bare rocks in their neighbourhood, which rise in isolated

masses from the surface of the water. They are generally of a conical form, rising from 10 to 50 feet in height, and are seldom more than 60 or 100 feet in circumference. They seem to be the apices of cones, whose bases are under water. I sounded round one of the smallest, and found within a yard of its side 15 feet water, which rapidly deepened as I withdrew from it. The larger of these rocky islets do not consist of single masses, but are broken into several of singular shapes. In more than one instance, I saw a large cone of granite, 30 feet high, split from its very apex to its base, the parts of which had seceded against their gravity; proving, I imagine, that their separation could not have been the consequence of disintegration. Was it produced by a cause coëval with their appearance above the surface of the water?

Could I have dwelt on the appearances presented by the exposed surfaces of these rocks, I should have found perhaps many interesting geological facts, traced upon them in very legible characters. But the time I was enabled to spend in their examination allowed me to derive little else from their contemplation than the pain of awakened, but unsatisfied curiosity.

My pursuits having separated me from the suite of His Excellency, I lost the opportunity of witnessing the funeral solemnities of the Queen of Portugal. But from the information I obtained from those who saw them, I missed but little which my imagination had not supplied. I heard the tolling of bells, and the firing of cannon; and when to these my fancy added their other elements in the church, illumination, magnificent bier, chanting, and solemn response; in the streets, the glare of torches, priests, and nobles in procession, crowds of by-standers, and soldiers keeping the ground, I formed a picture which, if not agreeable to reality, was at least satisfactory to myself.

On taking leave of Rio de Janeiro, I feel desirous of leaving on the minds of my readers some general notion of the characteristic features of the city of St. Sebastian, and of the country in its neighbourhood; but I fear any description in my power to give would be

inadequate to this object. The strongest efforts of the imagination cannot picture any thing so heavenly as the country, or so disgusting as the town. The first contains many of the noblest works of nature in their greatest freshness and beauty, on a magnificent scale ; the latter exhibits all the disgusting objects which pride, slavery, laziness, and filth can possibly engender. When I state that the face of high mountains is often covered with a sheet of blossom, a faint apprehension may perhaps be formed of the beauties of the country ; but when I aver that on entering some parts of the town, I almost lamented that I had an organ of smell, I give no idea of the stench which exhales from the accumulated ordure of its streets.

CHAPTER II.

THE *Alceste* left the harbour of Rio de Janeiro on the morning of the 31st of March, and after a very rapid passage, arrived off the Cape of Good Hope, and anchored in Table Bay, on the afternoon of the 18th of April.

We remained at the Cape till the 5th of May, when the *Alceste* sailed for the Straights of Sunda. The *Lyra* and General Hewitt had been dispatched nine days before, but our superior sailing enabled us to gain rapidly upon them, and we anchored in Anyer Roads on the 9th of June, two days after them.

Whilst at anchor I had an opportunity of examining a large shark, which was taken the day after our arrival. This animal, which measured twelve feet in length, was torn in pieces by the sailors the instant it was fairly on deck. They drew from its stomach a whole buffaloe's hide, two buffaloes' tails, one whole fowl, and the bones of another, the remains of several snakes, and a mass of matter of which it was impossible to ascertain the nature.

With some difficulty I made sufficient interest with its furious mutilators, to obtain its eye, the structure of which I was anxious to learn. It is supported on a firm cartilaginous stem, which arises from the bottom of the socket*, and passing by the side of the optic nerve, is articulated to the ball by a joint which permits motion in every direction. This joint is the centre of motion to six strong muscles that arise from the interior of the orbit, and are so inserted in the ball of the eye, that their whole action

This structure has been pointed out by a celebrated naturalist, who considers the cartilaginous stem as a lever to the muscles. The same naturalist also observes, that the stem is articulated with the lower part of the orbit. *Leçons d'Anatomie Comparée*, tom. ii. p. 425.

amounts to the circumference of a circle, whose diameter is that of the portion of the ball comprehended within their points of insertion. This organisation seems necessary in the shark, which takes its prey by turning on its back, to enable it to keep its object in view when preparing to seize it. The eye balanced on a pivot is obviously capable of a greater extent of motion, in any direction, than when imbedded in the gelatinous matter, which lines the eye-sockets of most other fish.

With the shark I obtained a specimen of the sucking fish, (*Echeneis Remora*,) which I mention chiefly to remark, that it adheres as strongly to any surface when dead as alive. It is very difficult to remove it from any body to which it is applied, by pulling it perpendicularly, or backwards, but it readily yields when drawn off in the direction of its head. On examining its organ of adhesion with a lens, the cause of this readily appears. The plates composing it, which look single and membranous to the naked eye, under a microscope are seen to be divided each into several smaller plates, and armed with a row of fine teeth directed backwards. I was not surprised that its English name had produced a steady belief in some of my ship-mates, that it derived nourishment from the shark to which it adhered.

This fish has no air-bladder, and must therefore (as its fins and tail are small) depend chiefly on the animals to which it is attached for progressive motion. For the same reason it cannot go in search of food, but must depend on something that passes near it for subsistence. The stomach of the specimen which I examined contained some filmy matter which looked like the remains of zoophytes.

These notices may appear of little importance. I insert them from the conviction, that if every observation was recorded which has been made on the structure and habits of rare animals by those who have seen them alive, and in their native climates, much valuable information would now exist which is lost to the world. I know from experience, that many individuals of a ship are often well qua-

lified to ascertain important facts on both these points. I have repeatedly seen an ardent curiosity excited by my pursuits in the minds of those whose general habits of life would appear least likely to render them observers of nature ; and I have been indebted to their industry, intelligence, and kindness, for the possession of a number of specimens and remarks, which, if they had not been unfortunately lost in the shipwreck of the *Alceste*, would better prove than words the correctness of my statement.

The medical officers of ships of war, and of Indiamen, are especially fitted for the pursuit of natural history, and still more so for that of comparative anatomy, and they do frequently make these departments of knowledge the objects of their study. But their modesty, looking to the extent of knowledge embraced by the masters of science, underrates the value of their acquirements. Many also are deterred from aiming at discovery, from the belief that they cannot tread a path which has not been before explored, or that the quantity of information necessary to give effect to their endeavours, requires exclusive occupation to obtain. But, surely, no part of knowledge is yet exhausted, and much that has been done requires to be modified ; and it is one of the peculiar advantages of the present age, that the lover of natural history, instead of toiling through myriads of books to ascertain the amount of existing information on any of the subjects of his research, may find it comprised in a few volumes. But let me quit a subject which may be considered as irrelevant to the nature of this work ; and which, if pursued, might lead into a wide field of statement and discussion.

Means of conveyance having been provided to take Lord Amherst and the gentlemen of his suite overland to Batavia, they set off on the morning of the 11th June for Sirang, which is about half-way between Anyer Point and Batavia. His Excellency, with his usual attention to the furtherance of my pursuits, permitted me to select my own mode of travelling. I therefore took possession of a dooly, and accompanied by Mr. Havell, who also preferred this mode of travel-

ling, commenced my journey in the rear of the carriages which conveyed the other gentlemen of the embassy.

It was dark before I arrived at the house of Col. Yules, the resident of the district of Sirang, from whose hospitality I obtained the pleasure of remaining in a part of Java interesting in the highest degree from its scenery and productions, during the stay of the Ambassador at Batavia.

At day-light the following morning, Lord Amherst and many of the gentlemen quitted Sirang for Batavia, leaving behind Mr. Havell and myself.

As my stay was to be limited to a few days, I consulted with several gentlemen at Col. Yules respecting objects of interest in the neighbourhood of Sirang, and directed my attention to those which were more immediately within my reach. Of these, Gunong Karang, a volcanic mountain distant about 18 miles S. E. of Sirang, particularly excited my curiosity, through the accounts that I received of its magnificent crater. I therefore, at three o'clock in the afternoon of the 13th June, left Sirang in company with Capt. Soady, intending to sleep at the native village of Plassur Pittee, situated on its declivity.

Our way, during the first half of the journey, lay through a plain highly cultivated, covered with rice fields, and intersected by rivulets. By the side of the road, at the distance of every three or four miles, we met with small sheds, intended as stations for coolies or porters, who relieve each other in transporting packages, or who act as bearers of palanquins. They also serve as places of refreshment, their neighbourhood always abounding in cocoa-nut trees and bananas; the fruit of which, together with the areca-nut, and betel-leaf, are exposed

A dooly is a kind of palanquin formed of bamboo, and resembling in shape a small house. It is well defended from the weather, and is carried by four or eight men, according to the size, who support it by transverse pieces of bamboo crossing the ends of poles which pass along its sides. Double sets of bearers generally attend it, to render the burden as light as possible, and they are relieved every four miles, by fresh relays.

for sale on a small table in the centre of the shed. The areca-nut, betel-leaf, and a small quantity of slaked lime, form the favourite masticatory of the Javanese. The better class carry them constantly about their persons in boxes sometimes of rather elegant forms, one of which is figured in the annexed engraving. Some of them add to this appendage two small instruments*, with which they bruise the ingredients for mastication before they take them into their mouths. One of these is a small hollow cylinder, having a piston which works within it. Having drawn back the piston, they fill the cylinder with the areca-nut, betel-leaf, and lime, and bruise them with an instrument shaped like a chisel, by working it about in the



These instruments are shown by figures No. 4 and 5.

hollow of the cylinder. Having done this, they place its open end between the lips, and forcing down the piston, drive the masticatory into their mouths. But these instruments are, I suspect, confined to old men, who use them as a substitute for teeth. We halted at one of the sheds, about half-way on our journey, and partook of the never-failing and ever-grateful beverage in this climate, cocoa-nut juice. This fluid is very sensibly cool when taken from a nut fresh gathered, and as far as my experience goes, is free from any deleterious qualities. The end of the nut in a green state, is readily cut off with a strong knife, and the juice is drunk from the opening thus made. The natives climb the tall tapering palms which produce this fruit, with wonderful dexterity; oftentimes ascending them without artificial aid, depending on their hands and feet for support. Sometimes, however, they notch the trees, or place against them long and thick bamboos, to which they affix a row of pegs that serve as the steps of a ladder.

Soon after leaving this place, the road, which before was tolerably level, became rugged, continually ascending, and sometimes very steep. The scenery on each side was composed of hillocks speckled with clumps of trees. At their base ran mountain torrents, in which natives were watering their buffaloes. On our right, Gunong Karang rose majestically in the back ground; and smoke ascending above trees, marked the site of the village of Plassur Pittee. As we advanced, the inequality of the ground increased, and had obliged the natives to cut it into terraces, for the cultivation of rice. These they had irrigated by filling up the bed of a stream at an elevated point, where its waters were first required. Having overflowed the first, or uppermost field, it passed to a second; from a second to a third, till it reached the lowermost, when it was led into its old channel by a trench cut for the purpose. I was informed that the natives obtain from their paddy fields two crops of rice annually, in the high lands. Besides rice, they obtain two crops of esculent vegetables; sweet potatoes, and after these, cucumbers with a species of bean. They allow no repose to the soil, which is a rich vegetable mould

constantly watered by rains and heavy dews, and fertilised by mountain torrents charged with the decay of vegetation, and the mouldering of rocks. The method of reaping in Java is the same as in many other parts of the East: the stems of the corn are divided singly. The instrument used by the Javanese for this purpose is shown by Fig. 10. in the wood engraving.

Continuing our route, we entered, about eight miles short of Plassur Pittee, an extensive forest formed of distinct woods, which were separated from each other by plains of the richest green: over these were strewn the huts of the natives surrounded by palms contrasting with trees of freer foliage. The natives, in their picturesque dresses, were every where issuing with their buffaloes from the woods, or loitering with careless indifference in their shade. The beauty of the picture could not be surpassed; and its various parts so harmonised together, that in their adjustment, nature seemed to have been directed by the hand of design.

Having passed two miles of this delightful region, we turned suddenly to the right, and soon lost all marks of a beaten track. My companion, notwithstanding he had previously visited the mountain, missed the path, and became entirely bewildered. Night would probably have overtaken us in a situation where beasts of prey are numerous*, but for the natural benevolence of a Javanese, who seeing us from a distance, guessed our embarrassment, and hastened to our relief. He pointed out some branches of trees which were fixed in the ground, and made us understand, that the inhabitants of Plassur Pittee, when informed of our intended visit, had planted them for our

Tigers abound on the island of Java. Not far from the spot where I then was, my companion had been obliged, some time before, to encamp for the night; when a boy who slept near him was carried off by one of these animals, notwithstanding the precaution of fires. I was informed by Professor Reinwardt, during my last stay in Java, that no less than thirty persons had been destroyed by them, in the space of two months, near the village of Buitenzorg. His Excellency Baron Van de Capellan, the present governor of Java, fell in with three tigers whilst on a shooting excursion, about a mile from his residence at this place. I saw the skin of one which was shot by his party.

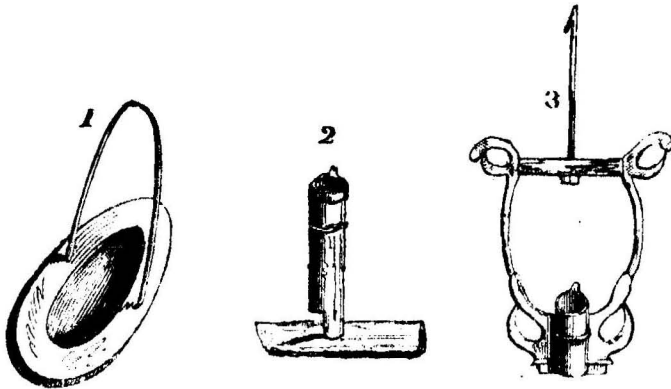
guidance, and that we should find them continued to the village, which was distant about three miles. Thus directed, we pursued our route till within about a mile of our destination, when the precipitous nature of the ground obliged us to dismount. Looking back from this spot, at a fourth of the ascent up the mountain, we commanded a view of a great extent of country, expanding to the computed distance of thirty miles. The woods which we had passed seemed to be dwindled into spots of green, and the huts of the natives were scarcely visible.

At six in the evening we reached Plassur Pittee. This village stands on a platform that is terraced from the declivity of Gunong Karang, which towers at its back. The summit of this mountain is covered with thick and impenetrable woods, which, extending beyond the village, flank it on both sides.

We were surrounded by the villagers as soon as we arrived, who busied themselves in preparing for our accommodation and refreshment. To defend us from the cold and damp of the evening, and to keep off the mosquitoes, they lighted fires about the hut intended for our reception. Looking at these men armed with daggers, and formed into groups about the fires, and reflecting that we were defenceless in the midst of a people who had been often represented as assassins, I felt something like alarm, and the first incident I met with for a moment increased it. Whilst examining a lamp suspended before the door of a hut, the natives who had been lying around me on the ground hastily started up, and seizing a bundle of lighted bamboos, ran towards me. My apprehension was needless. Observing me handle the lamp, they imagined I wished for a light, and their sudden movement was the consequence of their zeal to please me.

On entering the hut, I found my companion seated with the *Ingabi**, at a table covered with bananas and oranges. Having added to these some of our own stores, we soon found ourselves perfectly

at our ease. The hut consisted of three apartments, separated from each other by bamboo mats; the centre, open at both ends, was our sitting-room; the others, divided from it by matting, formed our bed-rooms. A plank of wood, simply hewn from a tree, and supported on four legs of bamboo, formed our table, and our seats were of similar construction. Three lamps of different forms lighted our apartment; one standing on the table consisted of a small block of wood, in which was fixed a piece of bamboo supporting a segment of a cocoa-nut; the second was the half of an oblong fruit hollowed in its centre, and through its sides was passed a slip of bamboo, by which it was suspended; the third was more complex in its fabrication, and more elegant in its shape. Each was furnished with cocoanut oil.



Our beds were bamboo frames, covered with mats; on these, with our saddles for pillows, we passed the night. I suffered severely from cold, the thermometer having fallen in the evening, between the hours of six and twelve, from seventy-five to sixty-six degrees. Leslie's hygrometer marked the point of extreme moisture.

At day-break we recommenced our journey to the crater of the mountain, accompanied by natives in great numbers, part of them being appointed as guides by the Ingabi, the others attracted by curiosity. The ascent of the mountain from the village was extremely steep from its commencement; and although a road had been cut by the natives through a wood, over a narrow ridge,

between two deep ravines, its difficulties would have been insurmountable but for the methods used to overcome its greatest obstructions. Whenever it was very precipitous, with no projections of the roots of trees by which to cling, strong bamboos were placed perpendicularly in the ground on either side of the path, and branches of trees were hung transversely between them, forming flights of steps which, in some places, continued for fifty feet. Having ascended for about an hour, we reached an open space, from which I had been promised an extensive prospect, but to our great disappointment, thick masses of cloud rolled at our feet, and hid every thing from our sight beyond the distance of a few yards. Having refreshed ourselves, we again advanced, and in another hour attained a part of the mountain where a large surface of its rock was entirely exposed. It consisted of strata very highly curved in their centre, was compact in its texture, approached to basalt in general character, and contained radiated zeolite. This exposed mass was on the ridge over which we passed, and its strata had been probably bent by one of those eruptions of the volcano which at different periods had convulsed the mountain. The strata were parallel with the sides of the ravines, to which the line of their disturbance was perpendicular.

The ridge over which we were ascending narrowed as we proceeded, and the ravines on both sides proportionably enlarged, appearing to have been the paths of lava at some distant period. Although thickly clothed with verdure, it was easy, when the clouds occasionally cleared, to trace their general form. They are narrow at the commencement near the bottom of the mountain, but widen as they ascend into immense semicircular basins. Still advancing, and having completed a large portion of the ascent of the mountain, we gained the verge of the crater, which it was my principal object in this excursion to visit; and now with regret I ascertained, that without ropes it was impossible to descend to its bottom; and that there would not be sufficient time to despatch any of our attendants for them. I was therefore obliged to content myself with the view I could obtain of it from the point where I stood. Its shape is that of a

horse-shoe, and, like the ravines, its narrowest is its lowest part. The sides are nearly perpendicular to the apparent depth of three hundred feet. Their upper part, to within one hundred feet of their base, is clothed with a thick foliage, but below, quite bare. The bottom of the crater is formed, as I afterwards ascertained, of masses of crystallized sulphur, and of sulphur mixed with fine white volcanic ash. At its narrowest part, which bore south from the point where I stood, I could distinctly trace ridges, looking, at a distance, like furrows. Smoke was issuing from it in many places, which, rising upwards, surrounded us with a sulphureous atmosphere. Clouds frequently rolled from the bottom to the top of the crater, and were in perpetual oscillation, sometimes filling its whole area, and hiding every object; then receding and leaving every part visible. The ground shook beneath us, and appeared to be composed of little else than the roots of trees and the decay of vegetation. The interval separating the ravine on the right and the crater on the left, was not more than two feet in width; but the thickness of the wood, whilst it afforded firm handhold, prevented us from observing much danger in our situation. I had no barometer with me, and therefore could not accurately measure the elevation of the highest part of the verge of the crater. Fahrenheit's thermometer stood at 68° at 11 A.M., when in the plains, it was at 84° . and Leslie's hygrometer* was less than zero. Water boiled at 206° .

During our whole ascent we had been surrounded by interesting plants. The ferns and mosses were especially beautiful. Of the former the smaller tribes were in the greatest variety; and the tree ferns were occasionally so abundant that they formed perfect woods occupying a considerable space of ground, to the exclusion of other plants. Of mosses I collected a great number; some of them of a size unusual to their order. In a cave formed in the bare rock, before described, I found the *Polytrichum undulatum*, in all respects resembling the

* Of the use and defects in the structure of this instrument, I shall have occasion to speak in another part of this work.

British species. It was delightful to find, so far from home, a plant familiar to my eye, and connected in its associations with the dearest scenes of my life.

Amongst the flowering plants, the most remarkable was the *Nepenthes distillatoria**, which the natives of the mountains call the king of plants. They believe that the water contained in its basket-like appendages possesses medicinal properties, and that it strengthens the sight. This plant grows near the roots of trees, varying much in size and appearance: in the latter particularly, from bearing, in what I conceive to be a young state, its peculiar organs without a corresponding leaf. I have seen specimens of the plant with few leaves and many appendages. I generally found a great number of drowned insects in the water of these receptacles, but could ascertain nothing in its taste or smell that was likely to have attracted them. The same circumstance is met with in *Sarracenia adunca*.

In descending the mountain I was obliged to use great caution, as the path must always be very slippery, in consequence of the heavy dews which fall upon the mountain; the thickness of the woods preventing their evaporation. On our return it was especially so, as it was raining heavily during our descent. I stumbled frequently, and should have fallen more than once, but for the attention of the natives. They followed me closely, uttered a cry at every false step I made, and caught me by the arm whenever I was in danger. It is impossible to do justice to the active and emulous good-nature of these mountaineers, who were anxious to excel each other in rendering me service. During my stay on the mountain I received great assistance from them in all my pursuits, although they could not comprehend their object. They were at first much amused at my collecting plants familiar to their daily observation, yet vied with each other in gathering them for me. If I pointed to a flower

* When in China, I received specimens of this plant from some islands in the neighbourhood of Macao, which I could not discover to be different from those gathered on Gunong Karang. See Note (B) in Appendix.