



Creating the Nation's first BioPark

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Letter from the Desk of David Challinor
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If "Man is Nature's sole mistake,"¹ a man like Challinor can be mistaken in what he writes. I was wrong, and geographically at that, in my report of the Roseate Tern, banded on Long Island, New York and subsequently found on Gorgona Island, British Columbia. This island actually lies about 20 miles off the Pacific coast of southern Colombia, not British Columbia. This gaffe was called to my attention by Ben Beck, a colleague here at the Zoo. Ben, Associate Director for Animal Programs, is a primatologist and ethologist and the principal character in a delightful account of the reintroduction of Golden Lion tamarins that appeared in the June 24th issue of The New Yorker (a copy is enclosed). Ben spotted the error because he knew of a Gorgona Island near Colombia, and thought it an amazing coincidence that there could be another island with the same name off British Columbia.

Ben was able to locate Gorgona correctly because while studying tool use in primates several years ago he learned that the Capuchin monkeys on Gorgona used stones to crack open oysters. As tool use among animals is a subject of intense interest to ethologists (students of animal behavior), he inquired about access to Gorgona, only to learn that it is now a penal colony and difficult to visit, and thus he has yet to observe this troop of oyster-eating monkeys.

My new knowledge of Capuchin tool use on Gorgona has led me to the subject of this Letter. Objects such as sticks for poking or stones for breaking seem confined to primate use among mammals. Tool use may be easy to explain in this group because primates possess opposable thumbs; that is they can touch each of the other four digits with their thumb and can make a fist. Note how awkward it is to pick up a pencil or a cup of tea without using your thumb.

Using stones to open oysters should, therefore, be an unsurprising adaptation for Capuchin monkeys. These small, vari-colored, New World monkeys are generally separated into 4 species -- White-throated, White-fronted, Weeper and Brown. The White-throated species lives in Central America and Colombia and is found on Gorgona as well as on the Smithsonian's Barro Colorado Island in Panama.

W.S. Gilbert of Gilbert & Sullivan

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the education and recreation of the people."



It is the White-throated species that was commonly kept by organ grinders in the 1920's. The organ grinder or hurdy gurdy man used to wheel his instrument in front of our New York brownstone and start turning the crank to produce the distinctive sound of his "organ." His Capuchin was kept on a long lead and would doff his little hat (kept on by an elastic under his chin) when handed a coin. This childhood memory merely illustrates how well these small bright primates have been adapting. The size of their brain relative to their body weight is unexpectedly large, as it is in humans, and this characteristic may help explain their relatively adaptable behavior, both in the wild and as pets or zoo animals.

Dietrich Heinemann, a primatologist, reported that captive Capuchins have often been observed cracking nut shells with stones or wooden blocks. He noted that some Capuchins were unable to learn tool use from their fellows for reasons not yet clearly understood. Chimpanzees, on the other hand, have been observed to possess considerable observational and social learning skills. Learned behavior is a very complex characteristic to analyze as there is such variation between and within primate species.

Although long observed in primates, tool use is absent in reptiles and amphibians and very rare in other mammal orders, except for Sea otters which use stones to crack shellfish on their chests. There are, however, at least two bird species that use tools. Best known is Darwin's "woodpecker" finch of the Galapagos, so named from the cactus spine it uses to extend its beak to search for bark beetle larvae on tree trunks and branches. Another quite unrelated tool-user is the Egyptian vulture which, in East Africa at least, uses a stone picked up in its beak to drop on ostrich eggs. Considering that birds use bills to construct all sorts of elaborate nests, it is not surprising that these two birds have evolved into tool-users.

We must remember that evolutionary theory postulates that all organisms are continually subject to the pressures and challenges necessary for their survival. How animals exploit their niches must be genetically coded over millenia or longer. Nest building, for example, or the use of spines by the Galapagos finch is quite certainly "hard wired" or genetically controlled behavior. The use of stones by Capuchins is also probably hard wired to a large extent, but selectively manifested to exploit a specific food source. Thus, if food can be readily gathered without tools, Capuchins may forego tool use. Tool use by chimpanzees, on the other hand, seems learned from each other. Most human behavior appears to be the result of a combination of genetically coded and learned stimuli, e.g. language. We are coded to speak, but must be stimulated by hearing a specific language. Just as scientists must attempt to isolate these two mechanisms, genetic coding and learning, that control behavior in monkeys and apes, so they continue their study of humans with the long-term goal of trying to understand our own behavior.