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## THE HANCOCK EXPEDITION OF 1935 TO THE BIRD ISLANDS OF PERU

WITH FIVE ILLUSTRATIONS

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The Hancock Expedition of 1935, after visiting the Galapagos Islands and the mainland of Ecuador, spent seven days, January 11 to 17, inclusive, among the islands of Peru. Although the collecting of marine invertebrates, particularly crustaceans, was the primary purpose of the expedition, the opportunity of observing at close hand the conduct of the world's most remarkable commercial enterprise based on the conservation of bird life and of obtaining specimens of the most important species concerned was eagerly seized upon. Under the "Compañía Administradora del Guano" the islands are now operated as bird sanctuaries. They are closed to visitors at all seasons of the year, except by special permit, and there are competent guardians to prevent the gathering of eggs for food or the unauthorized extraction of guano. Through the secretary of the Smithsonian Institution, Dr. Alexander Wetmore, and the United States Department of State, permission was secured for the motor cruiser "Velero III," under the command of Capt. G. Allan Hancock, to visit any or all of the fourteen groups of guano islands scattered along Peru's 1200 miles of coastline. Because of the short time available, it was deemed advisable to confine the activities of the expedition to four or five of these. Landings were made, accordingly, at Santa Rosa, Vieja, Ballestas, Chinchas, and Lobos de Afuera; the first and last are, respectively, southernmost and northernmost of the insular groups.

From Callao the expedition proceeded directly to Independencia Bay, 14° south latitude. Before entering the Trujillana Channel it was necessary for the "Velero III" to break her way through endless chains of cormorants flying low over the water, beak to tail, as far as the eye could reach. These were the Guanay (*Phalacrocorax bougainvillei*), a bird which stands in a class alone as Peru's number one producer of high-grade guano. Belonging to the antarctic branch of the cormorants, it is characterized superficially by a white breast and warts about the base of the beak. These birds were on their way to the Santa Rosa Islands, at the southern end of 14-mile-long Independencia Bay, which were visited the afternoon of January 12 and again the following morning.

Flat-topped and precipitous-sided, the Santa Rosa Islands are reached from the rolling launch by a rope ladder. Permanent buildings consist of barracks for the workers and a shelter for the guardian. With the exception of an area thirty feet wide about the buildings and a twenty-foot rim encircling each island, the ground was densely packed with nesting birds of but a single species, the Guanay. When approached closer than eight or ten feet they retreated in great confusion, trampling eggs and young. Once uncovered, a nest would be instantly denuded of every vestige of a feather. Because of the crowding, it is impossible for a Guanay to take flight

except at the edge of the circle, to attain which he must run a merciless gauntlet of vicious thrusts and jabs from every side. Instead of the customary four eggs of the northern cormorants, only two or three are laid. The guard would not allow eggs to be removed from the nest, but presented us with a clutch obtained from his shelter. The Guanay is double-brooded, and eggs and young are to be found at all seasons. It is significant that no marauding gulls or vultures were seen at Santa Rosa, although several condors were observed later in the day about the summit of Isla Vieja. Predators are apparently less a problem, or are better under control, in the southern than in the northern islands.

From Isla Vieja, which separates Independencia Bay from the open Pacific, a sand hook projects on the leeward side, affording a sheltered landing place and an appro-

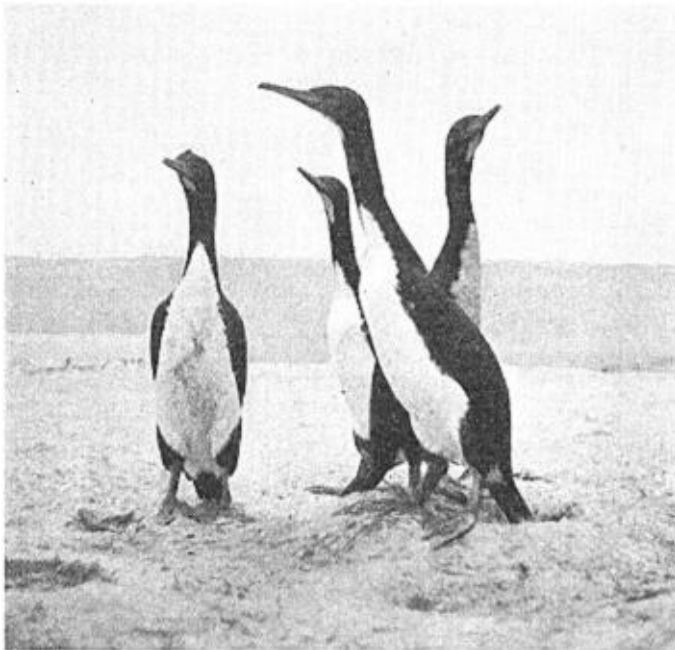


Fig. 1. Guanayes at Santa Rosa Island, coast of Peru.

appropriate nesting area for two species of gull, *Larus belcheri* and *Larus dominicanus*. Along the rock shingle, pairs of a coal-black oyster-catcher (*Haematopus townsendi*), native to the region, forage beside familiar turnstones, plovers, and spotted sandpipers from North America. A flock of terns, numbering thousands, alighted for an hour on the rocky beach. It is probable that they were migrating Arctic Terns (*Sterna paradisaea*); for had they been either of the local species, *Sterna hirundinacea* or *Sternula lorata*, the chances are that they would have been seen again.

The Humboldt Penguin (*Spheniscus humboldti*) was found burrowing into the hillside at two levels, the one about sixty feet above the tide line, the other several hundred feet higher. A hard, weather-resisting stratum was in each case chosen for the roof of the tunnel. Tracks of the birds were plainly visible from the bay. When approached from the sea, they could be driven into their burrows, then ejected after a little digging. Nine penguins survived the voyage to the San Diego Zoo, where they have since been an outstanding attraction.

While dredging in Independencia Bay, members of the expedition frequently ran down groups of the diving petrel (*Pelecanoides garnoti*). They are totally unlike North American petrels in form and behavior, resembling huge bees in flight rather than birds. During the period of molting they cannot raise themselves out of the water, and, at any season, they can take flight only directly into the wind. Their nests are built high on the sides of Vieja Island facing the southeast trades. Expedition specimens were secured from those which flew aboard at night.

On January 15 a landing was made at the Ballestas Islands, most rugged and wave-worn islands of the central coast. South Ballestas is given over to the Piquero (*Sula variegata*), North Island being reserved for the exclusive culture of the Guanay.



Fig. 2. Guanayes taking flight at Central Ballestas Island, Peru. Piquero nesting in foreground.

On Middle Island, where the two meet, the difference in nesting habit is strikingly apparent. The Piquero chooses the rocky cliffsides, while the Guanay prefers level ground. With this division of real estate, the two species occupy identical ranges, from  $4^{\circ}$  to  $16^{\circ}$  south latitude, without dissention. Only the difficulty of retrieving the guano of the Piquero prevents it from outranking the Guanay in total production, for it is the most abundant of the guano birds. When frightened, the Piquero disgorges from four to six small fish which are invariably the anchobeta (*Engraulis ringens*).

Most famous of all the guano islands are the Chinchas. In the early days of the guano industry one hundred or more sailing vessels awaited their turn at these islands to slip beneath the chute for a cargo of pulverized guano worth \$90.00 a ton delivered in London (see R. C. Murphy's "Bird Islands of Peru"). At that time Central Island was 100 feet higher than at present and North Island supported a town of 2000 popu-

lation, no trace of which now remains. The substantial buildings of the guano administration give the impression that this is the most important of the islands, strategically, if not also commercially. The abundance of birds is inconceivable. From estimates made by Dr. Forbes of England in 1913, no less than 5,600,000 cormorants occupied Central Chinchas, less than four square miles in area. One thousand tons of fish a day would be necessary to feed such a multitude.



Fig. 3. Nesting colony of Piqueros, South Ballestas Island.

In caves beneath the administration building the Inca Tern or Zarcillo (*Larosterna inca*) nests. The local name means "little earring" and refers to the white mustachios or curled feathers at the base of the crimson beak. Specimens shot from a skiff were retrieved with difficulty because of the surge. The Red-legged Chuita or Shag (*Phalacrocorax gaimardi*) and great lobos or sea lions of a southern species shared the caves with penguins and bats.

The islands of Lobos de Afuera were reached by a 36-hour run north from the Chinchas. Lying just  $6^{\circ} 58'$  south of the Equator, they are within the zone of influence of the counter current known as "El Niño." From December to April the Humboldt Stream is deflected by this warmer body of water, which brings with it a characteristic fauna, as the collection of marine invertebrates well shows. The birds of these islands are species adapted to a temperature at least  $10^{\circ}$  F. warmer than the average for the Humboldt Stream. The Camanay (*Sula nebowcii*) is the familiar Blue-footed Booby of the Galapagos and the west coast of Mexico. The Alcatraz (*Pelecanus thagus*) is a Peruvian species half again as large as the California Brown Pelican. Nesting with the

Camanay, which is not strictly a colonial bird, is to be found the ubiquitous Piquero; but there are no Guanayes on Lobos de Afuera.

Señor Fernando Ramirez was the first guardian who appeared to take a scientific interest in his work. The duties required of him by the guano administration are well-defined and exacting. He is meteorologist, port captain, lighthouse keeper, and custodian, all in one. In the latter capacity he prevents poaching, checks outbreaks of

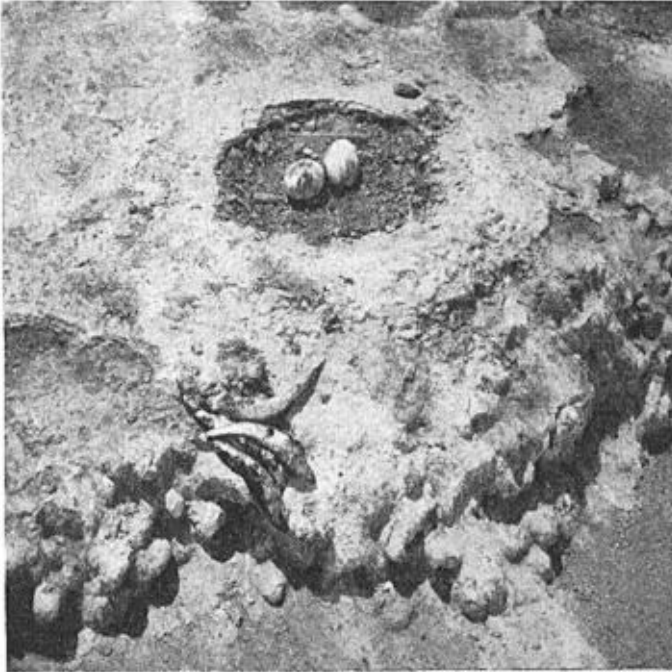


Fig. 4. Nest of Piquero, showing anchobetas disgorged by frightened parent; Central Ballestas Island.

disease, disposes of dead birds, shoots gulls and vultures, and acts for the general welfare of the colony. Copies of the monthly bulletin of the guano administration dealing with the chemical analysis of guano and methods of extraction were presented to the expedition in exchange for current magazines.

The most stupendous spectacle of bird life encountered in four winters of cruising in southern waters was the colony of pelicans on Lobos de Afuera. Although Sr. Ramirez affirmed that the greater part of the 200,000 birds were at sea fishing, the 40,000 which remained afforded ample photographic material. The few adults were continually taking off and alighting with tremendous beating of wings. The half-grown young, naked or in white down, huddled in compact masses like flocks of sheep. Our approach caused the greatest alarm among them. Judging from its apparent susceptibility to fright, the pelican is least satisfactory of the large producers of guano.

Although a week's observation is too brief a period upon which to base accurate conclusions, a few remarks from the ecological standpoint may not be amiss. The writer firmly believes that much could be gained from an unbiased investigation of the status of predators. Their presence in moderate numbers in the past has not prevented the accumulation of guano; on the contrary, it is one of the factors which has operated

to produce large, compact colonies rather than small, scattered ones. The ceaseless warfare now waged against gulls undoubtedly involves innocent migrants as well as guilty indigenes. The practical extermination of the vulture and the condor (although the latter is a harpie from the Andes likely to swoop down at any time) from several of the islands has brought about the more expensive disposal of the bodies of dead birds by cremation. Finally, the role of predators in the control of bird disease, as far as I am able to ascertain, is yet undetermined.



Fig. 5. Part of a colony of 40,000 pelicans on Lobos de Afuera Island.

The sudden and permanent abandonment of an insular group by a colony following digging operations is one of the most serious setbacks to the industry which can occur. In this manner the pelican has withdrawn from all the groups but two. If the present method of extraction, in which all the nests are destroyed every three years, were modified to allow one of a group of three islets to be unmolested in rotation, the decimated islets could be repopulated from this nucleus without the necessity of the birds abandoning the entire group.

In conclusion, the glimpse afforded members of the Hancock Expedition of 1935, of the bird islands of Peru, while brief, was highly satisfactory. The writer wishes to thank Capt. Hancock and the cooperating agencies of the United States and Peruvian governments for the opportunity of studying at first hand the organization of this unique industry.

*University of Southern California, Los Angeles, California, June 6, 1936.*