darts and stones hurled on our deck. To return it would have been useless, for we could not see our enemies. Meantime we kept the men under cover as much as possible, and got another anchor stocked and ready to carry out ahead. The savages must have seen the boat, for as soon as she was clear of the ship they opened fire on her, and it was not without difficulty that the anchor was carried out to the required distance, and the crew of the boat hurriedly returned on board.

Owing to Badham's machinations, some of the crew had at first been disaffected, but a common danger now united them, as they saw full well the treatment they might expect should the savages get possession of the ship. Besides the ship's guns we had four swivels, thirty muskets, and several blunderbusses and braces of pistols. These were all loaded and placed ready for use, with a number of boarding pikes, for we thought that at any moment the savages would come off in their canoes and attempt to board us. The whole night long they kept us on the alert, howling and shrieking in the most fearful manner. Soon after day broke their numbers increased, and as they could now take aim with their firearms our danger became greater. Fortunately they were very bad marksmen, or they would have picked us all off. Strange as it may seem, no one was hit, though our rigging and boats received much damage. After the crew had breakfasted, we sent two boats out ahead to tow off the ship, but the bullets and other missiles flew so thickly about them that they returned, the men declaring that the work was too dangerous. However, Benjie Stubbs, jumping into one of the boats, persuaded them to go again, while we opened a fire from the deck of the ship. As soon as the savages saw us ready to fire, they dodged behind the rocks, so that none of them were wounded. Still we hoped that by this means the boats would be allowed to tow ahead without molestation. We were mistaken, for the savages shifted their ground, and once more drove the boats on board. We clearly distinguished Badham and the rest of the deserters among the savages, and several times they were seen to fire at us. Happily they also were wretched shots, and their muskets thoroughly bad also. That they should venture to fire showed that they had no doubt of getting us into their power, for should we escape and inform against them, they would run a great chance of being captured and hung. Later in the day, Toby and I again made attempts to tow out the ship from her perilous position.

The savages all the day continued howling and shrieking and working themselves into what seemed an ungovernable fury, while they were, however, biding their time, knowing that probably a strong sea-breeze would soon spring up and cast the ship helpless into their power. Thus another night closed on us. Ere long great was our joy to feel a light air blowing off the shore. The pauls of the windlass were muffled, and not a word was spoken. The anchors were lifted, the topsails were suddenly let drop, and slowly we glided off from the land. The weather becoming very thick and dark, we were compelled again to anchor, lest we might have run on one of the many reefs surrounding the island. Here we remained on our guard till daylight, when we could see the natives dancing and gesticulating with rage at finding that we had escaped them. The favourable breeze continuing, we were soon able to get far out of their reach, I for one deeply thankful that we had not only escaped without loss ourselves, but without killing any of the unhappy savages. The treatment we received was such as at that time might have been expected from the inhabitants of nearly all the islands of the Pacific, including those of New Zealand, and numberless were the instances of ships' companies and boats' crews cut off by them.

A very few years after our visit, this very island was brought under missionary influence, the idols were overthrown, heathenism and all its abominable practices disappeared, and the inhabitants became a thoroughly well-ordered, God-fearing, and law-obeying Christian community. The same account may be given of the larger number of the islands which stud the wide Pacific, and ships may now sail from north to south, and east to west, without the slightest danger from the inhabitants of by far the greater portion of them.

But it is time that I should bring my narrative to a conclusion. This adventure at Ulitea was amongst my last. Finding that our trading expedition to the Pacific Islands was not likely to prove of advantage to our owners, Captain Hassall and I resolved to proceed home at once round Cape Horn.

We happily accomplished our voyage without accident and without any further occurrence worthy of note. Our path was no longer beset by hostile cruisers, for there was a lull in the affairs of Europe. After the many excitements of the past few months, the days seemed long and tedious as I had never known them before; and it was with a sense of relief as well as of real pleasure, that I again saw in the early morning light the shores of old England looming clear in the distance. I need not dwell on all the happy circumstances of my return, or on the special satisfaction with which I looked again on one familiar face. Suffice it to say that I had the gratification of receiving the commendation of my kind friend Mr. Janrin for the way in which I had carried out his instructions and performed my duties as a Supercargo; and that this voyage prepared the way for more substantial proofs of his favour.

MUSEUMS AS AIDS TO EDUCATION.

In his inaugural address as President of the British Association at Norwich, Dr. Hooker gave the following valuable hints on the educational uses of museums:—

Much as has been written upon the uses of museums, I believe that the subject is still far from being exhausted; for in the present state of education in this country, these appear to me to afford the only means of efficiently teaching to schools the elements of zoology and physiology. I say in the present state of education, because I believe it will be many years before we have school masters and mistresses trained to teach these subjects, and many more years before either provincial or private schools will be supplied with such illustrative specimens as are essential for the teacher's purposes.

Confining myself to the consideration of provincial and local museums, and their requirements for educational purposes, each should contain a series of specimens illustrating the principal and some of the lesser divisions of the animal and vegetable kingdoms, so disposed, in well-lighted cases, as that an inquiring observer might learn therefrom the principles upon which animals and plants are classified, the relations of their organs to one another and to those of their allies, the functions of those organs, and other matters relating to their habits, uses, and place in the economy of nature. Such an arrangement has not been carried out in any museum known to me, though partially attained in that at

Ipswich. It requires some space, many pictorial illustrations, magnified views of the smaller organs and their structure, and copious legible descriptive labels; and it should not contain a single specimen more than is wanted. The other requirements of a provincial museum are—complete collections of the plants and animals of the province, which should be kept entirely apart from the instructional series, and from everything else. The curator of the museum should be able to give elementary demonstrations (not lectures, and quite apart from any powers of lecturing that he may possess) upon this classified series, to schools and others, for which a fee should be charged, and go to the support of the institution. And the museum might be available (under similar conditions of payment) for lectures and other demonstrations. Did such a museum exist in Norwich I am sure that there is not an intelligent schoolmaster in the city who would not see that his school profited by the demonstrator's offices, nor a parent who would grudge the trifling fee. You boast of a superb collection of birds of prey; how much would the value of this be enhanced could there be seen near to it such an illustration of the nature, habits, and affinities of the *raptores* as might well be obtained by an exhibition of the skeleton and dissected organs of one hawk and one owl, so laid out and ticketed that a schoolboy should see the structure of their beak, feet, wings, feathers, bones, and internal organs—should see why it is that hawks and owls are pre-eminent among birds for power of sight and of flight; for circling and for swooping; for rapacity, voracity, and tenacity of life—should see, in short, the affinities and special attributes of birds of prey. This, which refers to the teaching of natural history, is an operation altogether apart from training the minds to habits of exact observation, which, as is now fully admitted, is best attained in schools by Professor Henslow's method of teaching botany. Excellent manuals of many branches of geology are now published, which are invaluable to the advanced student and demonstrator; but from which the schoolboy recoils, who would not refuse to accept objects and pictures as memory's pegs, on which to hang ideas, facts, and hard names. To schoolboys, skeletons have often a strange fascination, and upon the structure of these and the classification of the vertebrata much depends. What boy that had ever been shown their skulls would call a seal or porpoise a fish, or believe a hedgehog could milk cows, as I am told many boys in Norfolk and Suffolk, as elsewhere, do believe implicitly? A series of illustrated specimens, occupying some 5,800 ft. of wall-space, would give at a glance a connected and intelligible elementary view of the classification and structure of the whole animal kingdom; it would stand in the same relation to a complete museum and *systema Naturæ* as a chart on which the principal cities and coast-lines are clearly laid down does to a map crowded with undistinguishable details.

Much of the utility of museums depends on two conditions often strangely overlooked—their situation, and their lighting and interior arrangements. The provincial museum is too often huddled away, almost out of sight, in a dark, crowded, and dirty thoroughfare, where it pays dear for ground-rent, rates, and taxes, and cannot be extended; the object, apparently, being to catch country people on market days. Such localities are frequented by the towns-people only when on business, and when they consequently have no time for sight-seeing. In the evening, or on holidays, when they could visit the museum, they naturally prefer the outskirts of the town to its centre. Hence, too, the country gentry scarcely know of the museum's existence; and I never remember to have heard of a provincial museum that was frequented by schools, but rather the contrary. I do not believe that this arises from indifference to knowledge on the part of the upper classes or of teachers, but to the generally uninstructive nature of the contents of these museums, and their uninviting exterior and interior. There are plenty of visitors of all classes to the museums at Kew, despite the outer attractions of the gardens.

The museum should be in an open grassed square or park, planted with trees, in or in the outskirts of the town, a main object being to secure cleanliness, a cheerful aspect, and space for extension. Now, vegetation is the best interceptor of dust, which is injurious to the specimen as well as unsightly, while a cheerful aspect and grass and trees will attract visitors, and especially families and schools. If the external accessories of provincial museums are bad, the internal are often worse; the rooms are usually lit by windows on one side only, so that the cases between the walls are dark, and those opposite the window reflect the light when viewed obliquely, and when viewed in front the visitor stands in his own light. For provincial museums, when space is an object, there is no better plan than rectangular long rooms, with opposite windows on each side, and buttress cases projecting into the room between each pair of windows. This arrangement combines economy of space with perfect illumination, and affords facilities for classification. Upon this plan the large museum in Kew is built, where the three principal rooms are 70ft. long by 25ft. wide, and each accommodates 1,000 square feet of admirably lighted cases, 6,700ft. of wall-room for pictures and for portraits of naturalists, besides two fireplaces, four entrances, and a well-staircase, 11ft. each way. A circular building, with cases radiating from the wall between the windows, would probably be the best arrangement of all. A light spiral staircase in the centre would lead to the upper stories. Two or more of the bays might be converted into private rooms without disturbing the symmetry of the interior or intercepting the lighting of the cases. The proportions of the basement and first floor might be such as to admit of additional stories being added, and the roof be so constructed as to be removable without difficulty when an additional story was required; furthermore, rectangular galleries might be built, radiating from the central building, and lit by opposite windows, with buttress cases between each pair of windows.

In respect of its natural history collections the position of the British Museum appears to me to be a disadvantageous one; it is surrounded by miles of streets, including some of the principal metropolitan thoroughfares, which pour clouds of dust and the product of coal combustion into its area day and night; and I know few more disappointing sights, to me, than its badly-lit interior presents on a hot and crowded public holiday, when whole families from London and its outskirts flock to the building. Then young and old may be seen gasping for fresh air in its galleries, with no alternative but the hotter and dustier streets to resort to. How different it would be were these collections removed to the townward end of one of the great parks, where spacious and well-lit galleries could be built, among trees, grass, and fountains; and where whole families need not any more be cooped up for the day in the building, but avail themselves of the fresh air and its accessories at the same time as they profit by the collection.