

bank. Seeing a forlorn chance of getting afloat in the next hour or two, I jumped into the dinghy with the grains and poled over to the first channel through our bank. I did not have long to wait, for along came a big shark. He saw me about the time when I let drive the grains. Striking him fair in the back, he darted off, making the line hum as it went over the bow. I went down in the stern, grasping the line in both hands, having it rove through the ring in the stem. I waited for the strain; it came soon enough and at right angles to fore and aft, slewing the little boat around. We went off with a rush, making a wake like a tow boat. It was all right enough as long as he stuck to open water, but the rascal, he dodged through the channel, turned the corner and stranded me on the bar, he kept right on with the grains. This made the second pair lost.

After warping the Bessie off the bar we continued on our course for the creek, missing it by standing on too far and getting our bearings on Low Key; we about ship and finally found it by running on a mud flat at its mouth, hidden by a small mango key. The artist and I took a run up the creek to make observations and found it alive with fish and game. On passing through the creek with the Bessie we had the tide against us, which gave us plenty of exercise with the poles. We worked through to the south side of Key Largo, and stood N. E. for Captain Albury's plantation, where we received a very hearty welcome indeed. He has a large number of acres under cultivation, raising tomatoes, bananas, coconuts, pineapples, etc. This was the first and only place where I saw pineapples thriving. They can be profitably cultivated as far north as Key Biscayne Bay Keys, for profit but not further north. The land is very broken and stony, and one can step from stone to stone. The soil is remarkably fertile, the produce growing to perfection. We passed a very pleasant afternoon and evening with the family. The next morning they would insist on loading us up with an abundance of the good things from their gardens, one bunch of lady finger bananas being all our cook could carry. We had no pilot now, as we could find the bottom about as readily as he could, so we turned him into a cook without prejudice. The pineapples, ripe and just off the plants, were fine.

We were next bound for Taylor's River on the mainland, west of north from Tavernier Creek. Although the captain told us we drew too much water to reach it, we were bent on trying, so running back through the creek, with fair wind, we ran north for Taylor's River, keeping to the westward of Low and Walker Keys. After sailing along a narrow sand bar for several miles, we ran through a narrow channel about 15ft. wide and entered Barne's Sound. We found Taylor's River at sunset, after a two days' run. We passed very many game birds on the bars or wading in the shoal spots, including a great many flamingoes, curlews and plover, ducks and cranes. Here we saw our first alligators, there were lots of the bulls bellowing all night. The banks of the river are low and composed of hard yellow clay, which had the appearance from a distance of being rock. All sand and stone had disappeared, and there was nothing but the softest kind of mud on every hand. We cruised up the river for a whole day. The water was about 10ft. deep and 200yds. wide, the low banks covered with palmetto and cane brake growth, and occasionally a broad savannah dotted with islands. Probably in the wet season the whole country is under water; I saw high water marks 10ft. above the banks. It is the most forsaken and forlorn place I ever beheld. The color of the water is brown, the current sluggish and all one way, showing it to be one of the many outlets of the great everglades and lakes of southern Florida. So we left without regret, although it had at first interested us very much.

Passing along to the westward, we looked for Alahoochee River, which is a cut off, leading from Barne's Sound into White Water Bay. Following each bar and shoal we were gradually forced to the southward and then eastward, when we became convinced that Capt. Albury was right. Then to get back was the next move, which it took two more days to accomplish. From the gaff I saw two porpoises near at hand; trying a shot at them with the rifle, they headed outward and ran through a small channel that we had passed, and which proved to be the one we had passed through four days previous, so then and there we toasted the two new pilots with a will as they disappeared to the southward showing us the way to deeper water.

Again arriving at the channel through the long bar off Tavernier Creek, after an absence of several days cruising we were more than convinced that a boat drawing more than 14in. of water is not suitable for key cruising.

Our next course was southwest, back to Duck Key and then northwest to Cape Sable, passing between West Horseneck and Middle Shoal and west of Sand Key, reaching Cape Sable at sunset of second day. Part of the time we were out of sight of land with 4 to 6ft. of water; distance run, two days sailing from Indian or Channel Key to Sable forty miles. We found a harbor off a creek at Northwest Cay and had an all night drumfish serenade under the boat's bottom. Our tent in the morning was wet with the dew for the first time.

Ran into Harney's River next day. Shot two pink curlews—a beautiful bird. Saw hundreds of alligators. By shooting from the gaff they can be killed as they swim. This is a difficult thing to do from deck, for they only show their eyes and the tip of the nose above water. The ball from deck is apt to skip, when a plunging shot from aloft will kill every time. The 'gator sinks, turning his yellow belly up, and can be easily seen and picked up on one's return several hours afterward. We saw any amount of deer tracks on shore, and finding a crossing on the river we killed two in the evening of about 100lbs. each, a buck and doe. The mosquitoes after sunset are dreadful; with the hooting of the owl and the bellowing of the 'gators it keeps things pretty lively after nightfall. This is another river full to the brim of everglade water running through a perfectly flat country covered with tall grass and canebrakes, in which lurk bears, deer, wildcats, rattlesnakes and moccasins by the thousand. We see them every day and with the 'gators to keep it lively it cannot be a very nice place for a nervous person to reside in. The artist has a great fondness for bathing, which he gratifies by stripping in the dinghy towing astern, then taking a pail of water and having a shower bath. He went over backward yesterday (the maneuver being caused by a sudden jerk on the painter) into about 10ft. of water, which was alive with sharks. He lost no time in getting on board the dinghy when we cast off the line;

ordinarily he is the most deliberate man I ever saw; some might call it laziness, but he forgot his deliberation for a minute.

Running up the several rivers in passing along the coast we found a great similarity in scenery. We stopped at different favorable points on the beach, sometimes for a sketch by the artist, and again for wood for the stove. I have long since on former cruises thrown overboard the oilstove, with all its nastiness. My attention, while walking along the sandy beach hunting rare shells, was one day attracted by the wild exclamations of the artist, who as usual had lingered behind sketching a cabbage palm. Running back and looking to where he pointed I saw rising above the tough beach grass the heads of two large rattlers. Beside them lay the artist's sketch book, and to this day it has remained a mystery why he was not bitten. Keeping at a safe distance he asked me to hold them while he got the gun out of the sloop. He brought the shotgun and I gave them a barrel apiece, which finished them up in fine shape, and we soon had them stretched out on the sand alongside of tape line. One had twelve rattles and measured 6ft. 5 $\frac{1}{2}$ in., the other nine rattles and measured 6ft.; one measured 14in. in circumference; the odor from them was immense.

At the Ten Thousand Islands we entered one of the many channels, first at low tide fishing up a bag full of oysters. We cruised among the islands for two days, when after the second day it was only by close attention to the compass that we found our way out of the labyrinth of deep channels all full of brown swamp water. Some of the islands at a distance showed the foliage as white as snow, from the droppings of the birds, for here were the roosts of millions of birds of many kinds. Choccoliska and Casimba keys each contain one immense shell mound, perhaps 100ft. in diameter and 50 to 75ft. in height. There are smaller ones further up the coast. On digging into them we found several kinds of shells perhaps carried there by the Indians. These are the first elevated grounds north of Cape Sable. They are occupied by spongers. At several places in the vicinity there has been a feeble attempt at coconut and sugar-cane growing. The soil is rich enough, but the annual overflow causes very uncertain results. It is hard to remember that it is winter, with such perfect weather, enjoying every hour as we cruise along, finding plenty of harbors and a surfeit of game and fish. A full account of all our experience would fill a volume. V. W.

Natural History.

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"OFFICIAL EXTERMINATION."

Editor Forest and Stream:

IN FOREST AND STREAM for Feb. 3 is a communication entitled "Official Extermination," and signed "C. H. H.," which severely criticises Mr. C. H. Townsend for having been instrumental in procuring for the U. S. National Museum the skins and skeletons of sixteen sea elephants. Prof. Baird is also condemned by the author for having instructed Mr. Townsend to obtain these specimens. As Mr. Townsend is by reason of absence unable to speak for himself, I take the liberty of briefly replying for him and furnishing "C. H. H." with the facts in the case.

Mr. Townsend, while in San Francisco, made arrangements with the owners of the schooner Laura to accompany that vessel on a sealing trip, for the purpose of obtaining sea elephants, a liberal offer having been made in order that the skins and skeletons of such as might be killed should be preserved for scientific purposes instead of being made into commercial hides or thrown away. This trip was unsuccessful, and Mr. Townsend returned to Washington, leaving his offer still open. On the next trip of the Laura sixteen sea elephants were killed and preserved, although owing to the unfortunate absence of Mr. Townsend the skeletons were rather roughly prepared, and reached Washington in a decidedly mixed condition.

This act of "official extermination" thus resolves itself into the fact that a price was placed on the skins and skeletons of sea elephants sufficiently large to induce the dealers to save them instead of allowing them to rot upon the beach. But for the foresight of Prof. Baird and the energy of Mr. Townsend there would be to-day hardly a specimen to show that this huge animal ever existed, and Mr. Townsend is to be congratulated on having secured for science even a few immature individuals of this, our largest pinniped. Had the critic's assumptions been correct and the "final tragedy" taken place under the eye of Mr. Townsend, it would still have been far better to have secured all the specimens possible for scientific purposes, although at the risk of exterminating the race, than to have left the survivors to the tender mercies of the seal hunters. "C. H. H." himself bemoans the fate that befell the rhytina, the dodo and great auk, and yet he equally bewails the fact that the sea elephant has been rescued from the same rapidly impending doom. For doomed this huge animal was from the moment of its discovery, both by habit and location, and its final extermination has been merely a question of time, and of very little time at that. There is no case on record where sentimental considerations or even a chance of possible future profit has spared the life of a single creature whose death would cause the immediate gain of a single dollar. "After us the deluge" seems to be the motto of the American race, and the sea elephant does but mark the path of extermination down which so many denizens of our woods and waters are being hurried. We learn from Mr. Townsend's paper how the few animals spared by the Liberty in 1884 were promptly swept out of existence by the crew of the next vessel to appear upon the scene, and it is too easy a matter to imagine how long would have been the lives of any spared by the Laura. Lower California is quite beyond the jurisdiction of the United States, but did the territory lie within our boundaries it is the merest folly to suppose that the law which is powerless to protect the seals on the Farallone Islands could do so any where else.

From the sixteen individuals secured, specimens have already been sent to the British Museum, to the Museum of Comparative Zoology, the American Museum of Natural History and the Philadelphia Academy of Science. It is

just possible that "C. H. H." would prefer that these skins should have been made into leather and their bones left to whiten on the shore, but it is to be hoped that this supposition is not correct. No one deplores the destruction of animals more than does the present writer, and yet he deems the slaughter of the sea elephants not only justifiable but commendable. F. A. L.

WASHINGTON, Feb. 20, 1887.

NAVAJO METHODS OF CURING AGUE.

BY DR. H. C. YARROW.

[Read before the Anthropological Society of Washington.]

FROM the earlier periods of historic time up to the present day, the practice of medicine has partaken largely of an occult and superstitious character, which does not, even with more advanced mental enlightenment, improve as we have reason to expect. To-day we hear among our own people of faith and prayer cures for the relief of disease, of the laying on of hands, and of the miraculous effect of certain waters, charms, relics and conjurations, and this being the present civilized status, we should with all charity be tolerant of the peculiar views held with regard to the cure of physical and mental disorders by the Indian doctor and his patient.

No one will venture to say that the earlier physicians sprang into the performance of healing functions at once; the growth of the art has been gradual, and largely empirical, and this has been the case not only with the more civilized races, but also with the savage ones. It is true, as has been stated by our distinguished president and others, that the Indian has no absolute and definite knowledge of the causation of certain diseases, believing that many of them are produced by evil demons, spirits or gods. But that he is absolutely ignorant of the cause and effect with regard to remedial agents I do not believe. If we deny empirical observation to the Indian, we must then ascribe to instinct alone the faculty he evinces in choosing certain herbs, or other medicinal substances for the care of his ailments. Animals are their own physicians, and it must be instinct or transmitted hereditary experience which leads them to select particular plants and herbs to relieve occasional ill health. The question may well be asked, what part do instinct and experience play in this choice? Any one familiar with the gradual progress of medical science must admit, if not biased by the views of a particular school, that etiology is not of prime necessity in therapeutics, as we find different men of different pathological views, prescribing opposites quite frequently and having equally good success.

Briefly, it may be said then that the Indian's primary view of disease (excluding surgical injuries) is that it is caused by a bad spirit or evil god, his secondary idea of it being derived from actual empirical observation. And, acting upon these two theories, he applies as best he can the means at his disposal. To meet the necessities of the first he hires his shaman or medicine man, for the second he uses such simples as he has been taught by experience will be of benefit. The Indian is a tolerably fair anatomist and a moderately good surgeon, he seems to understand the relation of certain muscles to the bones, and in his treatment of fractures he often puts to shame his white brother. He knows that in delayed parturition, in some cases prolonged epulsive efforts are necessary; and he has certain methods of bringing about this result which, if not quite as elegant as those taught by the schools and approved by Lucina, are equally effective. This is the result of reasoning pure and simple, and I think we should be unjust did we fail to ascribe to him more reasoning powers and reflections in this regard than whites have usually credited him with. That he believes more than his original theory of the demoniac origin of disease, cannot be doubted, for when he finds that the prayers and incantations of his medicine man fail to relieve his suffering, how sagely in many instances do we find him applying to his white brother for relief.

It will be noticed that throughout this entire narrative, although the medicine men perform certain rites to dislodge the evil spirits, at the same time from the decoctions given, we must infer that they recognized the existence of fever and sought to reduce this by means of diuretics, diaphoretics and sweating, this certainly indicates something more than a mere belief in exorcism by noise and prayers. Crude as the observations may be I have brought them before the society hoping that in the discussion which may follow we shall be able to obtain an interchange of opinion which will be of value to all of us who are interested in Indian medicine.

I should state that the greater part of the information regarding the Navajo method of curing ague has been furnished me by my friend Mr. A. M. Stephen, of Keam's Cañon, Ariz., well known as a conscientious and careful observer of Indian myths and customs. With this slight introduction I may be permitted to read the notes sent me by Mr. Stephen:

KEAM'S CAÑON, ARIZ., Sept. 16, 1886.

MY DEAR DOCTOR— * * * You may remember having met here a Navajo friend of ours, one of their silversmiths, whom we familiarly call "John the Jeweler." He went over to the Kohonimo Cañon and stayed there four days. The day after leaving the cañon he was taken with ague, and every day for twenty subsequent days he had a chill followed by fever and delirium. The strangeness of the disease had an extraordinary depressing effect on him, and during these twenty days he was in a state of utter collapse. He is a medicine man, a minor priest of considerable repute, and numbers of his friends came to see him. But none of them knew aught about, or had ever seen such a disease. The priests and the patient were inclined to attribute it to "a bad smell" emanating from the Kohonimos; but as there was also a band of wandering Pah-Utes there during the time of the patient's visit, they are still uncertain. Possibly the "bad smell" may have originated with the Pah-Utes. The friends concluded in this emergency to call in the best mediciners of the region. The sequence of the different mediciners in this case may be taken as typical in similar cases, that is, where the patient is suffering from some uncommon or unknown disease, or one considered specially dangerous.

It is to be understood that each of these mediciners is also a priest, in the sense of being a recognized medium of communication between men and the gods, by virtue of the rites and song-prayers pertaining to the priesthood or fraternity. Each priesthood or fraternity has its own exclusive beliefs, rites, fetiches and song-prayers. Each

