

hangings and decorative coverings of beams. Piles of the cloth spread upon the floor, make delightfully cool and elastic beds, and upon the rafters are placed huge rolls of the finer textures, which by their number and total of yards represent the family wealth. When a woman of means marries she displays her social position by winding about herself all the "tappa" cloth her family can muster—so that a bride from the Fiji "Four Hundred" resembles a cotton bale with her head sticking out of the middle, and has to be carried to the altar by half a dozen muscular male relatives.

At short intervals along the shore, and in the cleared spaces of the tropical jungle, are the homes of the natives—some isolated, others collected into considerable villages, but all swarming with the brown children of the sun. These houses are always wide open, and one can enter at will, the people and the visitor seeming to take an equal enjoyment in the curious appearance that each presents to the other. A Fijian house is perfectly adapted to the climate, and affords protection alike against the torrid rays of the sun and the frequent tropical deluges of rain. It is made by driving stout posts into the ground, across which are laid beams fastened to the supports by ropes of cocoanut fiber, and from this framework rafters are run up to a central ridge-pole. Roof and sides are covered with a thatch of grass and reeds, sometimes two or three feet thick, the whole structure being elevated on rough blocks of coral, thus affording freedom from the dampness of the ground. In ancient times the four corner supports of chiefs' houses were set in holes wherein captured enemies had been buried alive, while a chaste and agreeable decoration of the front would be a row of stones indicating the number of captives the chief had eaten during his career. Thus, the tails of stones of a famous chief, counted by a missionary in 1849, was 872—for which the chief apologized, saying there should have been more, but he had been indolent of late, and had neglected to post up his ledger.

A country like Fiji, with its copious rainfall, is naturally full of watercourses, and the mountainous character of the land gives opportunity for numerous waterfalls, which are among the most charming features of the islands. Nothing can be more beautiful than these silvery cascades, set, as they are, in a dense jungle of flowering trees, variegated shrubs and mottled crotons, or in ravines where enormous orange-colored spiders swing in webs that glitter like diamonds from the spray of the falls, and where the flight of the "orange" and "rainbow" doves, and crimson and green parakeets, gives movement and shifting color to the scene. The natives are a cleanly folk, and spend much time in the water of the inland streams or in the sea within the coral reefs, where the sand is of dazzling whiteness and the water shows every shade of the opal, turquoise and sapphire.

Along the edge of the sea, extending for miles on both sides of Levuka, runs a smooth and level path, which, built up on the wall of coral rock that rises a few feet above the water, leads by gentle curves around projecting promontories into avenues of palm-trees, and picturesque glades where sleepy villages drowse under the rustle and shade of the cocoanuts, and in hearing of the perpetual symphony of the waves. From this path the eye extends to the encircling coral reef, against which the ponderous waves of the Pacific burst in clouds of foam. The heavenly blue of the water inside the reef forms a beautiful contrast with the purplish-indigo expanse without, and the drowsy air is made drowsier still by the incessant reverberant roar of the distant breakers. This sound is heard nowhere else in the voice of the sea. It has no intervals, but resembles the continuous passage of a heavily loaded railroad train, the hollow, semi-elastic structure of the coral giving it a metallic, ringing quality that is as noticeable as it is difficult to describe.

If you will launch a boat at noon, when the vertical sun lights up every detail in the bottom of the shallow lagoon, you may introduce yourself to a strange and lovely spectacle. You float over fairy grottoes, looking into which, through translucent fathoms, you see coral in every tint of blue, green, pink and creamy brown—the recollection of which will give you ever after a distaste for its bleached and ghastly skeletons in cabinet or on bric-a-brac table. Through its finest of branches float armies of fish the color of topazes and rubies, and of quaint or monstrous forms; enormous purple and crimson starfish sprawl upon snowy sands, while around them the hideous (but edibly delicious) sea-slug—the famous *bêche-de-mer*—glides in writhing progression, and sea-urchins expand and contract their iridescent spines. Now and then you drift over spaces dusky with depth, through which enormous conger-eels pass with wavering fins, and green turtles flap like strange, unwieldy birds—while rainbow-hued shells incrust everything in wanton profusion, and add to the beauties of fish, coral and swaying weed to produce a scene of exquisite loveliness, which lingers in the recollection like an enchanted dream.

A view of Fiji would be incomplete without some illustration of the old cannibal practices which, until

less than fifty years ago, made the country a section of hell transplanted to earth. Instances of this era are found most numerous at Mbau, the old heathen capital, and headquarters of the late King Thakombau (to give the English pronunciation of his name), who, as the last ruler of Fiji, ceded his country to Great Britain for a pension of £1500 a year and other considerations, and whose war-club, sent to the Queen as mark of fealty, holds worthy place at Windsor beside the umbrella of King Koffee of Dahomey—reminders to the world of two as thorough scoundrels as ever cumbered it. Before his conversion to Christianity the city of Mbau was covered with trees forming sanctuaries like the groves of Baal, and as one of his first acts on reformation was to cut these down, Mbau now lacks many interesting arboreal growths. Chief of these was the famous "Mbau Larder"—an enormous tree upon whose spreading branches tough victims were hung to acquire that "gamey" flavor which Fijians like in "long pig" (as they facetiously term the human bake-meat) and Englishmen in pheasants and grouse. The Wesleyan Mission House to-day fronts the ground where banquets were served and victims prepared for the oven. A huge stone stood at one end, upon which the subject's brains were knocked out as a preliminary; to-day it is in the church at Mbau, and is used as a baptismal font for native converts, its top having been hollowed out.

I met an aged man at Mbau who gave me much interesting information on cannibalism. His father, he said, had been a famous trencherman in the good old days, and although he denied that he himself had ever eaten the flesh of his kind, yet in the course of his description he fingered my arms and pinched my legs and poked me in the ribs in a manner which seemed to me not altogether platonic. Fijian flesh, he stated, was superior to that of white men, who tasted of the salt they ate with almost everything—while a tough old sailor was practically a waste of raw material from the tobacco and grog with which a life before the mast has a tendency to flavor the human system. Interrogated as to choice cuts, he gave the palm to the head—the brains and eyes being particularly desirable, and the cheeks, especially in young subjects, submitting to bak'ag very kindly indeed. The upper part of the arm, too, and the calf and upper portion of the leg, were not to be despised—but, said this epicure, as for the rest of the body, "throw him away." In the afternoon this interesting savage came around for me to get my gun and go into the bush with him, where he would "show me plenty parrots." After the enthusiasm of his morning description, however, I thought it prudent to decline.

A quaint feature of Fijian life is "*kava*" drinking—the beverage being made from the root of the *angona* shrub, which, being macerated and mixed with water, ferments and forms a mild intoxicant. It tastes like soap-suds and ginger-ale mixed, and the relish for it has to be acquired. It is drunk with solemnities at meetings of chiefs and at conferences generally, and its absorption is governed by strict rules of etiquette. It must not be sipped, but swallowed at a gulp, as a Western cowboy assimilates his whisky, and it is a fine touch, and an instance of *savoir faire* after drinking to "skitter" the cocoanut-shell cup in which the beverage is served along the ground to the presiding genius at the supplying bowl. In native circles the root is chewed by women and expectorated in the bowl to be mixed with the water. This is said to give a peculiar and agreeable flavor, but the less robust white residents reduce the root by a grater.

The "*Meke-Mekes*," or descriptive songs and dances of the Fijians, are wonderfully impressive. The illustration shows a party of girls giving the "*Wave Meke*," describing the movement of the sea on the reefs. The hands sweep the ground slowly, with waving motions of the fingers, to show the ripples crisping in the wind. Then the bodies sway in unison to show the roll of the ocean—other movements of rising and falling figures show the leap and fall of the breakers. Action grows more violent and confused, the performers rise to their knees, then to their feet; at last, with a spring and a clapping of hands, the wave is described overleaping the barrier of the reef, and as it falls into the still lagoon the dancers drop to the ground in unison with a long cry in diminishing cadence, and the "*Meke*" is over.

Delicious is the life in the tropic seas, dreamy as the lotus that typifies it—not to be understood by residents in our colder and ruder North, but delicious even in the aftertaste to him who has experienced it. Even I, who have sparingly partaken of this divine food, cannot forget its flavor; forevermore will rise before me, in smoky London, perchance, or in bustling New York, visions of the slumbering palms in the moonlight at Levuka, and my ears hear the murmur of the surf and the plaintive *Mekes* of Fiji.

Professor J. H. Sears, Curator of Mineralogy and Geology at the Peabody Academy of Science, in Salem, Mass., has unearthed in newly opened claybanks in Danvers fossils of the mollusk *Portlandia lucina*.

Correspondence.

Coal or Oil—An Early Suggestion from the Founder of the Guion Steamship Line.

To the Editor of the SCIENTIFIC AMERICAN:

In the summer of '79 or '80 I was crossing the ocean on the steamship "Arizona." The managing director, Mr. William H. Guion, was on board. Among the many interesting conversations with him was one upon the possible use, at some future date, of oil in the place of coal. The discussion came up on account of the vast amount of black smoke that almost constantly poured from the funnels of the steamship. The enormous amount of waste which he told me occurred from this unconsumed carbon was almost incredible. He then declared that the time would come when oil would be used in the place of coal, and gave as an interesting fact, or opinion, that the saving in freight room by the use of oil, in one trip between England and Australia, would be worth £6,000 (\$30,000). Mr. Guion was a very practical, energetic, progressive man, and his line furnished the first of the ocean greyhounds. His remark was truly prophetic.

GEORGE G. ROCKWOOD.

New York, June 17, 1902.

Prizes for Photographs.

The Bausch & Lomb Optical Company, Rochester, N. Y., announce a photographic competition open to amateur and professional photographers, residents of foreign countries, as well as the United States, the object being to bring together as large and representative a collection of photographs as possible, in order that the present development of the photographic art and the progress in lens and shutter construction which has been made during the past quarter century may be made evident. It is during the last quarter century that the greatest progress in photography has been made. In order to enhance the interest of photographic work, the awards have been divided into a number of classes, such as landscape, portrait, genre, instantaneous, architectural, interior, etc. Several special awards for telephoto and other work have been provided, also a special award for users of the Bausch & Lomb rectilinear lenses on various makes of hand cameras, kodaks, etc.

The Current Supplement.

A fully illustrated article on the American cut-glass industry opens the current SUPPLEMENT. Next comes a dissertation by Dr. E. Fischer on temperature experiments with butterflies. Dr. Fischer has proved the remarkable fact that by breeding certain European butterflies at low temperatures species are obtained which probably existed in the glacial period, and that by breeding these same European butterflies at high temperatures species which never existed before are produced. The Peterson boat-launching apparatus is made the subject of an illustrated description. The compressed air cars used in France are fully described. The results of the Interstate Commerce Commission's report on safety appliances for trainmen are also published. Mr. Guglielmo Marconi in an entertaining way tells something of the practicability of wireless telegraphy. Prof. Pedersen, Valdemar Poulsen's assistant, has made an important improvement in multiplexing the telegraph. The improvement is fully described. The wonderful Mexican istle plant and the many uses to which it can be put are fully set forth in an account illustrated by a series of very handsome pictures. The usual minor articles are also published.

An Odd Method of Heating Cars.

The Northwestern Railway Company of England has equipped some of its trains with a system of heating to which the much-abused term "unique" may well be applied. Two concentric cylinders are employed, the annular space between which communicates with a steam-pipe extending from the locomotive-boiler. The inner cylinder contains acetate of soda—a compound remarkable for its property of liquefying when heated, and of cooling very slowly. The radiators thus constituted are incased in asbestos-lined boxes having hinged doors. By opening or closing the door of a box the heat is turned on or off.

The United States Shipbuilding Company has absorbed the Bethlehem Steel Company, with the result that one of the most completely equipped and self-contained shipbuilding plants in the world has been formed. The new company is thus able to make every part of a ship, including armor plate and guns. The plant of the Bethlehem Steel Company, which is at South Bethlehem, Pa., covers an area of one and one-quarter miles long by one-quarter of a mile wide, of which about thirty acres are under cover. The works are particularly well equipped for the manufacture of armor plate and gun forgings.