Naturalist-In Series...

THE YEAR OF BORNEO 2 - UNKNOWN SARAWAK
by Chris K. Starr

[49th in a series on "Naturalist-In" books; see www.ckstarr.net/reviews_of_naturalist.htm]

Odoardo Beccari (1843-1920) was an Italian botanist. Soon after graduating from the University of Bologna, he spent several months at Kew Gardens in England, where he got to know Charles Darwin and some other leading English biologists of the time, as well the Rajah of Sarawak, Sir James Brooke. At Brooke’s invitation, he accompanied his mentor, Giacomo Doria on a collecting trip to Sarawak in 1865. Doria left in 1866, but Beccari was to remain for three years until he had to leave on account of ill health. It was his first time in the tropics, and in later years he looked back on the Borneo years as the happiest time of his life. This bears a close parallel to Henry Walter Bates’s memory of his time in the Amazon (see review no. 30).
In the following decade, Beccari made two further trips to South Asia, visiting Sarawak and several other territories from India to New Guinea. The botanical results of his South Asian explorations were published in an extensive monograph in 1877-1890. His base of operations was Kuching, the capital of Sarawak, about 25 km up the broad Sarawak River from the coast. At that time, agriculture was relatively new, so that very little of the forest had yet been cut down. He lodged in a bungalow close to primary forest, with the river (still about 250 metres wide that far upstream) very close by, so that for most of the first two years he had little reason to venture far afield. As an example, he was able to collect specimens of at least 50 dipterocarps within walking distance of his base. The Dipterocarpaceae are a family of almost 700 known species of often very tall trees. They are characteristic of lowland rain forest, with their greatest diversity in Borneo.

Note that Brooke (1803-1868), although an Englishman, was not the Governor of a British colony. Rather, in 1842 the Rajah of Brunei had ceded Sarawak to him as a personal fief in gratitude for Brooke’s role in putting down a rebellion. Brooke reigned as an absolute monarch over an area the size of England and Wales. Beccari’s attitude toward the Brooke administration was a very positive one. Among other things, it had been fairly successful in suppressing piracy and head hunting. Piracy had been the main occupation of coastal Malays, while head hunting—of which Beccari gives an extensive discussion—was a core traditional activity of the aboriginal peoples.

Like every other naturalist-in writer about Borneo, Beccari gave considerable attention to the various groups in this multi-ethnic island. As we find in other places, many of the various jobs were associated with particular ethnicities. The Chinese provided the best carpenters and smiths and most of the merchants, the Malays were the fishermen and sea-farers, and the Indians had their own specialisations, as did the mixed population. It didn’t need to be said that the colony’s administration was in the hands of Europeans.

As for the aboriginal Dayaks, or Dyaks, the separation into Sea-Dayaks of the coast and Land-Dayaks of the interior is now deemed of limited use, although it can serve for our purposes. The Dayaks as a whole had been—and to a certain extent still were at the time—warlike among their tribes, mainly in small head-hunting expeditions. Hunted heads remained as family heirlooms, openly displayed in their houses, as a man’s prestige in the community rested in large part on the number of heads collected by him and his ancestors. Although Beccari didn’t say so openly, it was plain that many Dayaks missed the good old days, and the practice continued at a low level. Soon after arrival, before he had learned to size up the local people, he was approached by a man with a cutlass whom he took to be a Dayak head hunter. Beccari “eyed him with a certain amount of diffidence, for the thought struck me that he might take a fancy to my head. Having my gun I felt somewhat reassured; but I very soon found out that the supposed head hunter was a very civil fellow.” In fact, he soon became Beccari’s best guide in the local forest. There are no accounts of threatened or actual violence, but in some areas he knew to take precautions and slept with a revolver and cutlass at hand.

After some months in Kuching, he found himself regretting that he had not had any contact with the Land-Dayaks and so determined to venture up into the hills to visit some of their villages. He found them to be mild-mannered and hospitable for the most part, and it suited him largely to go native while in the interior. Greeted by the headman on arrival in one community, he was invited into his house to sit in the place of honour, over which hung several smoked human heads. Although he had no medical training, Beccari could diagnose and deal with many of the common ailments and carried a supply of medications. In a region where local medical attention was almost unheard of, this made him very popular. All sick and invalid members of the village, as well as from surrounding villages, came for treatment by the great healer. Such was the interest, that some even seemed to regret not being ill, as they would have liked to experience the remedies.

It is plain that Beccari felt considerable affection for many individual Dayaks and the aboriginal people as a whole. There are word sketches of some of his assistants, e.g. one Sahat “was at heart a pirate, if not originally one. His instincts were cruel, and yet he was honest, plucky, a first-rate canoeman, and clever in most things that natives can do. He spoke...
fluently several dialects, was a decent cook, and could act on an emergency both as tailor and hairdresser.” And “Bakar in my eyes was a perfect philosopher, and the most happy man I have ever known.” He recorded and often used native names for plants and animals.

Beccari took Wallace’s The Malay Archipelago (see review no. 31) as his starting point, so that he deliberately chose some collecting areas because Wallace had not been there. At the time there were practically no roads, so that travel in the interior was mostly by water. This could be slow going, not so much on account of physical factors as the reluctance of his Dayak helpers to go beyond the next village, so that as they came to a new village they had to stop and arrange for a new crew. However, he found some areas so wild and unfrequented that even local guides did not know their way. It could seem as if no human being had ever been there before, and they had to keep marking their way in order not to get lost. And, traveling for days through dense forest could become a claustrophobic experience. Unlike on the sea or in open habitat, the sky was hidden most of the time, so that “the world appears to close in behind us, the fear of advancing grows with the thought of not being able to turn back, and the unknown generates a sense of horror.”

Inconveniences and hazards were plentiful. Among the former were the abundant leeches on land and in fresh water. “There is no way of avoiding them; they get into the shoes and under the stockings, and, fastening especially around the ankle, gorge themselves with blood before one is aware of their unwelcome presence.” He spent miserable nights in some villages due to swarms of mosquitoes and the great number of dogs that made a terrible and constant racket.

Among the potentially greater hazards were the giant honey bees, *Apis dorsata*, with colonies of many thousand intolerant workers. They usually nest very high on emergent trees and so present no danger to anyone passing peaceably at ground level. However, many of the plants of interest to Beccari workers were epiphytes, so that his climbers ran certain risks. Occasionally a big tree felled for agriculture or other purposes made it relatively easy to collect epiphytes. They came upon a recently felled tree, not knowing that it held a colony of these bees, which swarmed out to attack the intruders. Beccari dove into a deep waterhole to escape them, but as soon as he came up for air they were waiting for him. Again and again.

Even in the midst of strangeness and physical discomforts, Beccari could wax poetically. “Stillness, heat, sandflies, horseflies, and mosquitoes reigned supreme, but did not combine to make our journey an enjoyable one. The absolute silence and solitude was startling. Not a hut, not a single boat did we meet with for hours and hours together. Towards noon, nature appears asleep; not a bird’s note, not a sound of any kind breaks the profound stillness. The very water appears to move on as a solid mass, and not the slightest breath of air moves its polished shining surface.”

Among the plants that he especially wanted to find were the parasitic *Rafflesia*. After a long search, he finally succeeded. These peculiar plants grow below ground in the host plant’s tissues, so that only the enormous, conspicuous flower springs up above ground. I have never seen one, but the best way to locate one in flower is undoubtedly by its very offensive smell, like rotting meat, as *Rafflesia* is fly-pollinated.

Chapter 3 includes a review of Sarawak’s various edible fruits. This is a topic dear to my heart, as I maintain a personal life list of fruits I have eaten (not a joke, even if it sounds like one). These now amount to 79 species, 21 of which I first delectated in Southeast Asia, so that Beccari’s remarks are a real blast from the past.

Beccari was a critical naturalist. While he studied Wallace’s reports and those of other great naturalists, as well as noting what his local informants told him, he sometimes said that he was unable to confirm one or another observation. According to local testimony, for example, there was a flying snake “capable of spreading out the skin of its sides to such an extent as to enable it to float from one tree to another.” While noting that he had never seen such a snake, Beccari found no evident reason why such a form could not evolve. After all, there were flying squirrels, flying lizards and flying frogs. Note that none of these animals flies in the strict sense. Rather, like flying fish they can glide for significant distances while maintaining altitude.

He was also a philosophical naturalist who
thought about the causes of things. As an example, the shores of waterways in the Asian tropics are often occupied by a dense monoculture of the short nipa palm, *Nypa fruticans*, extending as far upstream as the salt water. Why, he wondered, are mangrove and coconut pantropical, while nipa is restricted to this one part of the world?

What of his thoughts on organic evolution, the central question for all biologists at that time. Although he had met Darwin and very much admired ‘On the Origin of Species’, and considered himself a follower of Wallace, Beccari was not entirely with them. Some of his speculations put him more in the Lamarckian camp. That is, he doubted the power of natural selection to drive all of evolution. For one thing, he saw only negligible variation within populations, which would leave no material on which natural selection could act. In the absence of significant genetic variation, he held to “the theory that the environment has been the most powerful and principal agent in causing animals, as well as plants, to assume their present form and structure. That the organised beings now living have been originated through the action exerted on them by the external world, is an old theory which was propounded by a few elect naturalists, who had not much faith in the creation of living beings simply by the action of a supernatural will.”

His clearest speculation along these lines concerned the archerfish, *Toxotes sp.*, and its remarkable feat of spitting a jet of water at a potential prey insect above the water’s surface to knock it down. Not only can it direct the water up to two metres, but it corrects for the refractive difference between water and air in its aim. How could this possibly have come about? Noting that the archerfish catches insect prey in a manner analogous to that of a chameleon, he reasoned that “in both cases we have special adaptations in certain organs whose modifications can only have been caused through impulses of the will. It must have been the wish to capture prey, and this only, that has rendered possible these morphological adaptations by means of which the desire could be attained.” In short, in striving to capture prey out of reach, an ancestral fish came to bring it down with a jet of water, which innovation was passed on to its offspring.

In addition to the 24 chapters, the book has an appendix on “The Bornean Forest”, an admirably extensive index, and extensive illustrations, including three maps. Included in the appendix is a review of vegetation, including epiphytes and ant-plants. Beccari was a pioneer in describing these latter and their close relations with ants, most notably in the plant genera *Hydnophytum* and *Myrmecodia*. These epiphytes typically have a swollen, tuber-like base with cavities in which the ants nest. At first it was supposed that stimulation by the ants caused the base of the ant-plants to swell in such a way as to make it suitable as a nesting space, rather like the many kinds of galls. However, it was shown by horticulturists that the plants develop in the same way even in the absence of the ants.

References


Archerfish aiming a jet of water at an insect above the water surface. *Courtesy of Mother Nature Blog.*

Epiphytic ant-plants. Left: *Hydnophytum* sp. in place on a tree trunk. Right: *Myrmecodia* sp. removed from its tree and partly cut open to show ant-harbouring cavities.

**Naturalist-In Series...**  

**THE YEAR OF BORNEO 3 – TWO MORE LOOKS AT SARAWAK**  
by Chris K. Starr

Review of:  
[50th in a series on "Naturalist-In" books; see www.ckstarr.net/reviews_of_naturalist.htm]

Charles Hose (1863-1929) took up an administrative position in Sarawak in 1884 at the invitation of the second Rajah, Charles Brooke. We are not told exactly what his job was, leading to the suspicion that his official post was a cover for something else. It would not be far-fetched to think that Rajah Brook was using him to check up on the various district officers. In any event, Hose had plenty of liberty to explore in an age when Borneo was even more outside the main routes of travellers. As noted earlier, most of Sarawak was forested, with very few roads outside of the towns, but it was well supplied with rivers, which served as the main routes.  

This engaging little book opens, appropriately, as he awoke on the boat the morning of arrival at the mouth of a river (presumably the Sarawak River by Kuching) with the sense of great expectation that the situation called for. His main focus throughout his stay was the Baram River and its tributaries on the north-eastern edge of Sarawak. The eight chapters have such titles evocative as “All on the Bornean Shore”, “A Mountain Treasure House” (about an ascent of Mt Dulit), and “The Wealth of the Jungle”.  

Hose’s observations were more those of an amateur naturalist than an original researcher, although this distinction was not nearly so pronounced then as now. His attention and knowledge were mainly directed to vertebrate...