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AMERIKA

SAMOA

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A History of  
American Samoa  
and Its  
United States  
Naval Administration

by

CAPTAIN J. A. C. GRAY MC, USN  
1960

United States Naval Institute  
ANNAPOLIS MARYLAND

P. 107  
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"Muliava  
of no  
value"

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The *Pandora* brought the last of the eighteenth century visitors to Samoa. Soon after 1800, the arrival or passage close by of sailing ships became fairly frequent as scientists, whalers, and commercial sailors began to travel the South Seas in increasing numbers. For the white man, the era of discovery had passed; for the Samoans, isolation was over.

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## 2

# The Samoa Islands and People

THE Samoan Islands lie spread out from east to west, overlapping the fourteenth degree of south latitude. They may be readily located upon a map of the Pacific Ocean area by drawing a line from Hawaii to New Zealand, upon which they will be found about two-thirds of the way down. The island chain is 290 miles long and, in round numbers, is 2,200 sea miles from Hawaii and 4,500 from San Francisco. The nearest island neighbors are the Tokelau Group, 200 miles to the northeast.

The islands, nine of which are inhabited, are the peaks of a largely submerged chain of volcanic mountains, which rises three miles from the floor of the Pacific. Except for Muliava (Rose Island) eighty miles east of Ta'u, the volcanic origin of the islands is everywhere apparent, and in Savai'i, the largest and westernmost of the group, there has been volcanic activity twice within the present century. Rose Island is an atoll, presumably resting upon the circular rim of a hidden peak.

All of the islands, again excepting Rose, have common characteristics. They consist for the most part of precipitous mountains, and flat land makes up a relatively small part of their surface. Upolu (area 430 square miles) offers the greatest agricultural advantages and is capable of supporting many times its present population. Savai'i (703 square miles) is larger, but much of its surface is barren due to lava flows and the extreme porosity of its soil, which allows rain water to drain off rapidly. Manono and Apolima, between Upolu and Savai'i, are small but historically important. Tutuila, with its satellite Aunu'u, and the three islands in the Manu'a Group, together make up the inhabited American islands. The largest of these, Tutuila, is about twice the size of Manhattan Island, and their total area is about 76

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# The Rediscovery of Samoa.

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SAMOA and the Western world first became aware of each other on 13 June 1722 when Commodore Jacob Roggeveen, commanding the ships *Arend* and *Thienhoven* of the Dutch West India Company's exploring expedition, approached the Samoan Islands from the east and arrived within sight of Ta'u in the Manu'a Group. By early afternoon he was abreast of the villages on Ta'u's western coast and came in close enough to lower a boat to sound for an anchorage.

Ashore, the Ta'uans were astonished and fearful. The ships were larger than any they had seen or supposed possible, and they placed offerings of food along the shore to placate "The Sailing Gods." Continued observation, however, allayed their apprehensions. The ships lay off shore and their small boat was of comprehensible size when she stood in for the land. Curiosity led some of the men to launch three outrigger canoes and put out through the surf to meet the strangers. Passing the small craft, whose occupants hailed them in an unknown tongue, they held on toward the larger vessels and climbed aboard. There they saw creatures who were evidently men of a sort, but men who had yellow hair and pink faces, covered with elastic skins which stretched from their necks to their wrists and their toeless feet, and from whose mouths there emerged strange words and, at times, clouds of smoke. On the ships there were many strange objects. The masts and rigging were understandable, but the guns and other metal pieces were startling. The Ta'uans sought to trade for metal nails, and offered coconuts in exchange, but their visit was brief, for, about two hours after he had hove to, Roggeveen recalled the small boat, ejected the visitors, and sailed off to the west.

A few miles in that direction lay the twin islands of Oloosega and

Ofu. Fishermen or runners from the more easterly Olosega hastened to tell the High Chief of Ofu of the visitation, and he was informed and ready when the ships entered the bay formed by the southern shores of the islands. As the traditional guardian of Manu'a, it was his duty to bring visitors ashore and to have their representative fight a warclub duel with his champion to determine their fitness to land. Although the genuineness of the combat might be determined in advance by the known friendliness or enmity of the visitors, entry into Manu'a was contingent upon its outcome, and although the strange ships were unrecognized and had come from an unusual direction, he must still challenge. He assembled the warriors on the beach of Ofu, and when a small boat came in from the ships, he set out in his war canoe to meet her, taking along his village virgin clad in her ceremonial, fine mat skirt and a blue necklace.

When the High Chief came within hailing distance of the strangers, he invited them to land by gestures, but when he sensed that they were reluctant to do so because of the armed men on the beach, he dispersed the latter by a hand signal. This appeared to satisfy the newcomers, for they rowed close in. That they landed is improbable, for it would require a foolhardy boatmaster to attempt to run the complicated passage through the reef at Ofu in the face of an uncertain reception and with night coming on. The encounter is therefore presumed to have been conducted out in the bay. The High Chief pointed to the girl's necklace and indicated his desire for another, to which the visitors replied by gestures that they had none. After a brief but not unfriendly mutual inspection, the strange boat returned to the ships, and the High Chief watched the squadron make sail and put to sea.

That Roggeveen was the first white man to visit Samoa has been questioned because the Ta'uans appeared to be familiar with metal nails and because the girl at Ofu wore a blue necklace. Since there is no blue coral in Samoa, these may have been glass beads. There is, however, no evidence of previous direct contact between the Samoans and the navigators of the Pacific, and the islanders might well have learned of nails and beads in Tonga or Fiji, which had already been visited by white men and with which they were in fairly frequent contact. Consequently, the priority of Roggeveen's discovery is likely to remain unchallenged.

The arrival of the ships and of the white men raised a number of questions in the minds of the Samoans. Their world consisted largely of their own islands and those of Tonga and Fiji and the Tokelau Group. While it undoubtedly contained other islands, it did not contain continents or white people. The Samoans conceived the universe to be shaped like a mushroom. The flat earth, consisting of the ocean and its islands, sat like a disc upon a pillar from whose circular periphery arose the over-arching dome of the heavens. The newcomers must, therefore, have broken through the periphery at some point, since they came from beyond the known world, and they were therefore presumed to be super-natural beings and were named *papalagi*, cloud-bursters, or those who break through the heavens. An alternative suggestion as to the origin of the name holds that it represents an attempt to render the sound of cannon-fire in the Samoan language.

The Samoans had plenty of time to mull over these matters, for forty-six years elapsed before the problem of the *papalagi* again presented itself. In 1768, the French navigator Louis Antoine DeBougainville, with his ships *La Boussole* and *L'Etoile*, came from the east and appeared off Manu'a, where he established contact with the inhabitants of Ofu and Olosega and bartered trinkets for fresh fruit. Admiring the manner in which the Samoans handled their boats, he paid them the compliment of calling their home "Les Iles des Navigateurs," by which name, or its English equivalent, "The Navigator Islands," they were long known. DeBougainville sighted, but did not land upon, the other Samoan islands.

The first Caucasians known to have set foot on Samoan soil were Comte J. F. deG. LaPerouse, commanding the French ships *L'Astrolabe* and *Boussole*, and members of his crews. In 1787, he passed along the northern face of Ta'u, traded with the inhabitants of Olosega, and three days later approached Tutuila from the north. His ships needed fresh water, and since the friendliness of the Olosegans suggested that he might fill his casks where he was, LaPerouse decided to investigate the possibilities and anchored in deep water off the village of Fagasa. On 10 December 1787, two French parties landed in Tutuila, the one, under LaPerouse himself, at Fagasa, and the other, under M. DeLangle, commanding *L'Astrolabe*, at A'asu a few miles to the west.



At Fagasa, LaPerouse found a neat, little bay and a sizeable village, walled off from the rest of the island by mountains. He and his party were welcomed and were permitted to take water from the two streams which flow through the place. Strolling about, he noted with interest the architecture of the Samoan *fale* (house): an oval or circular structure up to eighty feet in length, consisting of a thatched roof supported on central and peripheral uprights, the interior floored with smooth, coral stones and mats. He must have learned the name of the high chief of the area, for he called the island "Mouna," an approximation of his title, Mauga. The visit was marred by only one untoward incident. When a Samoan man leaped into one of the French boats and attempted to make off with an iron spike, LaPerouse had him seized, chastised, and ejected.

That evening DeLangle reported that he had found a splendid source of water at A'asu, and since the watering operation was incomplete and he believed a copious supply of fresh water necessary to prevent scurvy, he urged another visit to the place next day. LaPerouse had a presentiment of evil, but in the absence of any good reason to the contrary, he acceded to his junior's request and ordered the landing to be made.

By ill chance, the arrival of the French expedition in Tutuila coincided with another event in that island. Tutuila was subordinate to the Atua District of the island of Upolu, whence from time to time parties of warriors descended to exact ceremonial tribute and sometimes material. Such a party was present in December, 1787, indistinguishable to the French from their Tutuilan hosts. The man punished for attempted theft at Fagasa was one of these Upoluan, and when he re-joined his fellows, he aroused their anger over the treatment he had received. When the Upoluan bedded down for the night, they were looking for revenge, and the return of DeLangle to A'asu next day offered them an opportunity. When the French rowed in toward the village, the Upoluan gathered in the forest behind.

A'asu is a small village located in a cul-de-sac between mountain spurs. It is divided in half by a considerable stream of fresh water which pours down from the high ground behind and cuts a channel through the off-lying reef, for the coral animal cannot live in fresh water. The little bay is roughly flask-shaped, the shallow lagoon form-

ing the body and the passage through the reef, the neck. At the time of DeLangle's first visit, early in the day, the tide was high, and there was ample space and water for his boats to maneuver within the reef.

On the morning of 11 December 1787, the Samoans at A'asu saw the French ships, which had gotten underway during the night, return, and put out in their outriggers to visit them. Just after noon, DeLangle and his party started for the shore in two longboats, towing two barges loaded with the water casks. They found that the tide was low, however, so that the passage through the reef was not more than twenty-five feet wide, and the water in the lagoon was too shallow for the barges. DeLangle consequently left the barges at the reef and, at half-past-one in the afternoon, beached his longboats in front of the village.

From the start, the French disliked what they saw. About 200 Samoans awaited them menacingly, and while the French filled their casks, the number grew to an estimated thousand. Perceiving one chief who was trying to maintain order, DeLangle gave him some glass beads, which the chief shared with only a few others, thereby, in the opinion of one French survivor, angering the rest of the crowd. At three o'clock, when the French were ready to re-embark, high tide was still an hour away, and the longboats were fast aground.

Just then the Samoans let go with a volley of stones. The first to be hit was DeLangle, who fell on the landward side of his boat and was promptly clubbed to death. The French fired upon their assailants, but having to jump overboard into the water to use the boat hulls for protection against the hail of stones, they quickly wetted their powder. They were therefore forced to abandon the boats at the beach and to wade out through the lagoon to the barges tied at the reef, leaving their dead and wounded behind. Climbing into the barges, they pulled through the narrow reef passage against the incoming tide, fought off pursuing assailants, and reached the safety of open water. Two hours elapsed between the first attack and the return of the survivors to the French ships.

When he heard what had happened, LaPerouse restrained himself with difficulty from firing upon the Samoans thronging aboard his ships and lying close by in their canoes. Determined that punishment should be reserved for the guilty, however, he got rid of the visitors, hove up his anchor, and spent the next two days sailing back and forth



off A'asu. He was near enough to see the abandoned boats, but could not get in close enough to bombard the place. On the third day he accepted his losses and made off.

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square miles. Arable land is scarce, and the population subsists mostly on a narrow fringe between the mountains and the sea.

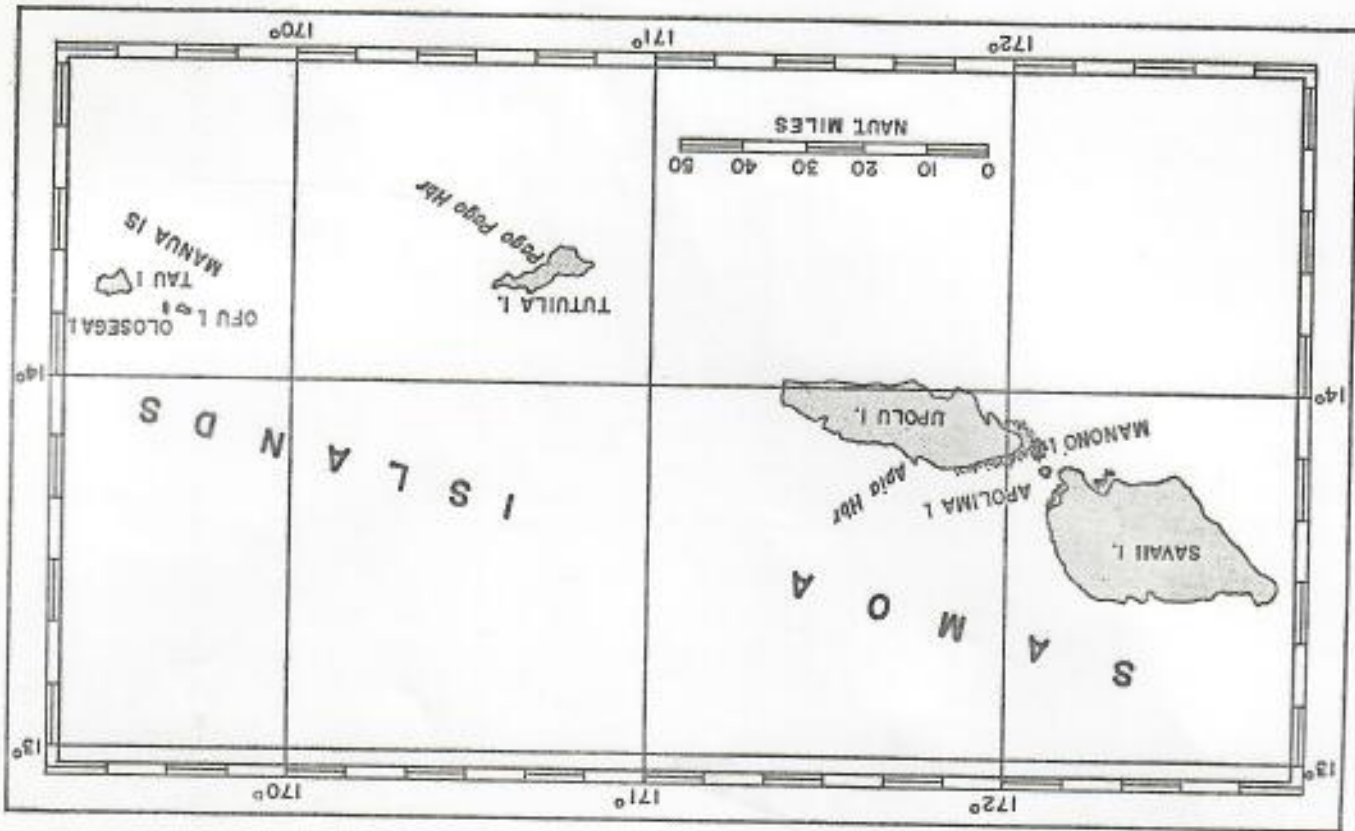
Were it not for the coral reefs, there would be little space for human habitation in these smaller islands. Where the mountains do not rise too abruptly from the sea, the coral animals have built the shelves which, for the most part, surround each island. By definition, most of these reefs are "barrier reefs," standing some distance offshore, where they break the force of the waves and enclose shallow lagoons between themselves and the shore line proper. In many places, however, the reefs are no more than narrow, projecting shelves attached to the mountain sides, and hence are classed as fringing reefs. Between these two types there are all degrees of variation. On the perpendicular parts of the coast which are devoid of reef protection, the lava rock is battered directly by the ocean and is slowly losing the battle, as the sea, finding the faults in the rock, gnaws the land away.

Upon all the land, mountainous as well as flat, there grows a dense, green vegetation. Trees, bushes, and creeping plants bind the soil upon the slopes, save where hillside farming denudes the ground and permits erosion. The soil will support almost anything planted. Fence posts, unless chemically treated, will sprout.

The climate of Samoa is that of the warm, moist tropics. The temperature and humidity depend upon the surrounding ocean. The average sea-level temperature at Apia, in Upolu, over a fifty-seven-year period was 79.45 degrees Fahrenheit. The highest temperature on record was 91 degrees, the lowest, 61. For practical purposes, a range of about 15 degrees may be expected during the year, from about 73 to 88 degrees. At altitudes above 1,000 feet, the thermometer may register 5 or 10 degrees less than at sea level. The coldest part of the day comes just at dawn, when the chill in the air causes the sleeper to pull up a sheet or even a light blanket, although the actual temperature may be 76 degrees. There is little appreciable difference in temperature from one day to another throughout the year, although it is a matter of record that the month of December averages about 2 degrees warmer than July.

The Samoans recognize two seasons, the fine and the rainy. The trade winds, which usher in the former, begin in April and last into November. They are, for the most part, strong winds which raise

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French concern, Hort of Tahiti, placed an agent at Apia, but was soon overshadowed by a German firm, J. C. Godeffroy and Company of Hamburg. In 1837, Godeffroy ships sailed to Sydney, and in 1850 the firm created permanent branches in Chile, China, and Australia. In 1847, they opened a branch at Honolulu and sent a ship to Apia. They bought copra, cochenille, mother of pearl, and trepang (*beche de mere*), selling the first three in Germany and the last in China, where it was supposed to be an aphrodisiac. The firm had large capital, capable management, and bold plans for expansion. In 1854, Herr August Unshelm of Godeffroy sailed into the Pacific to explore the possibility of producing coconut oil on a large scale. He saw that Hort was entrenched at Tahiti, but in Samoa he found what he considered to be superior resources. Three years later he returned to Samoa and began to trade at Matafele on Apia Bay.

Herr Unshelm was lost at sea, but his assistant, Herr Theodore Weber, proved to be an even more capable executive. Known in Samoa as "Misi Ueba," he established permanent coconut plantations for which he bought the best land available. At his headquarters he maintained a corps of German junior executives and clerks, living under semi-military discipline, but in the field he was willing to employ white men of any nationality. The hedonistic Samoans, who regarded regular work for wages as sheer lunacy, were useless as agricultural laborers, and Weber therefore imported indentured Chinese and "black boys" from Melanesia, fetched to Samoa for a stated period of time without their women. The Samoans would have nothing to do with the "black boys," whom they considered savages, but allowed the Chinese to make a slight impression upon their population.

Weber's plantations were splendid and orderly affairs wherein the coconut trees were set in rows at exactly the intervals calculated to assure maximum yield. They were supervised by German overseers and tended by indentured labor. Outside of the plantations, the Samoans lived the good life as they knew it, amazed and amused as what went on within, but vaguely conscious of what the system portended for themselves.

Also outside the Godeffroy plantation system were the remaining independent traders who fought it out among themselves for what business was left over.

The first large American business interest entered Samoa about fifteen years after the Germans in the form of the Polynesian Land Company. The firm was organized to speculate in real estate. Its agent, Captain James Stewart, claimed to have purchased 300,000 acres of Samoan land. He was especially interested in Pago Pago, where he foresaw a commercial depot. Stewart appears to have persuaded some Tutuilans to ask American annexation, and he certainly hoped for active American intervention in the islands, but when that was not forthcoming, the Polynesian Land Company's bubble burst, and its property was sold at auction.

Of a more permanent, though more limited, nature were American shipping interests in Samoa. The young transpacific steamship business was materially increased when the Union Pacific Railroad was completed in 1869, for travel and shipment time from the Antipodes to England across the North American continent was considerably shorter than transportation by the older routes via Panama or Cape Horn. New South Wales in Australia and New Zealand offered a subsidy to Mr. W. H. Webb of New York in 1871, when he proposed to open a steamship service between the Antipodes and San Francisco. He accepted the offer after he had become convinced that there was no possibility of help from the United States government. His line at first provided service with four side-wheel steamers built as transports for the Civil War, a makeshift succeeded in 1875 by the more adequate vessels of the Pacific Mail Steamship Company.

The steamers of the day had limited fuel capacity and needed coaling depots along their routes. Possibly influenced by the Polynesian Land Company and certainly by Commodore Wilkes' book on the United States expedition, Webb thought of Pago Pago as a site for such a depot and sent Captain E. Wakeman to Samoa in 1871 to look over the place and report upon the possibilities. Wakeman thought the Samoans "... a fine, large muscular race, but knowing little of the blessings of labor, as all their wants are supplied," and showed that his thinking did not differ from that of the Germans when he added, "... Chinamen would be invaluable here." He envied the Germans their expansion in Samoa, and claimed to have persuaded the United States Navy that the best harbor in the South Pacific, Pago Pago, was about to fall into German hands by default.



Some months after Wakeman's trip, Commander Richard W. Meade, USN, commanding USS *Narragansett*, sailed from Honolulu to Pago Pago Bay to investigate the possibility of setting up a naval station on its shores, and at the request of Mr. Henry A. Pierce, United States minister to Hawaii, to make a treaty of some sort with Samoan chiefs so that the United States would have a quasi-official interest in the islands. The *Narragansett* anchored in Pago Pago Bay on 14 February 1872, and while his ship completed the charting of the water, locating the great submerged bank off the harbor which bears her name, Meade devoted his attention to matters ashore. He informed the Mauga and his associates that he wanted to rent land at Pago Pago for a United States naval station and gave him what was probably the first Samoan flag. The Mauga, as leading chief of the area, conceded to the United States the exclusive right to build and maintain a naval station in his bay in return for "the friendship and protection of the great government of the United States."

Meade also concluded a set of commercial regulations for the port with the Mauga and named a board consisting of the Mauga, the agent of the California and Australian Steamship Company, and the foreign consuls to see that the regulations were enforced. Finally, at Meade's suggestion, the chiefs of the eastern half of Tutuila entered into an agreement of confederation and promised to uphold the Mauga's agreement with Meade.

Although Meade's "treaty" was never given official standing by the Senate of the United States, and the Mauga and his colleagues probably had no authority to negotiate a treaty on behalf of Samoans, they appear to have considered it binding. To this day, the visitor to Gagae is reminded that it was the scene of the first formal agreement between Samoans and the United States.

## 9

# First Samoan Experiments in Government

THE Mauga's treaty with Commander Meade did not pass unnoticed by the Germans, and Herr Weber hastened over to Pago Pago, shortly after Meade had left, to warn the Mauga that the treaty was not official and that German rights in Tutuila must be protected. In so doing, he set the pattern for the next decade of Samoan history, during which the several outlander factions strove to further their own interests and at the same time to create some semblance of law and order in place of the state of turmoil in which the Samoans lived.

While the basic rivalry between the A'anans and Atuans in opposition to the Malietoa faction persisted, dissension broke out within the latter. Before he died Malietoa Moli nominated his son Laupepa, then a youth of twenty, trained for the LMS ministry, to be his successor, but this nomination was not acceptable to Moli's brother Talavou, a well-known warrior and reported to be a heathen. Talavou himself had a strong claim upon the title, and the Malietoa electors were faced with two irreconcilable candidacies. In the circumstances, they fell back upon an old Samoan compromise and chose both Laupepa and Talavou to be the Malietoa jointly. Thus, uncle and nephew, the middle-aged man and the youth, the probably heathen warrior and the man of God, found themselves occupying one legal entity, and so great is the Samoan sense of accommodation that they managed to live together and to act in harmony for a number of years. On the face of it, however, the arrangement was impossible, and a rupture occurred in 1869 when Laupepa's adherents, supported by the LMS, crowned him "King of Samoa" at Malie, and Talavou's supporters, including the talking chiefs, hailed him as "King of Samoa" at rival ceremonies held at Mulinu'u.



prehended Steinberger and bore him off to the *Barracouta*, where he was held incarcerated until she sailed and took him to Fiji as a prisoner.

The presence of an American citizen held captive aboard a British warship at Levuka, the old Fijian capital, was actually embarrassing to Governor Sir Arthur Gordon. He ordered Steinberger's release and permitted him to travel to New Zealand, whence the ex-Premier of Samoa protested the treatment accorded him by the British and demanded damages. The United State Department of State made representations in London, and dismissed Consul Foster for having entered into an illegal conspiracy with the commanding officer of a foreign warship against a fellow citizen. At London, Her Majesty's government was displeased. Like his American colleague, Consul Williams was relieved of his post, and Captain Stevens was tried by court martial for actions grossly exceeding his authority.

After Steinberger was gone from Samoa, never to return, the government he had largely founded, commonly known as "The Old" or "The Steinberger Government," continued, possessed of an aura of legitimacy. Before long, however, it was confronted by a rival organization known as the Puletua, made up of personages who held no place in the Taimua or Faipule and who banded together in a bid for power. The Maletoa faction, probably feeling that Laupepa had lost face, turned to his uncle Talavou for leadership and tended to side with the Puletua. Herr Weber, who was unable to get along with the government now that his silent partner had been ousted, tried to get rid of it altogether. He prevented a visiting German warship from saluting its flag and he attempted unsuccessfully to have Foster's successor in the American Consulate join him in setting up a new government.

Insulted and threatened by the Germans and facing rebellion by the Puletua, the Taimua and the Faipule decided that safety was only to be found under the protection of either Great Britain or the United States, and with complete impartiality they sent emissaries to Fiji and to Washington to sound out the possibilities of intervention by either government.

The delegates to Fiji were hospitably received by Sir Arthur Gordon and the venerable old cannibal, King Cacobau, who had given his

islands to Britain when he realized that his kingdom could no longer exist independently. In the end, however, they sailed home with no promises. The delegate to Washington, the Mamea, fared better. Entprising journalists at San Francisco made him a national figure as "The Tattooed Prince," and at Washington both the Secretary of State and President Rutherford B. Hayes received him. Although he was unable to persuade the United States to assume a protectorate over his islands, he did succeed in negotiating a treaty between Samoa and the United States. Ratified by the Senate on 13 February 1878, this treaty provided for mutual peace and friendship between the two contracting parties for a period of ten years; was renewable; confirmed the right of the United States to establish a naval station at Pago Pago, although this right was not made exclusive; and empowered the consul of the United States to settle disputes arising between Samoans and Americans. Most important of all, it bound the United States to use its good offices in the event that Samoa should become engaged in a quarrel with any third nation.

While the Mamea was away on his mission, the Puletua revolted. They were quickly suppressed in Upolu, but in Tutuila, where they were led by the Mauga and armed by ex-Consul Foster, who had removed to Pago Pago after his dismissal, the fighting was general and serious. The government forces, based at Leone, raided Pago Pago, set fire to every building, and forced the Puletua to flee to the islet of Aunu'u. From Aunu'u the Puletua sallied forth by sea to attack government-held villages, but in the end their cause was hopeless. Aunu'u could not support an army, and the Puletua therefore went back to Tutuila and crossed its eastern end to set up a last defensive position on the north coast. When the Reverend Charles Phillips of the LMS persuaded the Mauga that further resistance was useless and that he should surrender, the defeated Puletua men fled into Leone and abased themselves for four hours. After a long delay and a longer trial, they were let go with the payment of fines, and the Mauga was forced to yield as ransom a fine mat appraised by outlanders at \$5,000.

When the Mamea returned to Apia with his treaty, he was accompanied by United States Commissioner Gustavus W. Goward, appointed to attend to its execution. The Samoan government accepted



aura of authority surrounding the captain of a *manana* (man of war) or his reference to Scripture, or both, won out. The opponents shook hands, and as the *Miranda* and the *Hyena* steamed off to Apia, Manuma and Lei composed themselves and promised to await the verdict of higher authority.

Despite their new municipality at Apia, the outlanders continued to be exasperated by chronic instability in the islands. Since the number of Germans in residence was greater than that of all other foreigners combined, and since they controlled four-fifths of the business, it was natural that the Germans should try to take the management of affairs into their own hands, and since the largest German interests were those of the German firm, it followed that the firm led the Germans.

In 1878, J. C. Godeffroy and Company went into bankruptcy due to matters far removed from Samoa, and although official German policy at the time opposed colonial expansion, the Germans were proud of their new empire and their new navy, and were displeased by the prospect that the Godeffroy's business might pass into British hands by default. On 13 June 1879, the Reichstag debated a government proposal to rescue the bankrupt concern by a loan. Although the Reichstag defeated the plan by a narrow margin, the colonial concept continued to grow, and Germans overseas had to be officially supported. J. C. Godeffroy and Company emerged with a new name as the "Deutsche Handels und Plantagen Gesellschaft der Südsee zu Hamburg," commonly shortened to "The D. H. & P. G.," or "The Long Handle Firm," or "The German Firm," or simply "The Firm." In Samoa, the changed name meant nothing. Herr Weber continued to direct operations and business went on as usual, but as official support waxed, the dividing line between private commercial enterprise and the German government became increasingly indistinct.

In 1880, Captain von Zembach arrived at Apia, and during his tour of duty as consul the views of the German government's official representative and those of the Firm were not necessarily identical, but when von Zembach was replaced as consul by Dr. Stuebel, Weber found that he had a man with whom he could work in complete harmony.

Dr. Stuebel began by imposing a convention upon Malietoa

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Laupepa. The convention established a council, to consist of the German consul, two other Germans, and two Samoans, charged with the duty of drafting laws for the mutual benefit of their two peoples, and it further provided that the king should appoint a German secretary to advise in all matters affecting Germans and their interests and to act as judge in the event of any disagreement. The expenses of this council were to be defrayed by taxes, which it would levy and collect. Although Dr. Stuebel claimed, and the German government asserted, that this convention was only an implementation of the German-Samoan Treaty, Malietoa Laupepa saw clearly that the result could only be government by and for the Germans. Unwilling or afraid to oppose Dr. Stuebel openly, five days before the convention was to become effective, together with Vice-King Tamasese and other Samoans, he attached his name to a petition addressed to Great Britain which begged that Samoa be annexed outright to the British Empire. On 10 November 1884, the effective date of the convention, he notified the American Consul that he had signed under duress.

How Dr. Stuebel learned of the petition to Great Britain is unknown, but he considered that he had been treated with shameful duplicity. He caused the commanding officer of a German warship to land a party of sailors to oust Malietoa Laupepa from Mulinu'u and raise the German flag. When the British and American consuls protested, he removed himself from the Municipal Board of Apia, thereby halting its operations. Casting about for a Samoan he could control, he made overtures to Tui Atua Mata'afa, the third figure in Upoluian precedence at the time and a man of increasing influence. When he was rebuffed in that quarter, he turned to Tui A'ana Tamasese, the vice-king. Probably because he was dissatisfied with his secondary status, the Tamasese listened and withdrew to Leulemoega, where, with the approval of the Taimua and Faipule, he proclaimed himself "King of Samoa." With a new and strong claimant for supreme honors in sight, Dr. Stuebel was happy. He decided to swallow the Tamasese's part in the odious petition, since anybody was preferable to Malietoa Laupepa, and announced that Germany recognized the Tamasese as "King."

There were now two governments in Samoa: that of Laupepa, recognized by Britain and the United States, and that of the Germans'

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ON 30 April 1899, Commander B. F. Tilley, USN, commanding the 4,000-ton naval auxiliary freighter, *USS Abarenda*, sailed from Norfolk, Virginia, to deliver a cargo of coal and structural steel at Pago Pago. Nearly four months later, after passing through the Straits of Magellan, he entered Pago Pago Bay on 13 August 1899, and on arrival became officer in charge of the United States Naval Station already under construction.

Some years after the American-Samoan Treaty of 1878, the United States had rented some land in Fagatoga village at \$10 a month to be used for a coal depot, and there the coal lay out in the open and discolored the waters of the bay when it was washed by the rains. The depot was supervised by the United States Consul at Apia, who hired the elderly Matthew Hunkin, an early assistant of the LMS missionaries, to act as its tender in addition to his other duties as United States consular agent in Tutuila. In 1888, Consul Sewall recommended that the consular agency be discontinued as unnecessary and suggested that, if the Navy wished to have Hunkin continue to manage the coal depot, it should employ him directly for that purpose. A few months later, before the matter could be settled, Hunkin died.

The plan to construct a naval station in addition to the coaling station on Pago Pago Bay appears to have been formulated by the Navy Department at about this time. In 1889, Admiral Kimberly, after the loss of his ill-fated squadron in the Apia Hurricane, travelled over to Tutuila aboard a schooner to survey the bay and to choose a site. He selected a tract of land on the southern shore of the inner harbor which stretched from Goat Island to Swimming Point and was completely protected from the sea. Flat land could be provided by cutting off the



hillsides and depositing the earth on the narrow reef between shoreline proper and deep water, and a dock, capable of taking seagoing vessels alongside, could easily be constructed.

After Congress had appropriated the necessary funds, the Department of State directed Consul Sewall to buy the land, which involved six tracts, some owned by Samoans and the rest, formerly the property of the defunct Polynesian Land Company, by Americans. Since each Samoan family concerned had to agree unanimously to the sale, and the American owners or their estates had to be contacted, it required eighteen months to buy land valued all told at \$5,241.59.

In addition to its location, the defense of the Naval Station against attack by sea had to be considered. The entrance to Pago Pago Bay is about half a mile wide and lies between two rocky promontories, that on the east known appropriately as Breakers' Point, and that on the west, as Blunt Point. A ship entering harbor keeps close to the former and steers north, using the buildings at the Roman Catholic Mission at Lepua as a navigational landmark. Since the two headlands and the mountain above the mission jointly dominate the entrance, it was desirable that they be owned by the Navy, and in 1893 Acting Consul Blacklock went to Tutuila to see if they could be bought, but his visit coincided with the war of the Maugas and the Lei'aitos that year, and he was unable to make binding agreements and had to be satisfied with options to buy. The land above the mission was not for sale upon any terms. Blacklock and Sewall were apprehensive about British interest in a plot of land in Aua on the bay, but the British were probably only looking for a site for a relay station for the cable planned to connect British Columbia and Australia, and they soon turned their attention to a more suitable place at Fanning Island.

After the property for the Naval Station had been assembled and the title of the United States thereto had passed the rigid scrutiny of the International Land Claims Commission in 1894, a number of years passed before building operations began. In 1898, the Navy entered into a contract with Messrs. Healy, Tibbetts, and Company, of San Francisco, to erect a wooden-floored, steel dock, a corrugated iron coal shed, a storehouse, a dwelling for the man in charge of the coal depot, and a water reservoir in the hills above the station. When Tilley arrived, he found W. I. Chambers, a Navy civil engineer, with two

assistants, and Mr. Tibbetts with about thirty assistants and laborers, already at work.

Having unloaded his coal and steel, Tilley was preparing to go to Auckland, New Zealand, to procure further building materials and more coal, when he learned on 6 December 1899, that Germany, Britain, and the United States had agreed to divide the Samoan Islands. Unable to delay his trip, he notified the Mauga of the decision of the powers and charged him to keep order, promising that the authority of the chiefs, "... when properly exercised, will be upheld."

Upon his return two months later, Tilley was pleased to find Tutuila tranquil except for minor feuds left over from the recent Samoan war, but he found it necessary to steam around to the village of Vatia where two chiefs were openly defiant and to offer them a choice between subsiding or being removed. Since the majority of Tutuilans were tired of fighting, he received the backing of public opinion and secured the peace. His greatest difficulties were at Pago Pago, where thirteen of the original workmen brought down by the contractors had become disgruntled and had gone home, leaving the foreman compelled to hire Samoan replacements. Tilley thought the Samoans good workers, but noted that the building program was delayed because the foreman was unable to get along with them.

Tilley's authority was soon greatly and unexpectedly increased. The partition of Samoa was, on the whole, a diplomatic defeat for the United States, which had hoped for many years that Samoa would emerge as a small, independent nation, and when the United States government found itself responsible for an island dependency, it had no program and no machinery for its management. There was no "Colonial Office" in Washington, and plans had to be improvised. In the circumstances, the Navy Department appeared to be the logical department of the government to take charge, and accordingly, on 19 February 1900, President William McKinley directed that, "The island of Tutuila of the Samoan Group and all other islands of the group east of longitude 171 West of Greenwich, are hereby placed under the control of the Department of the Navy for a naval station. The Secretary of the Navy shall take such steps as may be necessary to establish the authority of the United States, and to give the islands the necessary protection."



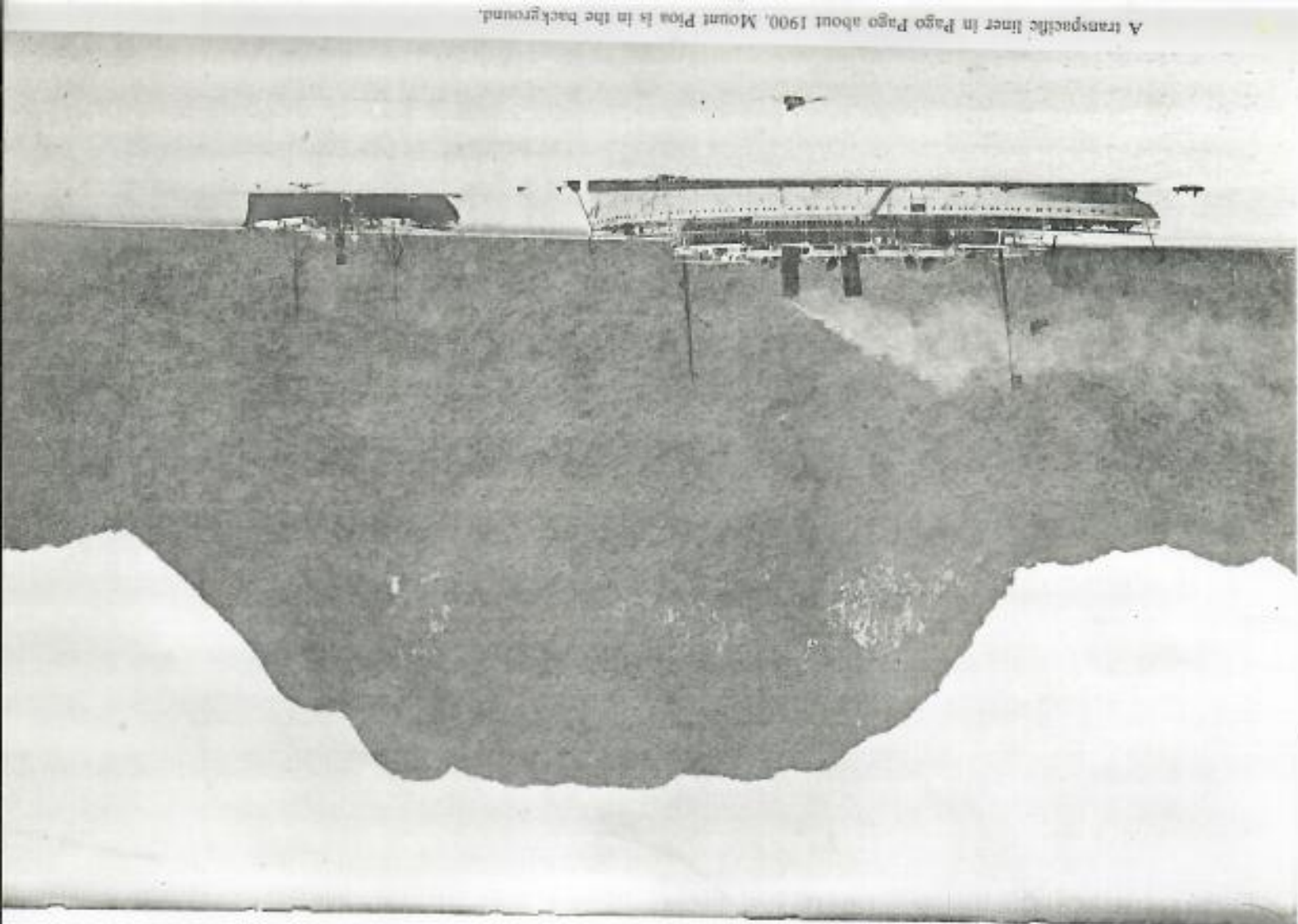
"In accordance with the foregoing," said the Secretary of the Navy in a General Order, the islands "are hereby established into a naval station to be known as the Naval Station, Tutuila, to be under the command of a commandant."

In a letter to Tilley naming him commandant, Assistant Secretary of the Navy Charles H. Allen wrote, "While your position as commandant will invest you with authority over the islands embraced within the limits of the station, you will at all times exercise care to conciliate and cultivate friendly relations with the natives. A simple, straightforward method of administration, such as to win and hold the confidence of the people, is expected of you."

The formula by which the authority of the United States was established in Tutuila proved to be a Deed of Cession, in which the chiefs ceded their island and its small neighbor, Aunu'u, to the United States. There is no record of the negotiations which led to this cession, but from the fact that the Samoans spoke of their "gift" of their islands, it may be inferred that it was a Samoan concept. The document itself shows that the eastern and western parts of Tutuila acted upon it separately, but it is not known exactly where or when it was drafted.

With Tutuila under control, Tilley went over to Manu'a to attempt to reach an understanding there. He knew that the centuries of isolation had made the Manu'ans "... very shy, and somewhat averse to any change in their government. They seemed to think," he continued, "they formed an independent nation which was quite able to take care of itself." To be diplomatic, therefore, Tilley determined to avoid forcing himself upon the Tui Manu'a, and he took along with him the United States Consul from Apia, whose position in the islands was well known, and High Chiefs Mauga and Tuitele and Chief Tiumalu of Tutuila, enthusiastic exponents of American sovereignty, who could be relied upon to act as ambassadors in his behalf.

Coming up to Ta'u Village on the afternoon of 11 March 1900, Tilley sent a letter ashore to the Tui Manu'a to invite his attention to the act of the powers and to invite him to associate himself with the Tutuilans in signing a joint Deed of Cession. The Tui Manu'a replied that he was not prepared to make a decision, but that he would be glad to receive Tilley the next day and discuss with him the relationship of Manu'a to Tutuila and the United States.





While the *Abarenda* lay rolling off Ta'u that afternoon, curious Manu'ans came out and climbed aboard her. Fifty years later a high chief, then a boy of four, recalled his astonishment at the ship and the apparatus on deck, especially the great steel winch on which the anchor chain was wound, and which reminded him of his mother's spools of thread.

Next morning, Tilley landed, accompanied by Consul Luther W. Osborn, Assistant Surgeon E. M. Blackwell, USN, of the *Abarenda*, and the Tutuilans. Landing at Ta'u Village is always difficult, for the reef lies well out from the beach and can only be passed through two narrow channels upon which, even in good weather, ocean waves of ten or twenty feet from the trough to crest pour down. The boat must be narrow, swift, and maneuverable, and the steersman and rowers must be masters of their art, for failure in passage results at best in a swamped boat and wet passengers and at worst in a smashed boat and death for its occupants on the jagged coral rocks. Some days, any landing at Ta'u is impossible, and it is necessary to round the north-west corner of the island and land in the better protected Faleasao, but on 12 March 1900, the passage at Ta'u was open. High Chief Tufele himself came out in command of a longboat and took the guests from the *Abarenda*. Turning toward the channel, he kept his eye on the following seas and waited for a wave of proper size to project the boat through the reef with enough momentum to hold her inside the lagoon against the furious backwash which would follow. At the precise moment, he cried, "*Alu! Alu!*" (Go! Go!), and the men took to their oars and pulled the boat through the passage, mastered the backrush of water, and moved on to the beach, where they jumped over the sides and carried the visitors to dry land.

Tilley and his party were led to the ceremonial *fafe* of the Tui Manu'a and were seated. The two-hour-long 'ava ceremony of the Tui Manu'a began and was punctuated by the arrival of the King. When the last of the 'ava had been consumed, the morning was almost over.

Tui Manu'a Eliasara was a vigorous man of middle age, a graduate of Malua College in Upolu, and polite but distant. He regarded himself, he said, as sovereign of a sovereign state, and he inquired by what right did the powers presume to interfere in his affairs? He would not deny that what he had heard of the Americans in Tutuila was favor-

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USS *Abarenda*, light, and SMS *Cormoran* saluting the Naval Station, 17 March 1900.



An inter-island vessel, the *Manu'a Tele*, a converted YMS, at the Naval Station.



able, or that he was well disposed toward the United States, but he wished to make it clear that Manu'a had no political connection with Tutuila or with the rest of Samoa, that it had never become involved in the disorders which had led the powers to intervene, and that it was accustomed to managing its own affairs. Any arrangements, therefore, affecting his islands were subject to the approval of himself and his people.

After luncheon, Tilley was gratified to find the Tui Manu'a more cordial, probably due to the efforts of the Tutuilans. In his turn, Tilley said that the action of the powers was none of his own doing, but that the result was a fact. He was aware that certain interested white men had spread a false rumor that the annexation was a scheme by which the Americans planned to take the Manu'an's land away from them, but he had no intention of taking land or of interfering in Manu'an affairs, for he saw no way in which the local government could be improved. He therefore invited the Tui Manu'a to travel back with him to join with the Tutuilans in signing the pending Deed of Cession. "But," he added, "whether you come or not, the authority of the United States is already proclaimed over this island."

The Tui Manu'a agreed to permit some of his people to go over to Tutuila as observers, and he agreed to acknowledge the general sovereignty of the United States and to accept its protection, but in the matter of his lands, he was adamant, and flatly refused to consider cession.

The day on which the flag of the United States would be formally raised in Tutuila was selected as 17 April 1900, and the place chosen for the ceremonies was a little bluff above the coal shed, with the unfinished dock and the raw, freshly excavated earth in the foreground. Governor Heinrich Solf of German Samoa came into Pago Pago Bay aboard the sleek German cruiser, SMS *Cormoran*, which joined USS *Abarená* and several island schooners already at anchor, and almost the entire population of Tutuila moved into the area. On the appointed day, hundreds of Samoans, the German visitors, and the American naval party converged upon the focal point, printed programs in hand. The number of umbrellas evident in photographs of the occasion, indicates that rain was threatening.

Unofficially described for the first time in the program as Kovana

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(Governor), Tilley began the ceremonies by reading the Proclamation of the President of the United States, which asserted sovereignty over the islands, and the Order of the Secretary of the Navy creating the Naval Station, Tutuila. The Samoan chiefs responded by reading the Deed of Cession, saying, in part, ". . . We give thanks to the Great Powers for the result that declaration is accepted by us with glad hearts. Now therefore, let your Susuga (Your Honor, *i.e.*, Tilley) know, and let his Afioga (His Excellency) the President of the United States know, and let all the nations of the earth know and all people dwelling therein, that in order to set aside all possible doubts in the future concerning our desire at this time on account of the rule of the United States of America in Tutuila and Manu'a, we now rightly appointed according to the customs of Samoa to be the representatives of all the different districts of Tutuila, we do allow, cede, and transfer to the Government of the United States the island of Tutuila and all things there to rule and protect it. We will obey all laws and statutes made by that government or by those appointed in the government. . . .

"*Ia, Soifua lau Susuga le Sui Kovana*" (Good health to the Governor!)

"*Ia, Soifua lau afioga le Alii Pule i le Malo o Ameiika le malo toina.*" (Good health to the leaders of the American Government.)

When this address had been read and acknowledged, the Reverend E. V. Cooper of the LMS and the Reverend Father Meinaidier of the Roman Catholic Mission offered prayers, and Tilley raised the flag, saying, "Acting with this (the Presidential) authority, I hereby declare the islands I have named, Tutuila and all east of the 171st parallel of longitude, to be under the sovereignty of the United States, and I hoist this flag as a sign that these islands now form part of the territory of the United States." The carefully instructed pupils of the LMS school at Fagalele sang "America" in English, and USS *Abarená* and SMS *Cormoran* fired national salutes, echoed four times by the mountains about the bay. Talking Chief Pele, on behalf of Eastern Tutuila, affixed the final signature to the Deed of Cession, and the assembly adjourned to Fagatoga village to enjoy the giant *fa fia* (banquet) prepared for the occasion.

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*On this, and the following pages, is reproduced the Deed of Cession giving the island of Tutuila to the United States. The English version is on the left, the Samoan, on the right.*

TUTUILA  
PAGOPAGO  
2 APRIL 1900

Iland Susuga

a Commander B Tilley

O le SUI.EOVANA o le Unaiite Setete o Aielika  
mo Tutuila.

Lau Susuga e :-

SI OU MATOU ALOFA !!

Ua matou te fia faasilasila atu ma le ava tele i leu  
susuga ma lana Afioaga, le Alii Taitai o le Malo o le  
Unaiite Setete o Aielika, o lenai matou te matua faafetai  
atu i Malo Tetele ona o latou tausisi ma faamamalu i  
lenai atunuu i soo ua mavae, ua taupeapea matou ma le  
faafetai tele. Ua olieli nei matou mo le matou loto  
atostoa ona o tela ua ma ua ai matou ua faaiu nei filii-  
-filiga o Malo Tetele ona o Samoa, ua faapea le latou  
tautinoga " Tau ana le Malo o Aielika o le a pule i  
Tutuila ma Manua, ua le toe aia si isi Malo Papealagi iai  
Matou te faafetai atu i Malo Tetele ona o Lona iuga, ua  
telia foi lona tautinoga e i matou ma loto fiafia. O  
lenai, IA SILAFIA LAU SUSUGA, UA SILAFIA FOI LAMA API-  
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TUTUILA  
PAGOPAGO  
2nd APRIL 1900

To His Susuga

Commander B TILLEY

Acting-Governor for the United States of America

at Tutuila.

Your Susuga :-

SALUTATIONS !!

We desire to make known with the greatest res-  
-pect to your Susuga and His Afioaga the President of the  
United States of America, we are now exceedingly grate-  
-ful to the Great Powers for the care and protection in  
this country in past days, we will continue thus to be  
thankful. We rejoice with our whole hearts on account  
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of the tidings we have received, the Conventions of the Great Powers concerning Samoa are ended, their Declarations are thus :- " Only the Government of the United States of America shall rule in Tutuila and Manua, other foreign Governments shall not again have authority there." We give great thanks to the Great Powers for that result that Declaration is accepted by us with glad hearts.

NOW THEREFORE, LET YOUR SUSUGA KNOW, AND LET ALSO HIS AFIIGA THE PRESIDENT OF THE UNITED STATES OF AMERICA

KNOW, AND LET ALL THE NATIONS OF THE EARTH KNOW AND ALL PEOPLE DWELLING THEREIN, that in order to set aside all possible doubts in the future concerning our true desire at this time on account of the Rule of the United States of America in Tutuila and Manua, We now, rightly appointed according to the customs of Samoa to be the representatives of all the different districts in Tutuila we do confirm all the things done by the Great Powers for Tutuila, we do also cede and transfer to the Government of the United States of America the Island of Tutuila and all things there to rule and to protect it. We will obey all laws and statutes made by that Government or by those appointed by the Government to legislate and to govern.

Our whole desire is to obey the laws that honor and dwelling in peace may come to pass in this country.

We depend on the Government and we hope that we indeed

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AFIIGA, LE ALII PULE O LE MALO O LE UNAI TE SETETE O AELIKA, IA SILAFIA FOI MALO UMA I LE LALOLALI, MA TIGATA MUMA O LOO I AI, ina ia tea ese lava maselesalo uma lava i ese amuli ens o le matou lotu faamoni i ona po nei ona o le pule o le Malo o le UNAI TE SETETE o Aelika i Tutuila ma Manua, o i matou nei, ua matou tofia tonu e tusa ma le tu e masesi ai Samoa, matou te faamoni mea uma sa faia e Malo Tetele ens e Tutuila, o i matou foi matou te te atu ma faai atu i le Malo o Unai Te Setete o Aelika le Motu e Tutuila ma mea uma e i ai o pule i ai ma faamamalu i ai. Matou te usiusitai tulafono ma faatonuga uma o le a faia e lena Malo poo e i latou ua tofia e le Malo a fai tulafono ma pule.

O loo matou lotu atostoa sa'i usiusitai tulafono uma ina taunuu i lena'i Atunuu le mamalu ma le nefelele. Matou te faalagolago atu i le Malo ma faamomoo atu foi o lena maua lava tatou uma ma le Malo, o le a Taitai tonu mai ma faatonu mai lelei le Malo i a matou ina ia matou te mafai ona tausii ma leoleo mo' le lelei mo le tonu le matou nuu eseese ma le matou itumalo foi-

Sa'i fai tulafono lelei ma aoga, sa'i msutu faavae o le Malo ma le faavaava.

Ia soifua, Iau Susuga le Sui-Kovana

Ia soifua Iana Afiiga le Alii Pule i le Malo o Aelika ma le Malo uma.

O i matou, o suaua faamoualalo a outou

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and the Government will be prosperous, that the Government will correctly guide and advise us in order that we may be able to care for and guard well and uprightly our different villages and also our districts. Let good and useful laws be made, let the foundations of the Government stand firm for ever.

May your Subuga, the Acting-Governor live!

May His Afiega the President of the Government of American Samoa live, and all the Government also!

We are, your humble servants

I am Mauga of Fagopago  
 Leiate of Fagaitua  
 Faumina of Aunu'u  
 Pere of Leauli  
 Masani of Vatia  
 Tupuola of Fagasa  
 Soliei of Nuuli  
 Mauga (2) of Fagopago

THE SUA AND THE VAIFANUA.

( note. The Sua ma le Vaifanua is the term applied to and embracing the whole of the western district of Tutuila. )

FOFO and AITULAGI ( term applied to and embracing the whole of the western district )  
 Tuitale of Leone  
 Faliivan of Leone  
 Letuli of Iilili  
 Fuimaono of Vailoa  
 Satalo of Vailoa  
 Leone of Leone  
 Olo of Leone  
 Mamo of Malanola  
 Malota of Malanola  
 Tuncitau of Povaiai  
 Lulemana of Asu  
 Aaituansai Ituan

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Ua ma mauga... Fago Fago  
 Leiate Fagaitua  
 Faumina of Aunu'u  
 Pere Leauli  
 Masani Vatia  
 Tupuola Fagasa  
 Soliei Nuuli  
 Mauga Fago Fago  
 Sua ma le Vaifanua

Fofo ma Aitulasi

x Tuitale Leone  
 x Faliivan Leone  
 x Letuli Fihili  
 x Fuimaono Aoloa  
 x Satalo Vailoa  
 x Leone Leone  
 x Olo Leone  
 x Mamo Malanola  
 x Malota Malanola  
 x Tuncitau Povaiai  
 x Lulemana Asu  
 x Aaituansai Ituan

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## The Polity of Manu'a Tele and Tutuila

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IT is now necessary to examine in some detail the polity of the Samoan islands entrusted to Commander Tilley to make the situation in which he found himself understandable to the reader. And since, as Tui Manu'a Eliasara pointed out to Tilley, there was no political connection between his islands and Tutuila, it is further necessary to describe the organization of Manu'a and of Tutuila separately.

Happily for the student of these matters, there lived in Samoa from 1897 to 1899 a German naval medical officer, Stabsarzt Augustin Kraemer, who investigated the social and political organization exhaustively. Typical of the best German scholars of his day, Kraemer had read all of the available literature concerning the islands before he went to Samoa, and after his arrival he learned the language rapidly. He travelled about as much as his duties at Apia would permit, listening, sifting, and recording, for he feared that all traces of Samoan culture were about to be swamped by the invading white man. Unfortunately for present purposes, the least definitive part of Kraemer's account is that which concerns Tutuila. He spent six days in Manu'a, but if he visited Tutuila at all, it was in passing, and his knowledge of that island was gained perforce from conversations with the Tutuilans who visited him at the German Naval Hospital at Apia as patients or at his hospital home as guests. Undoubtedly, therefore, what he learned of Tutuila was colored by his informants, chief among whom was the High Chief Lei'ato of his day. Nevertheless, Kraemer's account of Tutuila at the turn of the century is the most complete extant, and there are few qualified to take exception to it. Adherence to Kraemer has one further advantage: the outlander who does so cannot be accused of partiality by his Samoan friends.

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The polity of Samoa was not based upon geography, although the Samoans of course used place names, but upon the *fa'alapega* of the given community, that is a set of honorific titles referring to either personages or to sacred objects or to both, to which the member of the community owed his allegiance, much as the Briton owes allegiance to "The Crown" or the American to The Constitution of the United States, which all officers of the federal government are sworn to uphold and defend.

Heretofore Manu'a has entered little into this narrative for the reason that prior to 1900 its inhabitants, although not personally isolated, remained politically aloof from the main current of events in the rest of Samoa. Not long after the first ventures of missionaries into its area, Wilkes recorded the presence of renegade white men at the time of his visit in 1839. In 1860, Herr Weber bought the right to attempt to establish a coconut plantation on-Muliava (The End of Reef), commonly called Rose Island, which belonged to the Tui Manu'a, and he actually stationed a caretaking Samoan family there for a few years. Blackbirders visited Ta'u about the same time, but were defeated by an English trader named Parker, who forewarned the inhabitants of the slavers' intentions and enabled them to rally and to kill some of the raiders, and to drive the rest over the cliffs into the sea. In the eighteenthies, a German trader made up a constitution for Manu'a and set taxes, which were unnecessary in the opinion of the then United States consul, Sewall. The Manu'ans devised a flag for their kingdom which depicted a hen, symbolizing the Tui Manu'a, whose family name was Moa (chicken), sitting upon three eggs, which represented respectively the three islands of Ta'u, Ofu, and Olosega. The absurdity of this device penetrated even into Manu'a, and caused it to be replaced by a flag with one white, one red, and one blue stripe with a single star.

After the feeble, old gentlemen who served as Tui Manu'a at the time of Wilkes' and of Steinberger's visits, one Fanoa held the title, and after him came Matelita, daughter of the part-Samoan, Arthur Young, the bored, seventeen-year-old girl who acted as hostess when Robert Louis Stevenson visited her domain in 1893.

The *fa'alapega* of Manu'a are indicated in the following table, translated from Kraemer:

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## The Fa'alupega of Manu'a

The Tui Manu'a	The sacred house built by Tagaloa
The Faleula	
The Fine Mats and Sleeping House of the Tui Manu'a	Sacred because of their contact with the Tui Manu'a
The Tufele	High Chief of Fitiuta
The Tui Olosega	High Chief (King) of Olosega
The Misa	High Chief of Ofu
The Laolagi	High Chief of Sili, Olosega
The Vaimegalo	High Chiefs Sotoa (of Luma) and Lefiti (of Siufaga), advisers to the King
The To'toto'o	The Talking Chiefs ("House of Three")

This table indicates that at the apex of authority sat the Tui Manu'a, supported by the Tufele, Tui Olosega, Misa, and Laolagi, directly advised by the Sotoa and the Lefiti, and assisted in administration by the important talking chiefs.

The Tui Manu'a was hedged about with an etiquette which was almost Byzantine in its elaborateness. Only his *taupou* (entitled the Fa'ana) could make his bed, and his food had to be cooked separately. He was fed by his wife, for his person was so sacred that he would contaminate any edible he touched. (How this problem was solved during the incumbency of the girl, Matelita, is unknown.) Death was the penalty for eating any of his unconsumed food, and his garbage could not be fed to pigs or dogs. When he walked abroad, he had to be preceded by two talking chiefs blowing upon conches to warn all within earshot to prostrate themselves upon pain of death. Any dog,

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chicken, pig, or other animal which ignored his progress was summarily slain. The sacredness of his person extended to everything he touched, for which reason his fine mats and his house were worthy of inclusion among the *fa'alupega* of his community.

On the western coast of Ta'u lie the contiguous villages of Lumā and Siufaga, commonly called jointly Ta'u Village. The Tui Manu'a resided in Lumā. Probably because of their proximity to the King, High Chief Sotoa of Lumā and High Chief Lefiti of Siufaga were his direct advisers. When he wished to consult with them, he had Talking Chief Tauanu'u summon them to his presence. At such conferences, they sat outside the Tui Manu'a's *fale* with their backs toward him, listening to what he had to say and offering their comments. They alone had the right to oppose him when he wished to go to war, but on the other hand, also probably because of their proximity, their own stature was somewhat limited, and neither the Sotoa nor the Lefiti had the right to have a *taupou*.

At the northeast corner of Ta'u lay Fitiuta, the most ancient village in Samoa, where High Chief Tufele presided. The Tufele possessed the full complement of high chiefly honors, and his position was so important that there was ancient rivalry between his house and that of the Tui Manu'a.

There is a house of the Gnaisoa which claims to have ruled originally in Fitiuta and which still asserts its primacy in the village, but the intervening years have so solidified the Tufele in the place, if indeed they did not always occupy it, that the Gnaisoa claim is, for practical purposes, an historical pretendership.

The antiquity of these titles is indicated by the fact that the current Tufele is the forty-ninth holder of his title, but he admits that the title of the Tui Manu'a is eleven generations older.

The third unit of Ta'u was the village of Faleasao, just over the mountain spur from Lumā on the north coast, from whose cliffs the souls of departed Ta'uans plunged into the deep waters to begin their journey to Pulo-tu, the next world. The high chief is the Asoau, and the other notable is the Matagi, who is at once a chief and a talking chief. Politically, Faleasao customarily sided with Lumā and Siufaga against Fitiuta.

In Olosega, the Tui Olosega directed affairs at Olosega Village on

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Sa'ole County consists of the islet of Aunu'u together with its foothold upon the mainland of Tutuila at Aiofau and Amouli. The county high chief was the Faumuina, somewhat junior in status to the Lei'ato.

The original name of the area about Pago Pago Bay was O le Fagaloa (The Long Bay), but rhetorically it was also called O le Mautasi (The Single Chief's House) in compliment to the Mauga, who was senior to all of the other chiefs in the area, and who lived at Gagamoe in Pago Pago village at the head of the bay. The name Mautasi has gradually displaced Fagaloa, and has come to be used officially to designate the county.

Like the Lei'ato, the Mauga was a high chief, second, in Kraemer's opinion, to the Lei'ato. His precedence perhaps became exaggerated in the minds of outlanders, since they generally landed at Pago Pago and his was the first Tutuilan authority with which they came into contact. The Mauga possessed the peculiar right of participating in the affairs of both the Sua ma Vaifanua and the Fofoma Italagi. His talking chief, the Tuaoalo, was unique in that his voice equalled the voice of a county in all-Tutuilan affairs.

West of Mautasi lay the county of Itu'au ma Nofu, commonly called Itu'au, divided into northern and southern parts by the highest part of the central mountain range of Tutuila and peculiar in that it had no county high chief. The Mauga exercised some ceremonial but probably little practical hegemony. In the south, at Nu'uuli, power was divided between Village High Chief Savusa and the Four Chiefly Houses of the Soliai, Tago, Levu, and Alega. In the north, at Fagasa, leadership was shared by the Alo and the Tupuolo. The physical division of the county by the mountains and the lack of a high chief left the county without firm leadership and made it a battleground (*itua'u*) in ancient times, and especially susceptible to divisive political influences more recently.

The Fofoma Italagi occupied roughly the western half of Tutuila, with headquarters at Leone, where High Chief Tuitelele presided. In his home, there was a sacred stone, and his ancestor is said to have entertained the god, Pili, when the latter stopped off during his long swim from Ta'u to Savai'i. If it was the Leone people who derided Pili's skill as a fisherman and thereby caused him to go to the west in dis-

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the southeast coast, and the Laolagi at Sili on the north. There appears to have been good adjustment between them, and the rivalry of the island as a whole was directed toward Olosega's twin island, Ofu.

Although larger than Olosega, Ofu has but one general community known as Ofu Village, itself somewhat subdivided. At one time, there was probably a Tui Ofu, but the primacy has long been vested in the Misa, whose role as guardian of Manu'a has been mentioned. Ofu enjoys the distinction of providing the abode for the evil spirits of Manu'a at Toaga, a spit of land with a narrow saw-toothed mountain spur which extends to the gut between Ofu and Olosega.

Elsewhere in Samoa the Tufele, Tui Olosega, Misa, Asoau, Laolagi, and the Vaimegalo, the Sotoa and the Lefiti, would be no more than village high chiefs, but their rank is definitely of county grade due to the antiquity and enormous prestige of Manu'a in the *fa'aSamoa*.

Since the lines of authority in Manu'a were clearly implied in its *fa'atupega*, it was always relatively easy for outlanders to obtain a decision when doing business with the Manu'ans.

Unlike Manu'a, Tutuila, with Aunu'u, was not a political unit prior to 1900. The Upoluans regarded it as a subordinate district of sorts, and as such it was represented in all-Samoan affairs by the village Fono of Falealili in Atua. There were no high chiefly titles in Tutuila comparable in rank to those of the Tui Manu'a, the Tui A'ana, or the Malietoa, and power was divided between two aggregates known as the Sua ma Vaifanua in the east and the Fofoma Italagi in the west.

The Sua ma Vaifanua comprised the counties of those names, and to it adhered Sa'ole, Fagaloa, and Itu'au ma Nofua counties. The binding force of the Sua ma Vaifanua was their common high chief, the Lei'ato, who resided at Fagaitua in Sua County, where his house, known as Luafaga (Double Bay) was situated upon their common *malae*, Lalofileone. His personal talking chief was the Talauega. The Lei'ato had all of the attributes of a high chief, and Kraemer considered his the senior title in Tutuila. Sua County was represented by Talking Chiefs Pele (correctly, Mulitauopele) and Aulava of Lailii village, and Vaifanua by Talking Chiefs Tuiaosopo and Masani of Vatia. The signature of the Pele on the Deed of Cession on behalf of the eastern half of Tutuila suggests his precedence.

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gust, they do not admit it. While Kraemer considered the Tuitele junior to both the Lei'ato and the Mauga, it should be pointed out that his ranking is open to question, for in 1950, when the Tamasese and the Malietoa, in the presence of the Mats'afa of the day, presented a fine mat to Tutuila on the occasion of the fiftieth anniversary of the raising of the American flag, they chose the Tuitele to be its recipient.

Also in Leone dwelt the Fai'ivae, a high chief whose home had the distinction of constituting a place of refuge or asylum, analogous to the *heiau* of the Hawaiians.

The Fofu extended from Leone along the southern coast of Tutuila to the western extremity. Itulagi, also with its seat at Leone, reached eastward to the Itu'au ma Nofo, subdivided into Tualatai on the south and Tulauta on the north. High Chief Satele presided over the former at Vailoa, and High Chief Letuli over the latter at Ilii. Finally, on the north coast lay Leasina County, with its High Chief Fuimaono resident at Aloao.

The talking chiefs of the Fofu ma Itulagi were the Olo and the Leoso, of whom the latter, like the Pele in the east, appears to have been the senior, since he signed the Deed of Cession on behalf of the aggregate, and his house at Leone was known as O le Faitelele i Sisifo (The Great House of the West).

While the *fa'atulepega* of Manu'a approximate an organizational diagram, it is impossible to construct such a scheme to represent the seats and lines of authority for Tutuila. Originally it may have been that the Pele and the Leoso acted as the executive officers of the village Fono of Falealili in their halves of Tutuila respectively, but, by 1900, any such arrangement existed in tradition only. The experiences of the outlanders and the wars in the island in the nineteenth century show that it was divided and that authority rested in the high chiefs, whose relative weight varied from time to time in the *fa'aSamoa* and often in accordance with outlander interventions. The basic fact was the division of the island into the Sua ma Vaifanua versus the Fofu ma Itulagi, which Commandant Tilley recognized when he equated these ancient divisions to political districts.

## The Island Government

THE authority of a commandant within a naval station is military in nature, and Commandant Tilley faced the problem of governing several thousand Samoans humanely and justly within a military jurisdiction. At the start, he decided to employ existing Samoan authorities and to save for himself the regulatory power. "The government I propose to establish" he said, "is a government of the chiefs who are to receive additional appointments by the commandant."

Before he could establish his government, however, certain preliminary matters demanded attention, the first of which was internal communication. The islands were served largely by word-of-mouth transmission of the news by a line known colloquially as "The Bush Telegraph," along which news travels as fast as a man can walk, row, or paddle. Tutuila is so small that an event occurring in one place in the morning is likely to be common knowledge in the most remote community by nightfall, but Manu'a received the news more slowly in 1900, since it had to cross sixty miles of ocean. Tilley's first ordinance, therefore, was a tacit recognition of "The Bush Telegraph," when it announced on 24 April 1900 that official notification would be accomplished by posting notices on the bulletin board of the Naval Station in Fagatoga.

To provide funds for the civil, as contrasted with the military, establishment, he issued a "Temporary Customs Regulation." The Germans had already imposed a 10 per cent *ad valorem* duty upon all imports into their islands, and Tilley's was a more modest 2 per cent. This charge was arbitrary, and when it was found that it produced only about \$150 a month for the treasury, it had to be increased.

Tilley's third regulation forbade the sale of liquor to Samoans. His fourth, known as the Native Lands Ordinance, which forbade the alienation of land, stands as the most important single act of the



entire Naval Administration in Samoa. A primitive people will sell their land for a pittance if permitted to do so, and will then find themselves outsiders looking in at their rightful heritage. With the recent findings of the International Land Claims Commission in mind, Tilley resolved that such a thing should not happen in his islands. The Navy had already bought most of the land previously sold to outlanders, and Tilley moved rapidly to acquire the rest to be ahead of speculators reported to be in the market, and to assure that in Tutuila and Manu'a ownership should be exclusively in the hands of the Samoans or of the government.

On 1 May 1900, Tilley issued his Declaration of the Form of Government, in which he proclaimed that the laws of the United States were in force and that any Samoan law or custom not in conflict therewith would be preserved. Existing Samoan political organizations would continue to function, subject to the approval of the commandant, who would make all laws and appoint all office holders. He recognized the ancient division of Tutuila by dividing the island into two administrative districts, with Manu'a to constitute a third. To the governorship of each district he appointed the then leading local authority: the Tui Manu'a in his own islands, the Tuitiele in western Tutuila, and the Mauga in eastern. In so doing, he set a precedent which subsequent governors have generally followed, selecting the county high chief of the area concerned who had the best available administrative talent. The counties were to continue as before, under their own high chiefs, subordinate to the district governors. Finally, the organization of the villages was recognized, with the village high chief left in charge assisted by his *puteni'u*, or executive officer. For a judiciary, there were to be village magistrates having jurisdiction over local affairs, district courts, and a high court. All judicial appointments were reserved to the commandant.

It was obvious to Tilley, who recognized his ignorance of the *fa'a-Samoa*, that he needed a civilian assistant, or secretary of native affairs, who would be capable of advising him in such matters and of accepting considerable delegated authority. Tilley had no appropriated funds for the post and used his discretionary powers to hire the incumbent as an "interpreter" at a salary of \$150 a month. His field of choice was probably limited to two men: Mr. William Blacklock, the former

business man and at times acting United States consul at Apia, who had removed to Pago Pago because he was *persona non grata* to the Germans, and Mr. E. W. Gurr, a New Zealander, who had come to Samoa with the Land Claims Commission. Gurr had served as "Native's Advocate" in Malietoa Laupepa's government and had distinguished himself by the number of outlanders' land claims he had proved to be fraudulent. Like Blacklock, he had become unwelcome to the Germans, and having married Fanua, the daughter and *taupou* of High Chief Seumanu'afa of Apia, he had removed to Tutuila where his wife had an interest in a tract of land in Tualauta County. He was deeply and sympathetically interested in the *fa'aSamoa* and there could be no question as to his experience therein. The extent of his legal training is unknown, but his papers indicate considerable knowledge.

The fact that Tilley chose Gurr for the post despite the obvious objection that he was not a citizen of the United States, suggests that Blacklock was not available, possibly due to his business interests.

While Tilley's government was completely autocratic, it was pleasing to the Samoans. On 18 December 1900, the Matai of Tutuila, congratulating President McKinley on his re-election, took occasion to say that they were grateful because "... you gave us a leader, a Governor, a High Chief, whom we have learned to love and respect." A disinterested spectator, the Reverend E. V. Cooper of the LMS, also said, "I cannot conceive of your finding a better man to represent your government in such delicate matters as must always be associated with the task of 'annexing' than Commander Tilley."

Tilley promulgated later ordinances as the occasion arose. The registration of births, deaths, and marriages was made compulsory, so that such arbitrary standards as the "height-qualification" or judicial guesses as to age might be supplanted by recorded facts. The possession of firearms, obstruction of the public highway, and the assessment of taxes were brought under control, and the observance of the Sabbath was made mandatory.

In thinking about the problems of defense and of internal law and order, Tilley conceived the idea that he could provide a force for both purposes, in addition to his small police department, by forming a Samoan military organization, and on 13 June 1900, he proposed to enlist Samoans as "landsmen" in the Navy or as a Marine Guard for



the Naval Station. As a naval officer, he naturally regarded military training as a positive influence for good, and he believed that such training would provide a practical education for the young men enrolled. When the Secretary of the Navy approved his plan, Tilley recruited fifty-eight men whose physical qualifications were acceptable to Dr. Blackwell, and turned them over to Sergeant Jones, USMC, for training. Barefoot and uniformed in white shirts and blue *lava-lavas* with red waistbands (turban style caps were added later), the organization was named the Fita Fita (Guard).

Tilley attempted to visit every village in his islands. Accompanied by Gurr and Blackwell, he met each *fono* upon its own ground, and while he and Gurr inquired into the political and economic needs of the community, the doctor withdrew to a nearby *fale* to hold clinic. Such trips cemented the relationships between people and Commandant, but they were always difficult and often dangerous due to the sheer difficulty of getting about. There were no roads in Tutuila, and Tilley planned a highway from Leone in the west to Fagaitua in the east, to be built on the flat land and the shelves provided by the reefs on the south coast, since the north coast was too rugged to permit construction without prohibitive cost. When villages had to be approached from the sea, either by the *Abarenā* or by means of the barge which High Chief Seumaputafa had turned over to Tilley for use and safekeeping, he found that the narrow passages through the reefs were hazardous, and began a program to widen them by underwater blasting.

Communication with the outside world remained difficult. Transpacific steamers still called at Apia in Upolu, but were only able to transfer passengers, mail, and freight to small schooners off the west end of Tutuila when the weather permitted. Official mail had to be taken over to Apia to the United States Consul, and private mail often had to be posted there under German postage stamps.

By the end of 1901, the dock at the Naval Station was almost completed, and Chief Boatswain Hudson and Mrs. Hudson (the first Navy wife to live in Samoa) were installed in quarters ashore, but Tilley had to live and work aboard the *Abarenā* in a temperature which never dropped below ninety degrees. He therefore secured permission to build a combined house and office building for the comman-

dant, and chose a site on the ridge which separates the inner from the outer harbor, about 200 feet above sea level. He assigned the project to Ensign C. C. Bloch, USN, and told him that he had \$10,000 to spend upon it. Bloch, assisted by the *Abarenā's* carpenter, designed the structure and then climbed to the hilltop to ascertain how the building should be set. When they found that there was insufficient level space, they proposed to cut down on their design, but Tilley directed that the plans be left unchanged and that the hilltop be levelled accordingly. The ensign and the carpenter saw that their building, standing on an exposed hilltop, would be particularly vulnerable to hurricanes, to combat which danger they drilled holes ten feet deep into the lava schist and sank into them hand-knurlled metal rods, affixing other rods to the first ones, below, and to the underpinnings of the building, above. Soon after it was completed, they watched with satisfaction when a ninety-mile gale struck their handiwork, and it stood firm.

In purchasing land, Tilley probably acted in advance of the availability of funds, and involved himself and the vendors in temporary embarrassment. His dealings were further hampered by the lack of American banking facilities, because of which the Navy Department had to remit to its agents in Samoa via Messrs. Seligman of London, where, at one time, its balance fell to \$1.00. Other financial difficulties arose from the fact that doing business with the Samoans often involved expenditures which were not translatable into ordinary accounting terms. The auditors of the Navy Department chided Tilley particularly because some of his disbursements in connection with the water works were not properly supported by vouchers and some of the items seemed questionable. Tilley replied that the land for the project had cost \$300 and the water rights an equal sum. To conduct business, he had had to hire boatmen to bring the interested parties together, to give luncheons and cigars to the several *matas* owners, who would not do business in an ungentlemanly fashion, and to employ an interpreter. It had also seemed desirable to him to pay Mauga Moi Moi a fee of \$5.00, in return for which he cut short all haggling and saved the government from being gouged, for there was no Samoan in Maputasi County in a position to disagree with the decisions of its high chief.

As the Naval Station and the Island Government grew, official



correspondence and record-keeping multiplied accordingly, and on Christmas Day, 1900, Tilley wrote the Secretary of the Navy in his own handwriting, "I have the honor to inform the Department that I am unable to do, personally, all the clerical work which falls upon me in addition to my other duties. At present I have no one to assist me in such work except such members of the *Abarenda's* crew as are able to copy my letters." In response to his request for a clerk, the Navy sent Yeoman H. Y. Mooklar, USN, to Samoa where he undertook the Commandant's clerical work.

Eight days after raising the flag in Tutuila, Tilley went back to Manu'a to return the Manu'an guests. He found the Tui Manu'a still unprepared to yield any of his prerogatives, but willing to have the flag of the United States raised in his islands, and the date of 5 June 1900 was selected for the event.

On the occasion of the first Manu'an Flag Day, Tilley arranged to visit *Muliava* (Rose Island), which belonged to the Tui Manu'a and, on 6 July 1900, the *Abarenda* took the Tui Manu'a and about fifty leading Manu'ans aboard and steamed off to the east. During the night, the mountains of Ta'u dropped astern, and at dawn the ship approached the atoll. Uncertain of the navigational situation, Tilley remained aboard his ship and sent the Manu'ans ashore, together with fifteen sailors in charge of Dr. Blackwell. The party entered the lagoon and grounded their boats on the shore of the few acres of evolving land with its clump of pisania trees and coconut palms, startling the seabirds and rats which inhabited the place. The sailors felled a tree and fashioned it into a flagpole, which they set upright in the ground. The Tui Manu'a said a prayer, and Dr. Blackwell hoisted the flag provided for the occasion, and claimed the island for the United States. Probably they had no time to fish that day, for when Tilley himself came ashore at the conclusion of this little ceremony, he was unimpressed by his new territory, and pronounced it of no value.

Among the miscellaneous problems of the first Commandant was the case of a Solomon Islander.

About 1888, three "blackboys," indentured laborers of the German Firm, escaped from Upolu in a stolen boat and made their way to Tutuila, where they took to "the bush." In 1900, the first of them was captured, "a complete savage," about forty-five years of age, and in

fear for his life. In his small mixture of Samoan, German, and English, he said that he was afraid of the Samoans and that he dared not return to his own home, for he would long since have been forgotten and would be treated as a stranger and eaten as soon as the ship which delivered him had sailed away. Tilley took the unfortunate Melanesian in charge and asked the Navy Department's permission to care for him until some disposition could be arranged in his case. Although this request was readily granted, the later history of this Solomon Islander is not recorded, and his fate is unknown. One of his companions remained at large until 1923, but contracted pneumonia and died a few weeks after his capture. No trace of the other was found.

After a year on station, the *Abarenda* was in need of dry-docking and overhaul and her coal was running low, so Tilley sailed for Auckland. It occurred to him to give a few Samoans a glimpse of the outside world, and he took along High Chief Fai'ivae and his daughter Pua'a, together with her friend, a girl named Pulua, on the first Navy-sponsored overseas trip for Samoans. According to Dr. Blackwell, "The girls made quite a hit in Auckland."



funny is not apparent. 'Ava is enjoyed throughout Polynesia, but only in Samoa and Tonga is its consumption attended with a ceremonial which is believed to have originated in Fiji. It was condemned by some of the early Protestant missionaries, but their successors have long since withdrawn their objections.

In Samoa, the ceremonial drinking of 'ava is restricted to *matai*, including women *matai*, and persons accepted as their peers. In old Samoa, these included the specialists, such as the *fale* builders, and more recently admission to the 'ava circle has been accorded to the pastor, the medical assistant, and others of recognized standing in the community out of deference to their positions, rather than to themselves as individuals. Visiting outlanders and government officials are usually invited to partake, regardless of sex.

In every 'ava ceremony, there are certain constants. The utensils are a mixing bowl, a strainer, and a cup. The bowl is a shallow, many-legged wooden vessel, up to two feet in diameter, carved from a solid block of fine wood. It is usually a family heirloom. The strainer is a mesh of fibers made from the *fau* tree, about the length and dimensions of a horse's tail. The cup is half of a polished coconut shell. Water, formerly fetched in gourds, is now produced in metal pails.

In addition to the qualified drinkers, who are arranged around the inside of the *fale*, each in his proper place, there are a girl (or youth) who mixes and strains the brew, an assistant who shakes the dregs out of the strainer, a youth or maiden who serves the cup, and finally a "caller," a talking chief who acts as master of ceremonies. The arrangement of the participants can best be illustrated diagrammatically.

The caller starts the proceedings by a speech of welcome, during which the mixer and his or her assistant prepare the 'ava. When it is ready, he directs the proper order in which the server shall offer the cup to the several drinkers. An error in recognizing precedence is unforgivable. Special recognition is also reflected by special technique on the part of the server. The recipient always follows a set pattern, accepting the cup in his right hand, pouring a few drops on the floor as a libation, and exclaiming, "Manu'ia!" (Long life!) to which the others present respond, "Soifua!" (Good health!), as he drinks as much of the contents of the cup as he may desire at one draught. The

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## The Ipu of the Tui Manu'a

WHEN Tilley created the three district governorships, he divided authority logically among the three leading Samoans of his day, but he overlooked the fact that the relative standing of the Tui Manu'a and of the other high chiefs was far from equal. The Tui Manu'a's forbears had presided over all of Samoa, the first honors of Samoa were his due, and his genealogy was so sacred that it could not even be named. The Mauga and the Tuitele were considerably junior to him, and while Tilley could equate the three district governorships administratively, he could not alter the status of the three personages in the *fa'aSamoa*. If a question of precedence should arise, the Tui Manu'a might be expected to assert his seniority and the others to stand upon their new, outlander-style dignity.

It was Mauga Moi Moi, described by all who knew him as an unusually forceful personality and an able leader, who precipitated the crisis about to be reported. While the issue seems little more than a play upon words to outlanders, it had a profound significance to the Samoans, and it gave rise to the second major clash between American and Samoan law and custom.

To render the case intelligible, it is necessary to introduce the subject of 'ava drinking as it is practised by the Samoans.

'Ava, commonly spelled as *kava* in the Polynesian languages, is the contrived beverage of the South Sea Islanders. The root of the 'ava plant (botanically, *piper methysticum*) is dug up, washed, and dried in the sun. For use, it is chipped and ground in stone mortars to the consistency of sawdust (formerly it was reduced to pulp by the teeth of young girls), and is then steeped in water. The resulting liquid is cream-colored, non-viscid, and somewhat peppery in flavor. Just why generations of people who steep dried tea leaves or coffee berries in water to make a beverage consider a drink made of steeped wood chips

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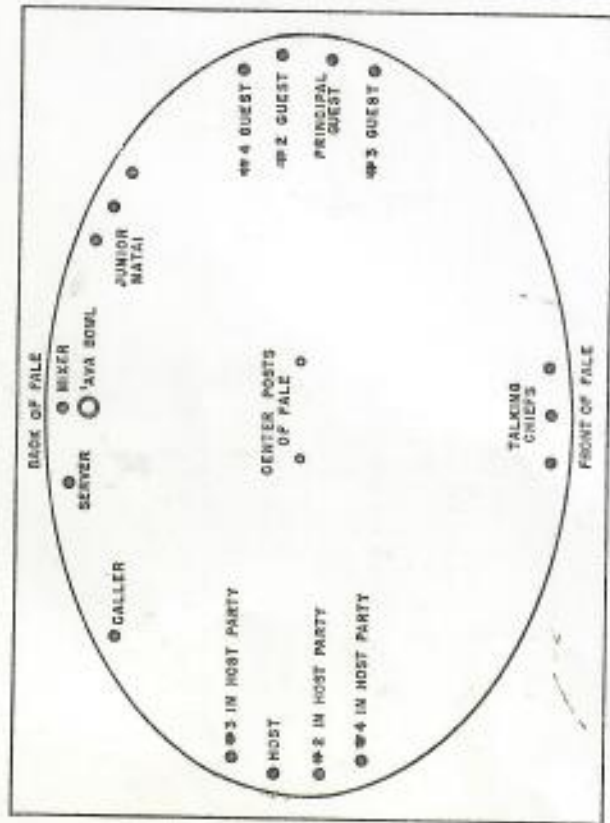


Diagram of 'ava ceremony.

residue, little or great, he flings out of the *fale* over his right shoulder before returning the empty cup to the server.

After the ceremony, any excess 'ava may be consumed by young men, women, and children as a beverage.

Many important *mat'ai* have "'ava titles," names by which their own 'ava cups are known. The Mauga's is known as "*Se uga loloa*," while the Tui Manu'a's cup pre-empted the name "*o le ipu*" (the cup) in Manu'a. Although *ipu* means simply "cup," no one else in his islands could use the word to describe the vessel out of which he took his 'ava, using instead the synonym, *o le taumafu* (the cup).

While all 'ava ceremonies conform to this basic pattern, there may be polite improvisations and there are differences in elaboration in various houses and places. For example, the Mauga has his jester to participate in his own ceremony, his 'ava is mixed by his *manaia* (leader of the young men), and he has his own cup bearer or server. Nowhere, however, did ceremonial reach greater heights than in the 'ava ceremony of the Tui Manu'a.

When the Tui Manu'a was prepared to take his 'ava formally, he

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directed his talking chief, the Tatanu'u, to broadcast the invitations. The guests took their places in the *fale* and sat in silence until the King arrived from his living quarters, preceded by two talking chiefs blowing upon conches.

Waiting outside were young men who, at the cry "Bring the 'ava!" dashed away in simulated confusion, striking down any man, woman, animal, or plant in their way, and returned with the 'ava done up in leafy packets and the bowls to be used for the occasion, sometimes twenty in number. The bowls were placed in line at the back of the *fale*, and behind them an equal number of mixers took station. When the several brews were ready, the caller cried out, "*Aumai o le ipu o le Tui Manu'a!*" (Fetch the cup of the Tui Manu'a!), and the Fa'ana, his *taupou*, departed with an escort to procure the cup. Even she might not touch the *ipu* at this stage, and she produced it upon the branch of a palm tree. The Tui Manu'a himself disengaged it from the branch and gave it into the girl's hands, and she bore it to the row of waiting bowls and filled it with some of the liquid from each. When she had served the Tui Manu'a, she took his *ipu* back, and immediately withdrew to return it to its repository, for the *ipu* could be used by no one but the Tui Manu'a.

Having presented this brief outline of 'ava drinking in general, and of the ceremonial surrounding the Tui Manu'a's 'ava, it is now possible to proceed with the case of "The Ipu of the Tui Manu'a."

On a day in August, 1901, Mauga Moi Moi arrived unexpectedly in the island of Ofu. Due to the absence of High Chief Misa, the task of receiving him devolved upon the *mat'ai* present, and they hastily arranged an 'ava ceremony in his honor. The personages known to have taken part were the Salelepage, who appears to have presided, Talking Chief Lei, who acted as caller, and one Palaita, probably also a *mat'ai*, who assumed the duties of server for the occasion.

When all was ready, the Lei called for the first 'ava to be presented to the distinguished guest, and cried, "*Aumai se uga loloa!*" (Bring forth the Mauga's personal cup!) The Palaita suffered a vessel to be filled and bore it to the Mauga, but to his chagrin, and to the astonishment of the assembly, the Mauga said, "If you please, I will not receive the 'ava," a statement which the Ofuans could only regard as insulting.

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"If you please," said someone, "Why not?"

"Because," the Mauga replied, "I demand to be served an *ipu*."

The Ofuans, citizens of Manu'a, saw at once that he was asking for an honor reserved in their islands exclusively for the Tui Manu'a.

"Why, Mauga," it was asked, "do you demand an *ipu*?"

"Render unto each his due," said Moi Moi, quoting the Bible (Romans 13: 7) with obvious premeditation. "Tribute to whom tribute is due, custom to whom custom; and honor to whom honor."

"Let us discuss this," said the Lei, and he withdrew with the Salelepaga and the Palaita. They were aware that the Tui Manu'a had already extended the courtesy of receiving their *'ava* in an *ipu*, to the Commandant, informally called *kovana*, and to the Secretary of Native Affairs, and it was evident that the Mauga was taking advantage of this concession to attempt to equate himself to the Tui Manu'a on the ground that both were now district governors. In the circumstances, they agreed to compromise and to qualify the word *ipu* by calling it "*O le ipu o le Kovana*" (The Governor's cup), which they thought would satisfy the Mauga and at the same time reserve the use of the unadorned word *ipu* for the Tui Manu'a. They then returned, and the Salelepaga addressed the company. "By right," he said, "we ought to let the Mauga have an *ipu*. He is a governor. Serve out the *'ava* to Mauga, the Governor!"

Resuming the ceremony, the Lei called, "*Aumai le ipu o le Kovana!*" (Bring out the Governor's cup!), and when the Mauga accepted the compromise in terminology, which must have been as apparent to him as to everyone else, the Ofuans believed that their diplomacy had won and that the crisis had passed.

But when word of the affair reached the Tui Manu'a in Ta'u, he was deeply disturbed. He sent his policemen to Ofu to arrest the Salelepaga, Lei, and Palaita, and when he had them in hand, he decreed the ultimate in Samoan punishment for them. He ordered their property to be destroyed, their families evicted, and themselves set afloat on the ocean in canoes to take their chance of survival. There is no doubt that this sentence would have been effected but for the chance arrival of Mr. E. W. Gurr in Ta'u, whither he had come to hold court.

Gurr directed the Tui Manu'a to desist at once from his intentions.

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Under the new sovereignty, he said, the Tui Manu'a was powerless to inflict punishment for crimes real or fancied, for such was now the exclusive business of the courts, and if he thought he had been wronged, it was his duty to prefer charges against the alleged offenders and to have them brought to trial. Whether the Tui Manu'a liked Gurr's order or not, he evidently felt impelled to respect it, and accordingly, on 20 September 1901, the "Matter of Tauanu'u versus Lei, Palaita, and Salelepaga" was docketed and heard in District Court Number Five, Ta'u. Judge Gurr presided, and with him sat High Chief Tufeale and Talking Chief Tulifua as associate judges. The Lei and the Palaita were present, but the Salelepaga was absent due to illness. The defendants plead not guilty.

At this trial, in keeping with the practice evolving in the courts of the Naval Station, Samoan witnesses testified in their own language, the court interpreter (in this case Mr. W. H. Yandell) translated, and the court stenographer (then Yeoman E. Y. Mooklar) took down the English version in shorthand. The procedure and rules of evidence of American courts were observed, and the right of cross-examination was assured. The process was necessarily lengthy, for the translation alone at least doubled the time each witness stayed on the stand, and frequently the witness or his friends understood more or less English and challenged the translation, in which case the point had to be debated until all parties were satisfied that the stenographer had recorded what the witness wished to say. The result, however, justified the time spent, for the record was complete and accurate, and no participant could later claim that he had been misunderstood or misquoted.

Opening as plaintiff, the Tauanu'u, talking chief to the Tui Manu'a and identified as custodian of "the *ipu*" itself, reviewed the events of the *'ava* ceremony at Ofu. He admitted that there was some uncertainty as to the exact words used by the Ofuans present, but asserted that the defendants had committed a grave offense, when they had so much as permitted a discussion of the use of the word *ipu* in serving the *'ava* to the Mauga. They should, he said, have rejected the Mauga's demand summarily. Questioned by the court, the Tauanu'u further admitted that the Governor and the Secretary of Native Affairs might receive an *ipu*, "because they are higher officials in the government

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than the Tui Manu'a, but amongst the Samoans themselves the term 'ipu' cannot be applied. This is why I am complaining, and this is why these people (the prisoners) are being kept here . . . on account of a breach of Samoan law."

Other witnesses supported the plaintiff. The elderly Fofu was introduced to present the point of view of tradition. "I do not know," said this Simcon, "how old I am, but I am an old man. . . . They can have an 'ipu' in Tutuila, but not here. . . . In connection with 'ava drinking like in the instance of Mauga, it is forbidden."

Another witness, the Mosasau, testified as follows:

Q. (By the Mauanu'u) Didn't you know yourself that no Samoan is allowed to use the word "ipu" here?

A. (By the Mosasau) Yes.

Q. Could a Tongan have an "ipu"?

A. No.

Q. Could a Fijian have an "ipu"?

A. No.

Q. If the King of England came here, could he have an "ipu"?

A. No.

Q. (By the Court) Hasn't the King of Tonga an "ipu"?

A. Not here in Manu'a.

Q. If Tui Manu'a went to Pago Pago, wouldn't he get an "ipu" there?

A. Yes.

Q. Do you not like to do unto others as you would like them to do unto you?

A. Yes, but Tui Manu'a is higher than all other kings.

In his own defense, the Palaita claimed to have served the Mauga his 'ava under the title of his own 'ava cup, namely "Se Uga Loloa," which probably meant that he had made a "mental reservation" at the time, and pointed out that the Ofuans present were all loyal to the Tui Manu'a and not intentionally disrespectful. The Lei, caller at the unfortunate ceremony, tried to minimize his personal responsibility by stating that all of the *matat* present in Ofu that day had attended and that none had protested his call.

A month elapsed after the trial before the court announced its

verdict, which was split. The majority, Judge Gurr and the Tufele, found the defendants not guilty but for obscure reasons assigned the \$5.00 costs to the Palaita. For the majority, Gurr took note of the fact that the full 'ava ceremony of Tui Manu'a had not been exhibited and said, "By a comparison of the actions of the accused when giving Mauga his kava with the ceremony observed when the Tui Manu'a takes his kava, the only answer to be given is that the accused did not in any way commit a breach of Manu'an custom." It was necessary, he went on, "to lay down a rule, . . . that the word 'ipu' is not confined strictly to Tui Manu'a and his people, but can be used in connection with giving kava to other chiefs. . . . Between the Tui Manu'a and his people," he added, "the Manu'an custom may prevail, but between Tui Manu'a and high officers of the government, it is no wrong to employ the word 'ipu' for the latter."

Judge Tulifua dissented. He considered the Salelepaga guilty as charged, and awarded him a fine of \$5.00, but dismissed the charges against the others.

The reaction to the court majority's verdict in Manu'a was immediate and unfavorable. The Tui Manu'a remained silent, but a number of *matat*, led by the Tauanu'u, signed an appeal, and the Tulifua, unaware of the niceties of judicial conduct observed by outlanders, added his name thereto. There were two assemblies in Olosega early in 1902 at which ways and means of protecting the sanctity of the word "ipu" were discussed.

When the appeal reached Captain U. Sebree, USN, Tilley's successor as commandant, he convened the High Court and set off to Ta'u in the *Abarenda*, where the court sat aboard ship on 14 April 1902.

Since there was no disagreement as to the facts, the court confined itself to a review of the former proceedings, and heard testimony, chiefly from the Tulifua, as to the relative authority of ancient Manu'an law versus the new American law. The court remitted both the fine against the Salelepaga and the costs charged to the Palaita, and upheld Gurr's rule. "In giving kava to Tui Manu'a," it said, "the word 'ipu' alone is used, but when once the word 'ipu' is conjoined with another name, it is no longer the Tui Manu'a's 'ipu' but the 'ipu' of the intended recipient. . . ."



Presumably satisfied that this ruling would solve the problem, the court sailed back to Pago Pago, and to settle the matter once and for all, Sebree sent Lieutenant Commander W. W. Kimball, USN, back to Ta'u on 2 May 1902, to deliver the written verdict to the Tui Manu'a personally and to require him to publish it. The Tui Manu'a was further admonished that, to the court, "the highest chief in Manu'a is not higher in family rank than several other Samoans," and that each of the three administrative districts in the American islands were of equal weight in the eyes of the government.

Although Tui Manu'a Eliasara made no overt personal resistance to the ruling, other Manu'ans did, and Kimball was startled when a committee headed by the Tui'ifua handed him a document with many signatures, which stated bluntly, "There will be but one *ipu* in this island of Manu'a, and this only to Tui Manu'a, the King of Manu'a." Kimball refused to receive the paper and upon his return to Tutuila suggested to Sebree that it might be desirable to remove the "disloyal" Tui Manu'a from the post of district governor and substitute for him the "loyal" Tufe'le.

When Sebree received Tui'ifua's statement through other channels and saw that it purported to have been signed by the Misa, Tui Olosega, Galeai, Lefiti, and Sotoa, among others, he could only regard it as a direct challenge to his authority. Forwarding a copy to the Secretary of the Navy and observing that he would be glad to be rid of Manu'a, he ordered the signers arrested and brought to Pago Pago to be tried for contempt of court. The move to Tutuila was evidently designed to free the trial of Manu'an influences, but it unexpectedly created a disturbance in the Pago Pago Bay area, where the Manga's adherents took occasion to vent their annoyance at what they conceived to be the haughtiness of the Manu'ans.

The third and final trial in the matter of the "Ipu of the Tui Manu'a" occurred on 3 July 1902 at the Naval Station proper. The defiant acts and statements of the Tui'ifua and some others were proved by witnesses, but when the court turned its attention to the written defiance, grave doubt arose as to the genuineness of many of the signatures. The scribe himself testified that he had written the document for the Tui'ifua and admitted that he had added many signatures at the latter's direction. Proceedings against some of the accused, therefore had to

be dropped. The court held guilty and punished four defendants. The Tui'ifua was fined \$50.00 and was required to post a bond of \$150.00 to be forfeited in the event he should leave the island of Tutuila, a sum which was unimaginable to him and which effectively confined him therein. The Misa was fined \$20.00 and was deprived of the exercise of his high chieftainship for a year. The Tau'ala and the Tauanu'u were each fined \$10.00.

The decisions in this case upheld American law and administrative policy, but they struck a blow at the heart of the *fa'aSamoa*, this time in its most ancient seat. The Americans thought, not unreasonably, that they were unmaking a king, but in Manu'an eyes they were interfering in the most deeply ingrained culture-complex in the islands, its *fa'atupega*. The result was that Manu'a was soon deprived of its natural leadership, and it is a tribute to both Americans and Manu'ans that they were not only able to get along together but to develop intensely cordial relations.



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### First Fono of American Samoa and Other Matters

THE title "Governor" was first officially applied to Commandant Underwood just at the conclusion of his tour of duty, and his successor, Commander C. B. T. Moore, USN, who reached Samoa on 28 January 1905, received the first formal Presidential appointment as "Governor." The scope thereby added to the Commandant's position was of considerable importance, for it pleased the Samoans, who well understood the difference between a "commandant" and a "governor," and it conferred a standing upon the incumbent in the executive department of the United States government apart from his military position. Not unnaturally, therefore, Moore devoted a great part of his time and thought to the civil government of his islands, and close at hand in German Samoa he found a model which could serve as a basis for planning.

There the Germans followed a consistent policy aimed at commercial development. At the head of the administration was Dr. Heinrich Solf, an able executive who had prepared himself for his post by a study of British colonial methods in Fiji, and who enjoyed authority commensurate with his responsibility. Solf chose his own assistants, not confining himself to Germans, and delighted the non-German residents by his conduct. He made himself so much a master of the *fa'aSamoa* that he did not need a "Secretary of Samoan Affairs," and paid such scrupulous attention to the niceties of Samoan etiquette that his political enemies in Berlin accused him of the crime of "*Verkanakerung*" (going native).

The kingship of Samoa having been abolished by the powers in 1899, Solf forestalled any new attempts at king-making by proclaiming Kaiser Wilhelm II to be "*Der Tupu Sili von Samoa*" (Chief King of

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Samoa), thereby automatically eliminating any other possible contenders. He conferred the title "*Alfi Sili von Samoa*" (Paramount Chief of Samoa) upon the Germans' old enemy the Mata'afa, gave him a pension and left him free to manage his family lands and to enjoy his ceremonial pre-eminence.

With the kingship in Berlin, there remained but two possible sources of opposition to German authority, the Taimua and Faipule (the remnant of the Steinberger government), and the unofficial but important bodies of talking chiefs, the Tumua and the Pule, as the Upoluans and Savai'ians groups were known respectively. When the Taimua and Faipule clashed with his plans, Solf dissolved them and established in their place a Fono a Faipule, a group of salaried, appointed representatives having advisory power only. He considered the talking chiefs to be irresponsible, and reduced them to impotence by ignoring the Tumua and the Pule, for all that they were enshrined in the *fa'alepega* of Samoa, and by withholding all patronage from them.

Keesing has remarked upon the similarity of the German and American administrations in Samoa, and in matters of joint concern, such as the disarming of the islanders by buying in their guns and the prevention of beachcombing, it was usually the Germans who took the initiative. Moore was not long in recognizing the efficiency of the German administration, and a primary reason for it was apparent. Solf had already been active in Samoa for six years, during which three American governors had come and gone, and he perceived that he was himself a beginner compared to the experienced German. He therefore anticipated by many years one of the criticisms later aimed at the Naval Administration in Samoa by recommending that the American governors' tours of duty be extended from two to four years. The Navy Department, however, was unable to permit Samoan affairs to interfere with the normal rotation of naval officers, and the Secretary replied that the proposed longer term would not "... conserve the best interests of the Navy."

It is almost certainly more than coincidence that after his visit to Upolu in August 1905 Moore revived E. W. Gurr's project and called an assembly of "native representatives" to meet with him on 20 October that year. He directed each of the three districts to choose eight

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delegates to this Fono and to submit in writing in advance all topics to be discussed. He excluded any matters affecting the Naval Station proper from the agenda, and made it clear that he reserved the veto power for himself.

Moore evidently had only a rudimentary knowledge of the *fa'aSamoa*, for he was chagrined to find that the districts did not elect their delegates by secret ballot and that the delegates consisted entirely of *matai*. He thought the absence of untitled representatives evidence of unwillingness on the part of the *matai* to yield any of their power, apparently believing that the *matai* were a caste of society rather than men already elected by their several family groups to represent them in public affairs. He was even more chagrined when he learned that the Tui Manu'a had appointed the delegates from Manu'a and had even instructed them how to vote.

Nevertheless, this first Fono of American Samoa was an even more important event than Moore had expected, for it brought together the Manu'ans and the divided Tutuilans into a corporate whole, and thereby created a consciousness of "American Samoa," as contrasted to "German Samoa," and engendered a political separatism the end of which is not yet clearly in sight.

The Fono discussed principally the handling of the copra, approving the government monopoly with some suggestions as to details, and the strictly Samoan customs attending birth, marriage, and death.

Marriage was still at times attended by the *fa'amasei'au* (public demonstration of the bride's virginity), to which the Samoans objected as Christians, but of which they had been unable to rid themselves. The birth of a child, especially of a first-born, imposed upon its family the obligation to conduct an expensive celebration, and events after a death were even more extravagant.

Ordinarily in old Samoa an hour or two of frantic mourning followed a death, during which the bereaved wailed, tore their garments, and beat themselves with stones or burned themselves with embers. When reason reasserted itself, they wrapped the body in *lapa* cloth for burial, and assembled and feasted relatives and friends until the interment, which usually occurred the next day. When a high chief died, the proceedings were more elaborate. Work ceased in his village, which became *sa* (taboo), and travellers dared not pass through. The

body was kept unburied (sometimes embalmed) for as long as might be necessary to permit relatives from distant villages to arrive. So much was expensive but not otherwise objectionable, but there was in addition a curious custom known as the *ausoga* attending the death of a high chief. As the Magalei of Pago Pago explained it, "If Mauga dies, Lei'ato's people might come along and cut down all the trees about his house." Since the ruin inflicted included breadfruit and coconut trees, upon which the survivors in the family depended for food and income, it was senselessly destructive.

From this first Fono of American Samoa and Moore's lessons in the *fa'aSamoa*, there emerged a number of ordinances affecting Samoan custom. The *ausoga* and the *fa'amasei'au* were prohibited, and the former ceased at once, although the latter was still occasionally practiced twenty years later. Moore, having learned that the "*matai* system" was deeply embedded in Samoan life, concluded that it should be accorded legal status, and therefore drafted an ordinance which established rules of succession in these titles, called for their official registration, and enabled rival claimants to go into court to settle their differences, in the event that they were unable to do so privately.

On the whole the Samoans were well pleased with the situation in which they found themselves. In 1907, High Chief Fai'ivae, his appetite for travel doubtless whetted by his trip to New Zealand with Tilley, proposed to President Roosevelt that a delegation of five Samoans visit Washington "... to express our great delight in your kind and good administration," a project which the President could not authorize because of the lack of funds. The next year the high chiefs and talking chiefs of Tutuila and Manu'a recorded their satisfaction, urging "... that the naval administration ... be continued until such time as a majority of the Samoan people can understand and realize the system of government in vogue in the United States of America." The Secretary of the Navy said in his annual report for 1907, "The people of the United States having assumed control of the islands, it is earnestly recommended that Congress give consideration to this matter."

After he had ceded his islands, Tui Manu'a Eliasara accepted American authority gracefully and became an enthusiastic member of the new community. When he died on 2 April 1909, Governor J. F.



Parker said, "Tui Manu'a was the last of a line of kings in the Manu'a Group, his title being changed to District Governor from the date of the hoisting of the American flag in those islands. He was a devout Christian and a faithful supporter of government, and his loss . . . is keenly felt."

Whether Parker's statement was naive or calculated, it is inconceivable that Eliasara had ever accepted a demotion or that he considered the title of District Governor equivalent to that of Tui Manu'a, and he doubtless thought that he occupied both positions simultaneously. It is therefore surprising that the Manu'ans made no serious attempt to create a new Tui Manu'a for fifteen years. In 1926, Talking Chiefs Tananu'u, Tulifua, and Ti'a ascribed their inactivity to lack of a suitable candidate, although Governor Kellogg held that his predecessors had "abolished" the title on the ground that it was royal in nature and therefore inadmissible under the Constitution of the United States. There was probably truth in both views. On the Manu'an side, the earlier selection of the girl Matelita is evidence of a tendency to name inoffensive nonentities, and after the death of Eliasara, the only forceful Tui Manu'a within recorded history, it is quite likely that the talking chief electors were content to debate the matter endlessly and to keep as much power in their own hands as possible. In the Naval Administration, the memory of the case of the Ipu of the Tui Manu'a was still fresh, and the belief that the title was royal in nature was undoubtedly sincere and well grounded.

In the absence of a Tui Manu'a, Governor Parker appointed Tufele Timiali, the leading rival of his house, to the district governorship, and it remained in his hands until his death in 1925, when it passed to his younger and even more able kinsman, Tufele Fa'atoia.

The lack of banking facilities was an early and continuing obstacle to the transaction of governmental and private business in the islands, for both the government and the merchants had to bank by mail, and the Samoans had no opportunity to learn the use of money as a medium of exchange. They understood tangible gold and silver coins fairly well, but they were reluctant to trust even postal money orders, and when they wished to send money out of the islands to make purchases or to contribute to church organizations, they shipped gold. In 1904, a 2½ per cent tax had to be imposed upon the shipment of gold

to halt the drain. It was not until 1914, however, that Governor C. D. Stearns solved the money problem by establishing the Bank of American Samoa, with the primary objective of "inducing the natives to save money," and at the same time to provide banking facilities in the islands. The government of American Samoa subscribed the capital of \$5,000 and employed the first civilian bank manager. Although the Samoan communal way of life was basically inimical to thrift, the bank succeeded in instructing some of the people in the value of intangible money, and it proved to be a boon to the business community.

From the time of cession of Manu'a, the title "U.S. Naval Station, Tutuila" had been inappropriate. The Germans called their islands "German Samoa," or simply "Samoa," but the eastern islanders lived under a government whose name was neither accurate nor descriptive. Attempts to change the name failed for one reason or another until 1911 when Governor W. M. Crose made an issue of the matter and requested that the islands be officially designated either "American Samoa" or "Eastern Samoa." When the Solicitor of the Navy Department stated on 7 July 1911 that he could find no reason why the name of the place should not be changed in accordance with the wishes of the Governor and of the people, Crose was officially authorized to use the designation "American Samoa" for his islands.



The Polynesian inhabitants of American Samoa were born seafarers, and when they saw small schooners operated among the islands at a profit by outlanders, they decided to go to sea in their own behalf. When they did so, they took the *Ja Samoa* with them in the shape of vessels owned collectively by the Eastern and Western Districts of Tutuila and Manu'a. The Eastern District had the *Stiafafi* and the Western, the *Leone*, the latter built locally and equipped with a kerosene engine. The Tui Manu'a and others in his islands formed the Manu'a Cooperative Company in 1902 and applied to Commandant Sebree for a charter, which would permit them to contract a debt of \$2,000 to purchase William Blacklock's schooner, the *Ertie White*.

Sebree had already accorded United States registry to H. J. Moors for his sixty-two-foot schooner, *Roxabel*, with Joe Konau of Rotuma Island, master, and when the Manu'ans applied for registry of their vessel, Sebree granted their request. When the papers reached the Navy Department in Washington, however, the Judge Advocate General was unable to sustain the Commandant, drawing a distinction between the rights of an American citizen, such as Moors, and the rights of American nationals, such as the Manu'ans. Whereas the former might properly claim all the benefits of citizenship, he held, the latter might fly the flag of the United States upon their vessel, but might not be accorded registry. This case offered the first occasion for a legal definition of the status of the inhabitants of American Samoa. As one of the corollaries of their lack of citizenship, which could be granted only by Congress, American Samoans were not entitled to United States passports and had to be satisfied with domiciliary certificates when they travelled abroad.

Although their ship was unregistered, the Manu'an Cooperative Company continued, and a peculiarly Samoan flavor attached to their operations. The idea of doing business cooperatively was indigenous in Samoa. For centuries, when the wheeling of the birds over the water indicated a run of bonita, the men of a village had put to sea in their boats as a unit, and the catch had been prorated when they came ashore. It was a natural step from community activities of this sort to community activities in the field of commerce, but, nevertheless, a step which involved a profound difference. The fishermen dealt only with tangibles: men, fish, and boats, whereas business included intangi-

bles, such as money, records, and management. It is doubtful that there were at the time more than a handful of Samoans able to perform even so simple a managerial function as bookkeeping, and from the start the business was poorly administered.

Five years after buying the *Ertie White*, the Manu'ans had to replace her, and although they had not paid off their debt to Blacklock, they bought another schooner, the *Altair*, for \$3,500, a vessel so dilapidated that they had to spend an additional \$7,000 to make her seaworthy.

Even so, the *Altair* proved that she could be operated profitably. She hauled the copra from Manu'a to Pago Pago and took such charter business as came to hand, and within a few months, she had nearly earned her cost. There was no lack of business, for each time the Naval Station ship visited fa'u at least a hundred Manu'ans clamored for passage to Tutuila, and she could have been filled to capacity each sailing. The *Altair* was not allowed to get out of debt, however. Each inhabitant of Manu'a considered himself one of her owners, and it appeared to him preposterous that he should be required to pay for the transportation of his goods or of himself and his family. Her management therefore attempted the impossible when it tried to enforce a schedule of charges, and the increasing financial difficulties became a burden upon the Governor, who had agreed to act as her trustee. In 1908, the Manu'a Company had to be reorganized, and its members proposed that the Governor grant them a new charter. Anxious, and indeed forced, to take steps to put the enterprise back on its feet, he issued the charter, effective for five years, on the condition that the government manage the affairs of the company, and accept Mr. William Grover, the postmaster at Ta'u as manager.

Under this arrangement, the *Altair* began to make money again, but time was not on her side, for she was already old and rotten and would have to be replaced. In the circumstances, the Manu'ans, who had wholeheartedly accepted United States sovereignty, turned with Polynesian logic to the Navy for aid and asked the Navy to build them a ship. When they were told that this was impossible, they contracted with the Anderson Shipyard of San Francisco to build a seventy-two-foot schooner at a cost of \$16,000. As has often happened, there was a naval officer who had served in the islands on the



scene to act as their representative, in this case the former Governor, now Rear Admiral, C. B. T. Moore, USN. Moore, who had said they were swindled when they bought the *Altair*, was determined that this time they should have the ship they wanted and agreed to supervise the contract.

When the *Manu'a*, as they christened her, was ready, they sent Captain Joseph Steffany, a first class mariner and a long-time resident of Samoa, with a crew of four to San Francisco to bring her out, and when she entered Pago Pago Bay on Washington's Birthday, 1912, after a 4,500 mile voyage under sail, her future seemed bright. Soon, however, she had troubles of her own. Her three-cylinder kerosene engine was vulnerable, and spare parts had to be ordered from the mainland. For all that she was well and expertly built, she proved to be too big and too expensive to operate for her job. She involved her owners in a damage suit due to a collision in Apia harbor, and later was cast aground in that place by the hurricane of 1915. The management problem remained unsolved, and Governor Stearns came to the conclusion that, "The natives are absolutely incapable of managing their own affairs in financial matters." He recommended that either the cooperative should be dissolved and the ship sold to an individual owner, or that the government should take her over and go into the shipping business. "The cooperatives," he said, "are an unlimited annoyance to whatever official is charged with their supervision."

Nothing proves the admirable tenacity of the *fa'aSamoa* better than the fact that thirty years later, after World War II, the Manu'ans again bought and attempted to operate a vessel, this time a former Navy minesweeper, which they named the *Manu'a Tele*, and again the government was plagued with difficulties until it chartered the ship and finally went into the shipping business.

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THE tension on the eve of World War I made little impression in American Samoa but became almost unbearable in the German islands. There two hundred Germans, thousands of miles from home, surrounded by powerful prospective enemies, and with only the inferior German Pacific Fleet upon which to rely, felt themselves prisoners already. Late on the night of 6 August 1914, residents at Matautu heard the Governor's automobile drive past on its way out to the wireless station and waited anxiously to learn their fate. When the car returned at dawn, they were told that the war had begun.

Three German reservists sailed at once on a neutral ship for Honolulu, hoping to get to Germany, and fifty or sixty of the other men formed a *Sicherheitswacht* (Security Watch) and went through the motions of making Upolu defensible. Governor Schultz, Solf's successor, sent the 10,000-ton liner, *Elsass*, over to Pago Pago for internment, together with his gunboat, the *Solf*. Later he asked his American conferees for the return of the *Elssers'* wireless equipment, but Governor Stearns, fearing that compliance might be an un-neutral act, passed the request on to the Navy Department for decision, and by the time he received his reply, German Samoa had ceased to exist.

When Great Britain declared war, there was a great outburst of patriotic feeling in New Zealand. The government undertook to seize the German wireless station in Samoa as an urgent imperial service, and a week later an expeditionary force of 1,473 men sailed from Wellington, escorted by the light cruisers, *HMS Psyche* and *Philomet*. The New Zealanders believed that they narrowly escaped disaster at the hands of the heavy German cruisers, *SMS Scharnhorst* and *Gneisenau*, which were reported to be in the vicinity of New Caledonia on the night of 19 August 1914. At Noumea, New Caledonia, the expedition was reinforced by the British battle cruiser, *HMS*

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against the Naval Administration in Samoa. The most important of these concerned a hanging for murder.

On 1 July 1923, Toepu of Vaitogi, angered over a gambling matter, armed himself with a shotgun and sought out Sake of Leone, whom he fired upon and killed. He was arrested and brought to trial eleven days later, with Mr. B. F. Kneubuhl appointed to act as his counsel by Governor Pollock. Toepu twice confessed his guilt, which was otherwise established, and was convicted of murder in the first degree and sentenced to be hanged. On the day of his execution, 27 July 1923, Toepu again confessed, and said that he hoped his fate would impress on other Samoans the evil effects of gambling. He faced death with that typically Samoan unconcern which is always startling to outlanders, who accept the rhythm of nature less resignedly.

To Hannum, the conviction and execution of a self-confessed murderer twenty-six days after the commission of his crime was intolerable. He complained to President Coolidge about "the illegal hanging of a Samoan," apparently preferring that a murderer should go unpunished than that the Naval Administration should promptly attain the ends of justice.

A saner view of the case was that of the defense counsel, Mr. B. F. Kneubuhl, an American who had arrived in Samoa in 1907 with the Navy and had elected to make his home there. "Benny" Kneubuhl had become a merchant and the leading American civilian member of the community, and among many other activities had made a study of the law. His nomination to defend Toepu was therefore the strongest available to Pollock. Kneubuhl took exception to the conviction of his client for murder in the first degree, holding that the lesser verdict of manslaughter would have been more appropriate. He must have had in mind the old Samoan concept that a killing should either be avenged immediately or compensated by the payment of a fine and by a public apology by the miscreant's *matai*. After his appeal had been overruled by the court, he asked President Coolidge to place a statute in the laws of American Samoa requiring that a conviction in a capital case be reviewed by a court in the United States. On reference, the Judge Advocate General of the Navy pointed out that, without Congressional enactment, a statute prescribed by the President would be insufficient

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to give an American court jurisdiction over a matter arising in American Samoa, and added that, according to the record of the case, the trial, sentence, and execution were all in accordance with the laws at the time in effect in the islands.

Fifteen years after the title of Tui Manu'a had been vacated by the death of Tui Manu'a Eliasara, a claimant for the position appeared in the person of "Chris Young," to give him his English language name. Young was a descendant of the English-Samoan, Arthur Young, who had lived in Ta'u in the nineteenth century, and a relative of the former Tui Manu'a Matelita. He had lived in the United States for three years, and subsequently in Apia for fourteen, prior to his returning to the American islands about 1920, where he worked as a clerk in the Supply Department of the Naval Station. During this period, he assumed the *matai* title, Tofa, to which he was not legally entitled, because the law required that a would-be *matai* must have lived continuously in American Samoa for five years when he made his claim.

July, 1924, found him in Ta'u, and that month, during the absence of District Governor Tufele and while County Chief Sotoa was Acting District Governor, Talking Chiefs Tauanu'u, Tulifua, and Ti'a assembled a conclave and conferred the title of Tui Manu'a upon Young. The Sotoa attended the meeting and the subsequent fearsome 'ava ceremony in honor of the new Tui Manu'a, and then allowed two days to pass before he notified Governor Kellogg of the events. Aware of Sebre's difficulties with the Tui Manu'a in 1904, and of Parker's dictum that the title was royal in nature and hence impossible under the Constitution of the United States, Kellogg dispatched his station ship, USS *Ontario*, to Ta'u with an invitation to Young to visit him at once, an invitation which the newly chosen Tui Manu'a felt it politic to accept.

Kellogg assembled the interested parties on 7 August 1924. Representing the Naval Administration were himself, Secretary of Native Affairs Hall, and three naval officers, while Talking Chiefs Tauanu'u, Tulifua, and Ti'a presented their views. The Manu'ans denied that they had created a king, and claimed to have done no more than to restore an honor which it was their right to confer. They called attention to the fact that the title of Tui Manu'a had never been formally

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abolished, and announced that they would be "dissatisfied to the death" with Kellogg's interference in their business. For his part, Kellogg stated that he considered it ridiculous to claim that the Tui Manu'a was not a "king," and that the action of the talking chiefs and others, in the absence of the District Governor, smacked of conspiracy. There would be, he said, no Tui Manu'a, and Chris Young would be detained in Tutuila. In his view, County Chief Sotoa was the individual primarily at fault because of his inactivity and delay in notifying the Governor of the events, and he therefore suspended the Sotoa from office for a period of one year.

Chris Young was understandably irritated. He found himself held in Tutuila for no crime other than that of having accepted the highest honor in the *fa'aSamoa*, to which he believed he was entitled, and he resented the curtailment of his new status and the ascendancy of the Tufele in Manu'a. For all that the latter could himself present a reasonable claim to the title of Tui Manu'a, the Faletolu had chosen Chris. He asked permission to return to Ta'u on the ground that he was unable to make a living for himself and his family in Tutuila, but when the Governor countered with an offer of a job in the Island Government at a reasonable salary, he haughtily rejected it. In the circumstances, it was not surprising that he should align himself with the Mau at Nu'uuli.

The case of Chris Young was further grist for Hannum's mill. The usual petition circulated in Ta'u. Its 314 signatures were all the work of five individuals, according to the Tufele. Without the prior knowledge of High Chief Lei'ato, the Mau arranged a meeting at his seat in Fagaitua, with Chris in attendance, at which a letter from Hannum asking for \$5,000 was read. This request was coldly received. The delegation from Afono walked out, and the Manu'ans present flatly refused to try to raise the \$2,000 quota assigned to them.

Despite this rather humiliating failure, however, it happened that Chris Young became the means by which the Mau came of age and assumed something of the status of a political party. In 1927, "The Committee of the Samoan League," as it was then called, addressed a letter to Governor S. V. Graham in which it announced the Mau's refusal to pay any more taxes "until the time a decision is made regarding the desire of the Samoan League for a civil government."

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and at the same time renounced the government's copra handling monopoly. Although he had not been among the signers of this letter, Chris Young was well known to be a leader of the Mau, and Governor Graham invited him to his office to discuss the situation. Graham formed the impression that Young himself did not have a clear idea of the meaning of a "civil government," and the latter volunteered the information that the Mau did not quite know what it wanted. Soon after, Young invited Graham to Mau headquarters at Nu'uuli.

On 14 November 1927, the Governor went to Nu'uuli to be received formally by the Mau assembled in a *fono*. The talking chief of the occasion stated that, in general, the Mau was not hostile to the Naval Administration, but that it believed the time had come for a change. Graham replied that he considered himself to be the Governor of all Samoans and that he was glad to learn what was in their minds. The policy of the Naval Administration, he said, had always been and remained, "Samoa for the Samoans," as evidence of which he pointed out that their lands and their customs had been protected against all comers and that their affairs were administered largely by Samoans. "If this," he said, "is not 'Samoa for the Samoans,' I cannot see what the term means." Historically, the treaty of 1878 had permitted the United States to erect a naval station on Pago Pago Bay, which was all it had ever wanted, and in 1900 the Navy had done no more than meet the wishes of those who signed the Deed of Cession.

As for the Mau, he considered that it had been shortsighted in that it had never addressed the Governor directly until the occasion of its recent letter. "I must tell you," he went on, "that I was disappointed at the way this was done. I could not believe that you wished to defy the authority of your government. I thought that you had not carefully weighed the possible meaning and result of this defiant attitude. But I refuse to get excited or to lose my temper."

This meeting was one of the reasons why the Mau, as soon as it came of age, began to decline. Its roots lay in a sense of grievance, and when it found that the Governor and his staff were prepared to discuss issues as reasonable men, its motivating force was sharply reduced. The sense of grievance was further modified by evidence of Congressional interest in Samoa in the shape of the Lenroot Bill, which failed of passage in 1926, and of a bill introduced by Senator

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Hiram Bingham and passed by the Congress to look into the problems of American Samoa.

The Mau's self-assurance was further undermined when, with the visit of the Presidential Commission impending, Graham advised it to prepare a draft showing the kind of government it wanted, giving careful attention to the necessary officials and departments, costs, and the means of revenue at hand to meet them. The Chairman of the Mau Committee told the Governor privately that he no longer wanted a civil government, and that he believed the Mau would drop the demand. "It is highly probable," said Graham, "that this change is due to an attempt of the Mau to draft in concrete form the kind of government it desired. No doubt the question of revenues and expenses contributed largely to their change of attitude."

Other reasons for the decline of the Mau were its opposition to the high chiefs, whom no Samoan who cared to live at peace in the *fa'aSamoa* dared to oppose too long, and the suicide of C. S. Hannum, who had been the mainspring of its action for some years. The motives of this strange man, who claimed to represent people living in islands he had never visited, are difficult to analyze. His interest cannot have been pecuniary, for the legal fees to be had could never have been important, nor, as far as the record shows, was he actuated by political ambition.

Finally, the Mau had opportunity to observe contemporary events in Western Samoa where a broader-based movement, led by the great Upoluan high chiefs themselves, clashed with a well-intentioned New Zealand administration, and a conflict developed in which the Tamasese of the day was shot by the police while leading a parade on the streets of Apia. The members of the Mau in the American Islands could, in the circumstances, only conclude that their lot was better than that of their compatriots.

The Mau put on a final show of strength during the visit of the Presidential Commission in 1930, but its reason for existence had gone, and thereafter it fell apart rapidly. In 1935, Governor Dowling was able to say that, for all practical purposes, it had ceased to exist.

TWO hundred miles to the north of Tutuila lies Swain's Island, an atoll geographically a part of the Tokelau Island group. It is oval in shape and about a mile and a half long, although from the air it looks like a big circle of palm trees enclosing a blue lagoon. The land measures about 800 acres, nearly all of which is given over to the growing of coconut palms. There is a small village at the western extremity with a grassy *malae*, about twenty Tokelauan-style, rectangular *fales*, and a copra shed which looks like a big red New England barn. The water supply is derived entirely from the copious rainfall, which is collected in gutters around the roof of the copra shed and led into two huge mahogany tanks.

About a mile from the village, by road, stands a group of buildings known as "The Residency." In the center of the island, the lagoon, surrounded by the ring of forested land, could well be a lake deep in a forest were not the roar of the surf on the reefs outside loud enough to remind the spectator of the presence of the Pacific Ocean. The water in the lagoon, six fathoms deep, is brackish and useful for washing, but is impotable.

There is a road around the island, running through an aisle in the palm trees, which connects the village, "The Residency," the cemetery, and, in recent years, the wireless station. In the center of the cemetery stands the headstone of Eli Hutchinson Jennings, born at Southampton, Long Island, New York, 1814, died in Swain's Island, 1878.

All unused ground is covered with the discarded husks of coconuts, which are allowed to accumulate and rot to add organic matter to the scanty soil.

The first white man to discover Olosega (its Polynesian name) was Pedro Fernandez De Quiros, who set out from Peru under the orders of the Spanish Viceroy, and landed there on 1 March 1606. He was so charmed by the handsome and friendly inhabitants (archeological



findings suggest that they were eastern Polynesians) that he called it La Isla de la Gente Hermosa.

For over two hundred years thereafter, De Quiros' Island, as the western world labelled it, remained unvisited by white navigators. During that period, according to legends which reflect the nomadic habits of the Tokelauns, these atoll-dwellers came over from the nearest island, Fakaofu, by sea, slaughtered most of the men, and took the King and the women back with them to their home. The unhappy King invoked a curse, and when the Fakaofuans returned to settle, they met with drought and poor fishing, and were starved out.

At some time prior to 1840, Captain W. C. Swain, of New Bedford, Massachusetts, skipper of the whaling bark, *George Champlan*, out of Newport, Rhode Island, came upon the island and believed that he had discovered new land. Somewhere in the Pacific, he encountered Commodore Wilkes and Captain William H. Hudson, the latter commanding *USS Peacock* of the United States Exploring Expedition, and told them of his find. In 1840, Wilkes directed Hudson to look out for the island, and on 31 January 1840 he lay off the atoll, but did not go ashore because there was no visible passage through the reef, and the sea was too rough to permit landing through the surf. Hudson saw no people on the island and no evidence of human habitation except the coconut palms, which are always a sure sign of past or present Polynesian occupancy. He found that the island was not in the same location as that described by De Quiros, and concluded that, in all probability, Captain Swain was correct in his claim of discovery.

Soon after Hudson's visit, the Fakaofuans returned to the island, where they were joined by three Frenchmen, who engaged in making coconut oil. When they had accumulated a shipload, they sailed away and left the place to the Fakaofuans.

At about this time an Englishman known as "Captain Turnbull" appeared at Apia, Upolu, with the claim that he had likewise discovered the island. Turnbull met "the ingenious Yankee," Eli Hutchinson Jennings, who was disgruntled by the failure of the Samoans to pay him adequately for his masterpiece, the paddle-wheeled war vessel, *Le Tuamasila*, and who was minded to quit ungrateful Samoa and to strike out elsewhere. Turnbull offered him his "title" to the atoll for an unknown consideration, and Jennings accepted the offer.

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With his Samoan wife, Mere (also spelled "Maria" and "Malie"), he set out for his new home and landed there on 13 October 1856, raising an American flag to declare his nationality.

To Jennings, coming from eastern Long Island, where he had been a near neighbor of Gardiner's Island, individual ownership of an insular estate seemed natural and proper. He began to produce copra, with the aid of Fakaofuan labor, and to sell it in the market at Apia. Still a shipbuilder and inventor at heart, he built two small schooners in the outer lagoon of Swain's Island, blasted a channel through the reef, floated his vessels through on pontoons made of empty barrels, and sold them to the German Firm at Apia. With Mere, he had six children (Eli Hutchinson Jennings, Jr., Daniel, Fife, Mere, Leta, and Eleni), and adopted a child named Samisi. At the age of fifty-four, he made a will, naming his wife his sole beneficiary, which he recorded with the United States Consul at Apia, and in 1878, at the age of sixty-four, he died.

His widow continued in possession of the island. The fate of some of the children is unknown (presumably they died young), but three were named in her own will made in 1881: Eli Hutchinson Jennings, Jr., to whom she bequeathed the island itself, and Daniel and Mere, who were designated heirs of her other property. Her will, like that of her husband, was also registered with the United States Consul at Apia.

Eli, Jr., who had been at school in San Francisco, took over the management of the estate during his mother's lifetime. Ten years after her death, Robert Louis and Fanny Stevenson referred to him as "King Jennings," when they visited Swain's Island aboard the *Janet Nichol*. They found a road, a church, a schoolhouse, and a copra shed, and saw under construction a wooden railway from the copra shed to the head of the reef channel, down which loaded cars were to roll by gravity. Since the highest elevation of the land was about twenty feet, pushing the empty cars back uphill by hand would not entail back-breaking labor. Through her porthole, Fanny Stevenson noted a horse and carriage. The employees were islanders, several of whose contracts had expired but who had been unable to go home because of lack of transportation. When the *Janet Nichol* left, she took a few of them along to their native Puka Puka, 200 miles to the east.

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The Stevensons also saw at Swain's Island a remarkable variant upon the flag of the United States: "Old Glory" flew on the flag pole, but superimposed on the blue field was a white dove. They learned that at one time a bird had come and cried over the little community at night, foreboding pestilence, and that the dove had been added to the flag to propitiate this omen of evil.

The junior Jennings' proprietorship came to be challenged by two parties: the British Empire and his relatives living in Apia. The British Sub-Commissioner of the Ellis and Gilbert Islands, who exercised dominion over the palms of the other Tokelauan islands, decided that Swain's also belonged to his territory, and visited the place in 1907 to exact taxes. Jennings paid \$80.00 under protest, claiming that he was an American and that his island belonged to the United States, and when his protest was evaluated by higher British authority, he was upheld. The American nationality of himself and his land was conceded, the overzealous tax gatherer was reprimanded, and Jennings' money was returned to him.

In 1906, Daniel Jennings claimed that his older brother, Eli, Jr., was in unlawful possession of Swain's Island, and within a few years a nice problem had arisen, which involved the Jennings family, the Samoas, the British Foreign Office, and the Department of State at Washington. Since Swain's Island copra earned about \$20,000 a year for its owner, his relatives questioned the older brother's right to this undivided prosperity. The stake was also attractive to Captain E. F. Allen, who, with William Blacklock, directed the Samoa Shipping and Trading Company, which owned the ships *Dawn* and *Rob Roy*, upon which Eli Jennings was dependent for the shipment of his crop. Allen saw that it would obviously be more profitable to own the plantation than to transport its product.

Allen was in a strong position. He controlled the transportation, had Jennings in his debt, and could egg his relatives on. The conflicting interests involved became aligned upon national grounds when Eli, Jr., turned to the United States for aid, and his opponents, to Great Britain.

On 29 September 1913, United States Consul Mason Mitchell, at Apia, wrote to Governor Stearns at Pago Pago that the time had come for action regarding Swain's Island. As nearest United States Consul,

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he had the place under his protection, but this was no substitute for a method of administration, and he proposed to join Swain's to American Samoa to define its status. Stearns, who was frankly interested in the taxes which the island's copra would earn for his chronically poor government, thought highly of the idea, and asked the Secretary of the Navy to consider the plan. Eli Jennings, Jr., was evidently pleased with the prospect, for he wrote directly to the State Department to urge the union, pointing out that he transacted his business in Apia and used the German courts there for the sole reason that there was a United States consul present to protect his interests.

Probably spurred on by this move, the Jennings family at Apia assumed the offensive. Mr. James Curry of Apia, whose position in the matter is not clear, wrote Governor Stearns that his deceased cousin, J. C. Curry, had claimed that the will of the first Eli Hutchinson Jennings had never been subjected to probate, and that therefore Eli, Jr.'s, title to the island was open to serious question. He further called attention to Captain Allen's growing interest in the place, based upon Eli Jr.'s indebtedness to himself and to the general dissatisfaction of the members of the family in Apia. Stearns, who described Allen as a "South Seas Character," and believed that Curry was aligned with the forces opposed to Eli, Jr., forwarded the letter to the Secretary of the Navy with the comment that, as the situation was developing, Allen might well be able to take control of the island himself.

During the next few months, great pressure must have been brought to bear on Eli Hutchinson, Jr., for in May, 1914, he announced that he had changed his mind about the union of his island to American Samoa, giving as his reason the fact that he was dependent upon Apia for his labor (by which he probably meant the shipping provided by Captain Allen), and that Swain's Island was British territory! A letter from the Secretary of State, in which he said that he saw no objection to formal American control of the island, crossed in the mail an urgent appeal from Governor Stearns, who thought that the machinations of Allen were about to produce a "public scandal" in an American island, and that only by prompt action could the United States spare itself the spectacle of an American living on United States territory being forced to convey title to an Englishman and to alienate the land

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the scandalous conditions alleged by the Tyrell brothers to exist there were, if true, a matter of common interest to all civilized people, and His Majesty's Ambassador at Washington invited the attention of the Department of State to certain evidence which it "may very probably wish to consider." In brief, the Tyrells claimed that Eli Jennings, Jr. and his manager, Mr. I. H. Carruthers, were unjust in their dealings with their Polynesian employees; that they were arbitrary and stingy; that Eli, Jr. took all of the available food for himself; and that he punished people by flogging them and tying them to trees or by putting them in stocks.

Having no means to investigate, the State Department referred the matter to the Secretary of the Navy, who in turn directed the Governor of American Samoa to look into the matter. The Governor ordered Lieutenant Commander L. W. Sturm, USN, to make a personal survey of conditions in the island and to render a report.

Sturm found that there were seventy people living on Swain's Island, of whom only thirty were sixteen years of age or older. Taking with him an interpreter and a stenographer to record interviews directly, he talked with nineteen men and nine women selected at random. He reported that, in general, the people were happy and enjoyed an ample diet, which included rice, bread, tea, biscuit, jams, and tinned corn beef as well as their local catch of fish. The alleged deprivation of food amounted to no more than the tithing of their fish which they rendered, in the Polynesian manner, to Jennings as their *matua*. Jennings, he found, spent about \$400 a month in wages and benefits for his workers, cared for the sick as best he could, and exempted any pregnant woman from working. His books were well kept and showed that he paid each worker \$5.00 a month in wages in addition to his keep, as well as a bonus upon the expiration of his contract.

Sturm also showed that the charges of cruel and unusual punishment were fantastic. Three boys and three girls, whose parents had objected to their illicit sexual relations and to their marriages as well, and who had attempted to elope by putting out to sea in a canoe (the nearest land was 100 miles away), Jennings had, in fact, tied to trees in accordance with Polynesian custom. Jennings had exhibited the stocks to punish an exceptionally ardent man, who had annoyed the married women of the island, and who admitted the justice of his punishment

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into the bargain. What delayed the Jennings family, in Apia, and Captain Allen from the consummation of their plans is not recorded, but it is likely that the outbreak of World War I turned their attention to other matters. It is also likely that the British government, having conceded the sovereignty of the United States in Swain's Island, had no desire in the heat of that conflict to aid its would-be nationals, in an attack upon that sovereignty.

During the new period of inactivity, there appeared another claimant to the proprietorship of the island in the person of Mrs. Sarah Swain, the widow of Captain W. C. Swain, who had died in the belief that he was the island's discoverer. Eighty-two years old and destitute, Mrs. Swain asked her Congressman, the Honorable John M. Raker of California, to ascertain if she had any rights in the island, or at least some claim on the government because of her late husband's discovery in "1850." Mr. Raker asked Secretary of the Navy Josephus Daniels to look into the matter, and he, in turn, gave the problem to Assistant Secretary of the Navy Franklin D. Roosevelt. Roosevelt, after consultation with the Navy's Hydrographic Office, concluded that Swain had only rediscovered De Quiros' island, the discrepancy in locations being due to the imperfect navigational instruments of the early Spanish explorer, and, moreover, that the island had been visited more than once by other shipmasters at or about the same time as Captain Swain. Mrs. Swain was, therefore, unable to establish any pecuniary rights for herself.

In 1917, the war having passed on from the Pacific, the interested parties at Apia renewed their activities. Sale (Charlie) Tyrell advised his mother, Eli Hutchinson Jennings, Jr.'s, sister, Mere, that Captain Allen had become his fast friend, a fact which she should on no account bring to the attention of his uncle, Eli, and he also told her that she should never permit anybody to say unchallenged that Swain's Island belonged to the United States.

Still unable to oust Eli Jennings, Jr., some of the Apia parties resorted to the old South Seas tactic of character assassination. With the former German Samoa now under New Zealand mandate, they attempted to discredit Eli, Jr., by advising the local authorities that he was unfit to continue in his landlordship. Although the British Empire had formally recognized American authority in Swain's Island,

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and indicated his lack of resentment by declaring that he was happy and had no desire to move away from Swain's Island. The flogging had consisted of a single episode, when Carruthers, the manager, had thus chastised his own nephew for seducing the pastor's daughter. Crime on Swain's Island consisted chiefly of offenses against the sexual code, both Polynesian and outlander, and the punishments inflicted were not unusual by either Samoan or missionary standards.

Sturm's report terminated this phase of the campaign against Eli Jennings, and he was left in peace until his death in 1920. His elder son, Eli Hutchinson Jennings, III, having died, he willed his real property to his surviving son, Alexander H. Jennings, and the residue of his estate to his daughter, Anna Eliza, who was Mrs. Irving H. Carruthers, of Apia. Attempts to settle the estate opened the way for further litigation.

Alexander H. Jennings, then twenty-three years old, tried to have the will probated in the courts of American Samoa, but Judge A. M. Noble doubted that he had jurisdiction and consulted United States Consul Quincy F. Roberts at Apia. In Western Samoa, Mrs. Carruthers likewise found herself without recourse to the courts of that New Zealand mandate. Roberts, therefore, referred the matter to his superiors at Washington, and asked for a clear statement of jurisdiction in Swain's Island.

Both the State and Navy Departments considered Swain's to be United States territory. The Secretary of the Navy proposed that the President establish American authority by Executive Order and designate the Navy its administrator, although he pointed out that the Navy was not interested in the place as far as its own business was concerned. The Secretary of State, however, countered that he considered the matter one for Congressional rather than executive action, and again the problem lay unresolved.

Alexander H. Jennings was thus left in an impossible position. He personally asked for a formal declaration of American jurisdiction, because his father's will could not be probated, and he found himself compelled to continue to operate the plantation jointly with his sister, whose rights were as ill-defined as his own. It was not, however, until 1925 that Secretary of State Charles Evans Hughes succeeded in having Congress adopt legislation (Public Resolution No. 75, 68th

Congress) which formally extended the control of the United States to Swain's Island and made it an administrative part of American Samoa, an entity which Congress had not recognized.

This act rendered the problems of the Jennings family soluble. Alexander Jennings took possession of the island and turned the other assets of the estate over to his sister. In keeping with South Seas custom, new flag-raising ceremonies became appropriate, and in May 1925, Lieutenant Commander C. D. Edgar, USN, went up to the island and formally hoisted the American flag, sixty-nine years after it had been raised by the original Eli Hutchinson Jennings.

The legal battle over the island and the estate was not finally concluded until 1939, when Governor E. W. Hanson was able to report the end of the litigation.



Arkansas, together with Representatives Carroll L. Beedy, of Maine, and Guinn Williams, of Texas, and he directed that Governor Graham suggest the names of two appropriate Samoan "chiefs" for nomination. Since Tutuila and Manu'a had come under the flag of the United States separately, Graham thought that each should participate in membership on the commission, and he submitted the names of High Chiefs Mauga and Tufele as best fitted to represent their islands. At the same time, he believed that because the Mau had contributed materially to the passage of the Bingham Bill, it should also be accorded representation, and accordingly recommended that the Samoan membership be increased to three and include the Magalei, a Mau leader. He was also constrained to invite the attention of official Washington to the fact that the Mauga and the Tufele were *ali'i sili* in the Samoan language, and were therefore entitled to be called "high chiefs" in English. When his suggestions had been digested and approved, Congress modified the act (by Public Resolution Number 3, 71st Congress) to permit the naming of three Samoan members, and to recognize the difference between the English equivalents of *ali'i* and *ali'i sili*.

The nomination of the Magalei aroused objections on the part of the Samoans who did not adhere to the Mau, but they readily accepted Graham's explanation that American principles demanded representation of differing points of view.

The commission's visit to Samoa and the hearings were finally scheduled for 1930. Before their departure, the American commissioners met informally at Washington and invited all interested persons to appear and be heard. They received and considered proposals for an organic act from three former naval governors of American Samoa, the current Governor and the Secretary of Native Affairs, and the Officer in Charge of the Navy Department's Office of Island Governments. Correspondence began to arrive from other sources. A junior member of the Tufele *aiga*, then living in the United States, at first expressed the views of "The California Mau," but later reported that he had come to a misunderstanding with Mr. and Mrs. S. S. Ripley, whom he no longer considered qualified to speak for Samoa, since Mr. Ripley had lived abroad too long and Mrs. Ripley was too American in her outlook. A lady in California, who apparently had never been in Samoa, informed the Secretary of the Navy that, since his department

would provide transportation and support for the commission, an impartial hearing would be impossible, and urged that she be taken along as the person best qualified to speak for the Samoans.

Mr. and Mrs. S. S. Ripley, or at least Mr. Ripley, presumably intended to be present in the islands during the visit of the commission, but they cancelled their plans for unrecorded reasons.

In Samoa, the Mau Committee, including Commissioner the Magalei, set forth its program in a letter addressed to Messrs. Thurston, Bruce Cartwright (of the Bishop Museum staff) and A. A. Greene in Honolulu. They desired territorial status, removal of the Naval Administration, and an appropriation of \$1,000,000 to establish the future Samoan government. They took occasion to ask their friends to prevent the "club formed by Samoan boys now in Honolulu," *i.e.*, the Samoan Civic Association, from appearing before the commission, a request which the association's spokesman, Nelson of the Tuitele *aiga*, ascribed to their fear that the young men in remote Hawaii might style themselves "chiefs." Whatever its politics, the Mau evidently wanted no meddling with the fundamentals of the *fa'aSamoa*.

The Congressional commissioners assembled at San Pedro, California, and boarded USS *Omaha* on 11 September 1930 to begin their journey, accompanied by Captain W. R. Furlong, USN, officer in charge of the Navy's Office of Island Governments, who acted as aide and as paymaster for the expedition. They found a collection of official documents and pertinent books and publications concerning American Samoa ready for their use, with which they occupied their time at sea.

Reaching Honolulu on 18 September 1930, the commission was joined by Mr. Albert F. Judd, who had been designated its counsel. The commissioners visited the Bishop Museum, where Dr. Peter Buck addressed them on "The Samoan System of Chieftainship" and expounded the social and political organization of Samoa. Formal hearings began on 19 September 1930, Senator Bingham emphasizing his regret that the exigencies of the situation made it necessary to start work in the absence of the Samoan commissioners.

In addition to Dr. Buck, four other members of the Bishop Museum staff appeared by invitation as expert witnesses. They confined their comments to social and economic matters and avoided discussion of



While hope of total eradication of filariasis, like the eradication of other infectious diseases is probably Utopian, reasonable control appears to be practicable at the present time.

After forty-five years of hope and amateur experimentation, the government was reinforced by the arrival of a trained agriculturalist in 1946. As aide for agriculture to the Governor, Mr. David Butchard was able to revive the experimental farm, establish a dairy, provide teaching in the vocational school, work actively in the field of soil sanitation and coconut-beetle control, and even to undertake experimental projects in animal husbandry.

At mid-century, the *fa'aSamoa* was far from dead, ranging from a reactionary obstructionism to a pleasing blend with twentieth century life. Reactionary episodes were curious and interesting. In 1950, Mr. Butchard and a visiting British forester roped off a measured acre of ground, intending to make an actual count of each tree and variety of tree within the area. Next day, however, they found that every tree enclosed by their line had been chopped down by the old gentleman who owned the place. What devilment he feared is unknown. At about the same time, Medical Assistant Bert Williams, working in Ta'u, had to invoke the law to keep a practitioner of "bush medicine" from interfering while he cured a victim of meningitis with sulfadiazene. In this case, according to Williams, the patient's delirium caused the family to demand demonologic treatment.

After World War II, the Manu'ans revived their ship-owning cooperative. They bought a former Navy minesweeper, which they named *Manu'a Tele*, but they were soon swamped by managerial difficulties, and Governor T. F. Darden was burdened with problems identical with those which had plagued his predecessors before World War I. After various expedients had been tried and had failed, the government of American Samoa was forced to take the ship under charter, for after the departure of USS *Sharps* (AKL-10), the last of the Naval Station ships in the line begun by the *Abarenáa*, the Governor felt that the isolated islands should not be left without a ship under his positive control.

Simultaneously, the adaptability of the *fa'aSamoa* was apparent. After a dinner given in his guest  *fale* by Talking Chief Tuiasosopo in honor of Professor and Mrs. Felix M. Keesing in 1950, at which High

Chief Mauga demonstrated his celebrated dancing ability, Dr. Keesing remarked that it was the first occasion in his extensive experience in Samoa at which the high chiefs and talking chiefs had appeared at a party with their wives, outlander-style.

When the communications and radar station in the mountains above the village of Aloao on the north coast was closed, High Chief Fuimaono, of Tualauta County, and the *matari* of Aloao moved en masse from the narrow confines of their old home on the north coast to the open area above. There, at an altitude of a thousand feet, stand the sixteen guest *fales* representing the sixteen *alaga* of the village, spread out in a line almost a mile long, facing upon the grassy *malae* and the road. The center of the village is marked by the flagpole and the concrete schoolhouse. Behind each *fale* are the living and working quarters of the several families, and further back in the woods are the latrines belonging to each. High Chief Fuimaono likes to call attention to the vigor of the children, which he ascribes to excellent sanitation, and he likes the cooler, high-altitude climate. "Notice how all the little boys have to wear shirts," he says.

On 17 April 1950, American Samoa celebrated the fiftieth anniversary of the cession of Tutuila and the raising of the American flag. Months of preparation preceded the occasion, and for many days in advance every other subject slipped from the public consciousness. Among many other groups, school children practised their singing and dancing, and High Chief Lei'ato's *amaga*, 300 men strong, brought their knife dance to perfection. The 24-oared, racing longboats, assembled from all over Tutuila and Manu'a, together with a guest boat from Upolu, and used the cool hours of the dawn to practice, breaking through the mists over Pago Pago Bay with the sun to spurt over the course, and then return singing to their boathouses. Modern Samoa blended into traditional Samoa when Medical Assistant Vaisigano of the Uperesa rowed with Pago Pago's boat, Etiati of the Lei'ato danced with the knife-dancers of the Sau ma Vaifanua, and charming Samoan nurses manned the first-aid station on the *malae*. Distinguished guests, many accompanied by their wives, included Admiral Arthur W. Radford, USN, then Commander in Chief, United States Pacific Fleet, the Honorable G. R. Powles, high commissioner of Western Samoa, and the department heads of his government, the Tamasese, the Malietoa,



and the Mata'afa. The program comprised oratory (Talking Chief Pele spoke in allusive Samoan for an hour and then, after drinking a glass of water, delivered the same address again in faultless English), demonstrations of all manner of skills by teams of all ages from the smallest children up, and athletic events of every type, leading up to the 3-mile race of the longboats. Among others, High Chief Faumuina, a retired member of the Fita Fita, and 280 pounds of solid Polynesian, led his contingent onto the *malae* with the curious little trot, broken by a skip every third step, permissible only to a high chief, and came before the rostrum to acknowledge the guests, where, after he had removed his high-chiefly head covering, he panted and said, "I'm getting too old for this kind of thing."

The climax of the celebration was the parade by the 3,000 persons in the events, led by the Fita Fita and followed by the Samoan nurses. At mid-century, American Samoa was proud, vigorous, and confident of the future.

## Transfer to the Interior Department

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WHEN the House of Representatives defeated the Bingham Bill in 1931 and again in 1932, apparently because it was reluctant to grant United States citizenship to the Samoans, American apathy toward the islands returned and lasted until World War II. The war, however, left the United States in effective possession of a vast area in the Pacific formerly controlled by the Japanese, which the United Nations recognized as a trust territory and turned over to the United States for management. Under this arrangement, continued Naval Administration of American Samoa, like that of Guam, became an anachronism, and plans for civilian government in both places had to be formulated.

The United States Department of the Interior, responsible for Indian affairs and territories, had long been interested in American Samoa. In 1901, and again in 1911, the Navy had asked its advice about education in the islands, and in 1907, the President had directed the Secretary of the Navy to send to his colleague of the Interior Department information copies of all official correspondence regarding Samoa. According to J. C. Furnas, himself no great admirer of the Navy Administration in American Samoa, the Interior Department became actively interested in supplanting the Navy in Samoa and the other islands after World War II, and a campaign directed toward that end by Secretary Harold L. Ickes created a great deal of unnecessary interdepartmental animosity.

What the Samoans themselves wanted is unknown. Sweeping statements about their desires, whether for retention of the Naval Administration or for its replacement, have no more validity than sweeping claims made during the heat of a political campaign. No plebiscite was ever held, and if there had been one, the result might have been valid



for the day of the voting only, for in internal matters the Samoans at mid-century had changed little from the fickleless described by High Chief Lei'ato in 1930. It is a fact that High Chief Tutiele and Talking Chief Leoso and their following in the Western District of Tutuila wanted a civilian administration, and there is no doubt that the Manu'an leaders wanted continued Naval Administration, for Talking Chief Tauanu'u publicly said so in 1950, but facts such as these are too few to justify conclusions.

Nevertheless, the outcome could not be in doubt, and on 18 June 1947 the Secretaries of the State, War, Navy, and Interior Departments jointly recommended to President Harry S. Truman that responsibility for American Samoa, along with Guam and the Trust Territories, be vested in the Interior Department. On 14 May 1949, the President directed the Secretaries of the Navy and of the Interior to concert plans for the transfer, and they, by joint memorandum, agreed upon 1 July 1951 as the date for the change-over in the case of American Samoa.

The first official of the Interior Department to visit Samoa in connection with the pending transfer was Mr. Emil J. Sady of its Division of Island Territories, and in May, 1950, a planning committee arrived, headed by United States Commissioner of Indian Affairs John R. Nichols. The committee, which included Dr. Gordon MacGregor, an anthropologist well known in Samoa and a recognized authority on Polynesia, Mr. Lloyd Furstenu, a personnel administrator, and Mr. Marshall Spaulding, a consultant in management engineering, studied the situation at first hand and defined the future administrative needs of the islands. They proposed a number of administrative changes, notably the creation of a division of management services in the government to relieve the Attorney General of many matters which did not logically pertain to his department, and of posts for a personnel director, a public defender, and a staff anthropologist. The second officer in the government, called the Executive Officer by the Navy, was to become the Samoan Secretary.

In fiscal matters, the committee faced the fact that removal of the Navy would eliminate automatically all of the indirect subsidies it provided, which they considered excessive, and instead proposed an outright federal grant in aid of \$790,000 a year.

On 22 February 1951, Captain Thomas F. Darden, USN (Ret.), the last of the twenty-seven naval governors, went down to the oil dock with a few members of his staff to meet the *Manu'a Tele* bringing in his designated relief, the Honorable Phelps Phelps. Also aboard were Samoa's old friend, Dr. Gordon MacGregor, the new attorney general, and a few others. Next day, Governor Phelps, representing the Navy Department until the actual transfer date of 1 July 1951, formally relieved Governor Darden at ceremonies held on the *malae* in Fagatoga.

In the program printed for the occasion, the Fono of American Samoa said, "By means of the ceremonies set forth in the pages of this program, The Fono, in behalf of the people of American Samoa, wishes to place in the record of history the significance of the termination of 51 years of naval administration. Mutual respect, understanding and cooperation has [sic] been the keynote of our long relationship. Our appreciation for the guidance and leadership of the Navy in helping American Samoa to move forward is deep-seated and everlasting.

"Turning its head to the past, Samoa is sorrowful to bid farewell to a good and loyal friend, the Navy. At the same time, turning its head toward the future, Samoa bids welcome to the new administration under the Department of the Interior, and offers its loyalty, cooperation, and obedience with bright hopes for the future. May God grant strength, wisdom, and success to the new administration in its endeavors."



THE Interior Department concentrated from the start on the economic problem precipitated by the closing of the Naval Station. It hoped to bring money into Samoa by using the oil storage facilities to sell oil to shipping and by establishing a bonded warehouse at Pago Pago. It also hoped to lure transpacific airlines to the airport at Tafuga, and as a necessary adjunct, it set up the Rainmaker Hotel, like Blacklock's Oceanic Hotel of 1900, except that it had no bar. It made every effort to increase the production and export of copra, *lauiala* mats, wood carvings, and curios, and actively sought new sources of revenue. Unfortunately, the sale of oil did not produce a bonanza, owing to the large oil capacity of transoceanic ships, and for lack of demand, the bonded warehouse did not materialize. Also unhappily, the airlines preferred the facilities of Canton Island to the cramped airport at Tafuga, although there is no doubt that the latter will become active eventually.

Politically, Secretary of the Interior Oscar Chapman and Mr. Emil J. Sady, Chief of the Pacific Division of the Office of Island Territories, wanted to provide American Samoa with a regular status under the United States by means of an organic act. While logical, and in agreement with the views of many naval governors, first voiced by Seabee in 1902, the philosophy behind such legislation was not entirely acceptable to Samoans living in Samoa when they met it face to face. An organic act would bring into local effect all of the provisions of the Constitution of the United States, and official pronouncements show what the Samoans feared. In 1950, the Fono appointed a committee to design ways and means to safeguard the *matai* system against the pending organic act (HE 4500), and later at a special session resolved that, "the Fono fully believes that neither Washington nor Miles' Sub-

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committee should evolve, instigate, create, or sponsor anything that would hasten destruction of the Samoan *matai* system." In June, 1951, immediately before the transfer of administrative control to the Interior Department, the Fono demanded that its status be changed from advisory to legislative, so that, among other things, it could speak out authoritatively against the proposed organic act. In short, the leaders of this small people were determined to have what they wanted rather than what outlanders thought was good for them.

The civilian administration of the islands got off to a good start because of the forcefulness of the first civilian governor, the Honorable Phelps Phelps. A man of rugged personal character, schooled in the rough and tumble politics of the west side of Manhattan, which he had represented in the New York State Legislature, Phelps was a political realist and a man who refused to be stampeded. In his inaugural address, he stated that he brought the personal assurance of Secretary Chapman that no unacceptable organic act would be rammed down the throats of the Samoans, and after a study at first hand had convinced him that the pending act was in fact unacceptable, he opposed it firmly and consistently to the chagrin of the theoreticians.

Phelps established his authority by having his publicly antipathetic attorney general recalled and then, finding that the Interior Department's planning committee had underestimated the loss of income which followed the departure of the Navy, he went back to Washington to get enough funds to enable him to operate the island government. Locally, he found a number of political wounds which needed healing. The Tuitetele was disaffected, and High Chief Faumuina felt slighted because the Mauga had been appointed to the District Governorship of Eastern Tutuila, when it was vacated by the death of the Lei'ato in 1950. Thanks to his experience in practical politics, Phelps knew how to restore harmony. The Tuitetele became Chairman of the Flag Day Committee in 1952, and the Faumuina returned to the fold. Referring to correspondence received, the Australian editor of the *Pacific Islands Monthly* stated that he was glad to have an opportunity to publish "these remarkable tributes to the new Governor." When Phelps resigned on 1 July 1952, to accept an ambassadorship, he left the Tutuilans and Manu'ans more united in purpose than they had been in many years.

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Phelps was succeeded by his assistant, the Samoan secretary, Mr. John C. Elliott, a respected and well-liked young man, who left Samoa in September, 1952, for personal reasons, and was succeeded in turn in November by Mr. James A. Ewing, a Truman appointee. After the election of President Eisenhower, Ewing yielded place to Mr. Lawrence F. Judd, a Republican and a former governor of the Territory of Hawaii. Judd stayed in Samoa one month, and resigned on 5 August 1953 because of ill-health. Since the brevity of the two-year terms of the naval governors had been one of the leading complaints lodged against the Naval Administration, the situation was extremely unhappy, and even the tremendous talent and enthusiasm of the Samoans for ceremonial was taxed to provide suitable inaugurations for their transient chief executives. Stability returned, however, when President Eisenhower appointed Mr. Richard B. Lowe to be Governor of American Samoa, and he was inaugurated on 26 December 1952. An educator by profession, who had served on active duty with the Naval Reserve, Lowe brought the point of view of a career man to the post, and settled down to do a job. In this he was assisted by Mr. Allan M. MacQuarrie, also of the Naval Reserve, who had served for two years in Samoa under the last Naval Administration, and who had become experienced in Washington management in the Navy's Office of Island Territories.

Despite the kaleidoscopic changes in governors in 1952 and 1953, the government of American Samoa, with Chief Justice Morrow providing continuity in the judiciary, was held together by capable subordinate officials and growingly competent Samoans, and pursued a generally upward course through its difficulties. In 1952, the Fono reorganized itself. The House of Ali'i, the high chiefs who held office by virtue of their positions, was promoted under the title of "Council of Paramount Chiefs," or "Senate," to advisory status in the executive branch of the government, and the membership of the legislature was reduced from 54 to a more wieldy 18, to be elected by secret ballot. An advisory committee, consisting of Mr. John Cool, anthropologist, Mr. G. H. Gottlieb, the attorney general, and Chief Machinist Edward Hunkin, USN (Ret.), the postmaster, supervised the registration and travelled throughout the counties to instruct the prospective electorate in the novel voting methods. In January, 1953, the voters cast 2,882

ballots in Tutuila alone, and the advisory committee was gratified to find that few had to be voided.

The newly reconstituted Fono soon asked for a constitutional committee to compose a territorial constitution for American Samoa. Governor Lowe, when he approved the plan, said that a constitution of American Samoa "would have many of the benefits of organic legislation and at the same time permit the people of Samoa to maintain traditional systems of land tenure and their traditional social organization so long as it meets their needs." To membership on the drafting committee, with Fono advice, he appointed the president of the Senate, the speaker of the House, the district governors, the chief justice of American Samoa, the attorney general, the public defender, and the Samoan affairs officer. The committee began its work in 1954.

While plans for commonwealth status for American Samoa, somewhat like that of Puerto Rico, were in the air, an unexpected crisis developed on Swain's Island. It will be recalled that Swain's Island had become the undisputed, personal property of Mr. Alexander E. Jennings, and as such his coconut plantation differed from a freehold farm in the United States only in that it was an island surrounded by the Pacific Ocean. For workers, Jennings hired mostly Tokelau Islanders, whom he thought inefficient and who, in 1953, decided to claim squatters' rights on the ground that they lived upon the island the year round. When Jennings dismissed some of the workers and shipped them and their families off to Pago Pago, the fifty-six evicted Tokelauans had to be supported by American Samoa until they could be repatriated, and Governor Lowe was forced to act. To prevent recurrence of such episodes he issued an executive order which acknowledged Jennings' proprietary rights and the rights of his employees, directed that the latter be protected by contracts, approved in each case by the governor and cancellable only with his approval, restricted employment in Swain's Island to American Samoans, and installed a *pulemu'u* (executive officer), a *leo leo* (policeman), and a government representative to supervise governmental affairs and contracts.

The economic situation in American Samoa became so desperate in 1952 that about a thousand Samoans migrated en masse to Hawaii, transported by their old friend, the Navy. To combat the blight, the



government fostered the planting of cocoa as a money crop, a project pioneered privately by High Chief Tufele in Ta'u in 1948, and in 1954 Governor Lowe succeeded in having the Navy send a recruiting team to Tutuila, which drained off 84 young men accepted for enlistment. Fortunately, just as the outlook appeared most grim, Japanese fishermen showed in 1954 that there was a large harvest of tuna to be had off Pago Pago by using their technique of sub-surface fishing. Their first experimental catch was so large that local cold-storage facilities were overwhelmed, fish were given away in Tutuila, and there was still a large surplus to ship over to Apia for distribution. Satisfied that a reliable source of tuna had been found, the Van Camp Seafood Company, of California, leased the cannery on the shore of the bay, which had reverted to the government, and went into business, contracting for the catch of relays of Japanese fishermen and employing about 150 Samoan workers in the plant. In the fiscal year 1954, \$983,000 worth of tuna and tuna products were exported, and the business climbed so rapidly that the *Pacific Island Monthly* was able to report that "Tuna Alters Eastern Samoa's Economy" by providing an exportable commodity, creating employment, and bringing in shipping, which bought oil, goods, and services.

The civilian administration provided a more congenial atmosphere for the social sciences and community effort projects than had the Navy. Prior to 1951, the only "social service" organizations in the islands were the Alumnae Association of the School of Nursing, the local post of the Veterans of Foreign Wars, the Red Cross (which oversubscribed its quota by 1,000 per cent in 1951), and an organization known as The Makogai Fund, which made an annual collection to buy comforts and amenities for the victims of leprosy at the colony maintained by the Fijian government. In 1951, the Makogai Fund was expanded into a more general Samoan welfare organization, under the direction of Mmes. B. F. Kneubuhl, E. Hunkin, E. W. Johnson, and R. E. Pritchard. A chamber of commerce was established, Boy and Girl Scout movements were initiated, and there was talk of a YMCA and a YWCA.

Late in 1956, Governor Lowe was moved from Samoa to the Governorship of Guam, and was replaced by Mr. Peter F. Coleman. Mr. Coleman, a thirty-seven-year-old attorney and a veteran of World

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War II, is the son of an American father and a Samoan mother, is a native of Tutuila, and was educated in Hawaii and the United States. He has previously served as public defender and as attorney general.

Since the appointment of Governor Coleman, the principal accomplishment in American Samoa has been the solution of the transportation problem. Matson Line steamers call regularly at Pago Pago again, and Samoan Airways, organized by Mr. Lawrence Coleman, has commenced regular service from Tafuna airport in Tutuila to Apia in Upolu. In 1959, transpacific planes stopped off occasionally at Tafuna, and current plans call for improvement of that facility to enable it to receive the latest in jet-powered equipment.

Politically, events in Western Samoa have greatly overshadowed those in the American islands. In 1956, the New Zealand Parliament amended the Samoa Act to provide ultimate independence for Western Samoa. Since New Zealand has managed the affairs of those islands under a United Nations trusteeship, that body has considered the situation of the islands periodically. In 1958, the two Fautua of Western Samoa, the present Tamasese and Malietoa, who were to be the joint "head of state," visited United Nations headquarters, and pointed out that the Samoans desire to continue to live under their own "matai system," which has served them well for a thousand years, rather than to adopt the universal suffrage of Western democracy.

In 1959, a visiting committee of the United Nations adopted full self-government for Western Samoa by 1961 as its goal. To that end, the New Zealand administration and the Samoans established a cabinet government, with the current Mata'afa as prime minister. He took office in November, 1959. Remaining problems are determining the ultimate form of the head of state, and deciding upon the nature of the links with New Zealand and the United Nations.

Thus in the very near future, there will be an independent Samoa, and the inhabitants of the American islands will have to choose whether to align themselves with it or to remain within the orbit of the United States, probably in a commonwealth status, similar to that suggested many years ago by Mr. V. S. K. Houston.

The Samoans in all of the islands are one people, sharing one way of life, but the people of Tutuila and Manu'a are subjected to a cultural tug of war which draws them, on the one hand, toward their own

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people, and on the other, toward Hawaii and the United States. While the ties of consanguinity and of culture might be expected to be the stronger, especially in view of the intense nationalism which appears to be developing in Western Samoa, the desire for United States citizenship remains very real. Furthermore, there are complicating factors in the *fa'aSamoa* itself. The inhabitants of American Samoa are the "poor relations" of the race, and Western Samoa may hesitate to saddle itself with economic responsibility for them, and except for the still vacant place of the Tui Manu'a, the high chiefs in American Samoa are considerably junior to those of Upolu and the Savai'i. Having been treated with deference as the highest local authorities by the United States for sixty years, they might be reluctant to resume their inferior status in an all-Samoan state.

At this juncture, it is impossible to predict the political future of the American islands. Whatever the wishes of the people prove to be, the United States is bound in honor to see that they are realized.

*Soifua*

## Note on the Samoan Language and Glossary

THE Samoan language has five vowels (a, e, i, o, u), pronounced as in the Romance languages.

There are nine indigenous consonants (f, g, l, m, n, p, s, t, v), pronounced as in English with one important exception: the g-sound is always preceded by an n-sound. Thus "Pago Pago" is pronounced to rhyme with the "pong" in "ping pong"; Pong-o Pong-o. (Why this n-sound was omitted when the language was reduced to writing is not known, but it is too late to change.)

An apostrophe before a vowel indicates "a glottal stop," not quite an "h." Thus the word *alii* (chief) is almost ah-lee-hee.

The consonants "k" and "r" have inevitably crept into Samoan, since without them it would be impossible to indicate the sounds of necessary imported words such as "Amerika" and "Kirisimasi" (Christmas).

The Samoan words which appear in the text are the following:

SAMOAN WORD	ENGLISH EQUIVALENT
<i>afioaga</i>	excellency
<i>oiga</i>	extended family, a "relative" therein
<i>aitu</i>	spirit
<i>alu</i>	go
<i>'ava</i> (or <i>kava</i> )	<i>kava</i> (plant, drink, or ceremony)
<i>aua'uma</i>	unmarried women's association
<i>atunaga</i>	untitled men's association
<i>ausoga</i>	destruction of property
<i>fa'ala'upega</i>	what a community venerates
<i>fa'amasei'au</i>	public defloration
<i>fa'aSamoa</i>	the Samoan way of life
<i>falifeau</i>	clergyman



No. XX.—ON *POLYTREMA* AND SOME ALLIED GENERA. A STUDY OF  
SOME SEDENTARY FORAMINIFERA BASED MAINLY ON A COLLEC-  
TION MADE BY PROF. STANLEY GARDINER IN THE INDIAN OCEAN.

By SYDNEY J. HICKSON, F.R.S., *Professor of Zoology in the University of Manchester.*

(COMMUNICATED BY PROF. J. STANLEY GARDINER, M.A., F.R.S., F.L.S.)

Read 4th May, 1911.

(Plates 30—32 and one Text-Figure.)

I. INTRODUCTION.

SOME years ago Professor Stanley Gardiner sent to me a small collection of Stylasterina from the Indian Ocean for investigation and description; but I found included in the consignment some purple and yellow corals which, having a superficial resemblance to some varieties of *Distichopora*, might easily be mistaken for Stylasterina in the process of sorting out the specimens of such a large collection as Prof. Gardiner made in the course of his expedition. Having no special knowledge of the Foraminifera it did not occur to me at once that these large dark red and yellow corals could have any relation to the well-known genus *Polytrema*, but further investigation convinced me that the specimens were identical with or closely allied to the specimens collected in the Gulf of Manaar by Captain Warren and described by Carter (5) as *Polytrema cylindricum*.

Carter's description of his new species was very brief and I found it very difficult to understand the reason for including it in the genus *Polytrema*, as there are many characters, apart from its great size and its colour, in which it differs from the *Polytrema miniaceum* that is found in the Mediterranean Sea and elsewhere and is so well known to zoologists by the researches of many investigators. I endeavoured, therefore, in the first place to clear my mind as to the essential characters of the genus *Polytrema*; but, on reference to the literature, I came across a great difficulty which it took me some time to unravel.

The accounts given of the structure of *Polytrema* by different authors of repute are not consistent, and the inconsistencies cannot be accounted for by any supposition that they are due to gross inaccuracy of observation and description.

Fortunately there is in the Manchester Museum the large and valuable collection of Foraminifera made by Mr E. Halkyard and included in this collection are several specimens of Foraminifera labelled *Polytrema miniaceum*. On making a careful examination of one series of specimens in this collection from the West Indies I found that the structure of the surface corresponds very closely with the description given by Carpenter and is totally different to that given by Max Schultze, Merkel and Lister, but on the other hand the descriptions given by Max Schultze, Merkel and Lister agree quite accurately with the structure I was able to observe on the specimens collected at Nice and from a locality off the Kermadecs in the S. Seas.



This led me to test the provisional hypothesis that the specimens examined by Carpenter and those examined by some of the other observers belong to quite distinct genera. I therefore searched through all the many bottles of Corals, Alcyonaria and other specimens of marine fauna in the laboratory and examined any red patches I could find that had the least resemblance to a *Polytrema*; and I also examined a large number of specimens of the genus in the collections at the British Museum.

The result was to prove conclusively that there are at least two distinct genera of Foraminifera included in the group of specimens which are usually labelled in Museums "*Polytrema miniaceum*" and that these two genera differ from one another by constant and well defined characters. For the form that is certainly common in the Mediterranean Sea but is also widely distributed in other parts of the world I propose to retain the generic name *Polytrema*, for the other genus which does not, so far as my information goes at present, occur in the Mediterranean Sea at all, I propose the new generic name *Homotrema*.

But to return to the specimens identified as *Polytrema cylindricum*. A critical examination of my own specimens proved that their structure was in many respects quite distinct from that of either *Polytrema* or *Homotrema*, and having convinced myself that they are not gross, overgrown or hypertrophied specimens of either of these two genera I propose now to constitute for them a new generic name *Sporadotrema*.

I wish to acknowledge the assistance I have received in the course of this investigation from Mr H. Sidebottom, a well-known authority on the Foraminifera, and from Professor Burrows of the Manchester University whose advice I have followed in the construction of the new generic names.

I am also indebted to the authorities of the Free Public Museum at Liverpool for the loan of the type specimens of *Sporadotrema cylindricum* and to Mr Kirkpatrick for his assistance in my study of the specimens of *Polytrema* in the British Museum.

The very fine set of specimens and preparations of the genus *Polytrema* made by Mr E. Halkyard which was recently presented to the Manchester Museum with the rest of his rich collection of Foraminifera has been of invaluable assistance to me in the study of the genus.

## II. DIAGNOSES OF THE THREE GENERA.

### 1. POLYTREMA.

The original description of this genus given by Pallas (14) is as follows :

*Millepora miniacea*—*M. pumila subramosa rubra, punctis crebris impressis minutis. Maris Mediterranei, Americani, Indicique Corallia.*

Tournefort\* committed himself to the view that this coral was the beginning of the true red coral, i.e. *Corallium*. It was Risso, in 1826, who separated it from the genus *Millepora*, but Dujardin, in 1841, first placed it tentatively among the Rhizopoda.

Coming down to more recent times the more important papers on the genus are by Max Schultze (15), Möbius (13), Carter (3) and Merkel (12).

\* Mem. Acad. Sci. 1700, p. 35.



The coral may be in the form of small flat encrusting disks on corals, shells and rocks, or in the form of short branching coralline structures rising from a flat and sometimes spreading base. The usual size of the branching forms from the Mediterranean Sea is about 3—4 mm. in height and 4—5 mm. in diameter at the base. The flat encrusting forms are very variable in shape and size, the largest patch from the Mediterranean I have seen is 6 mm. in length but of irregular shape. The specimens from other parts of the world do not seem to grow much larger than the Mediterranean specimens. The greatest height attained by the branched specimens in Möbius' large collection off Mauritius was only 3.5 mm. The finest specimen I have seen came from the Ki Islands in the Malay Archipelago (Plate 30, fig. 1, Plate 31, fig. 8), Siboga station 250, 90 metres. It is 7 mm. in height and one branch alone is 6 mm. in length.

The colour is usually pale red, of a tint that has variously been described as "cinnabar," "carmine" or "peach colour," but pale pink and white varieties are known.

There can be no doubt that the genus has a very wide distribution in the tropical and temperate seas. It certainly occurs in the Mediterranean Sea, the Indian Ocean, the Malay Archipelago and the S. Pacific Ocean (Kermadecs, Funafuti, etc.) but I have not yet found any specimens from the W. Indies or from the shores of the American continent.

It is not necessary to describe the structure of *Polytrema* in detail but it may be useful for purposes of comparison with the two allied genera (cf. pp. 447 and 450) to state the principal characters that can be used for distinguishing the genus.

The surface is perforated by two kinds of pores, the larger or pillar pores ("Pfeilerporen" of Merkel) gradually shelving from a diameter of 0.08 mm. to a diameter of 0.03 mm. and the smaller and far more numerous pores or foramina opening abruptly with a diameter of about 0.005 mm. (Plate 32, fig. 23). Below the surface there is a series of laminae perforated by foramina similar to those of the surface lamina and these laminae are connected together and supported by the hollow pillars (Pfeiler) (Plate 32, figs. 18 and 27). The walls of the pillars are not perforated by foramina but there may be one or more than one passage ("Lochern" of Merkel) by which the cavities of the pillars are connected with the intralaminar spaces.

## 2. HOMOTREMA.

It is difficult to determine whether the original specimens described under the names *Millepora miniaceum*, *Polytrema corallina* and *Polytrema miniaceum* by Pallas, Risso and Dujardin belong to this new genus *Homotrema* or to the genus *Polytrema*. Lamarek (10) described his specimens of *Millepora rubra*, some of which came from the "American ocean," as "*sublobata*, poris crebris minutis punctata." I believe these specimens belong to the new genus *Homotrema*. The specimens described by Max Schultze (15) clearly belong to the genus *Polytrema* and it is evident that the specimens described by Carpenter (2) belong to the genus *Homotrema*. Max Schultze's specimens came from the Mediterranean and he states that he examined Carpenter's specimens which came from the South Sea, and although they showed more variation than his, he had no doubt they were the same specific form. Schultze's opinion that the specimens from the two localities are undoubtedly the



same species is difficult to understand when the descriptions given by the two authors are compared.

Carpenter for instance lays stress on the fact that "the surface is always areolated" and "the areolæ are porous while their boundaries are composed of solid shell substance." In describing the internal structure he says that the chambers communicate by large circular pores and smaller orifices. It is noteworthy that he does not state that the walls of the chambers are perforated by foramina nor in the figure does he show any foramina except those at the surface. Carpenter's statement moreover that "sometimes its stalk, instead of branching swells into a globular protuberance" is quite consistent with the view that the form he described was a *Homotrema*. I have not seen any specimens of *Polytrema* for which this statement of the shape could be considered accurate\*.

If Max Schultze's account of *Polytrema* be compared with that of Carpenter it will be noticed that on all these important points the two authors are at variance.

Carter (3) evidently examined a large number of specimens which he considered to be *Polytrema miniaceum* from the Mediterranean Sea and from other parts of the world.

His figure 6 of the species appears to me a composite production, the upper part being taken from a true *Polytrema* and the lower part from a *Homotrema*. I have never seen any such combination of the characters of the two genera in any one specimen. Both his figures and his description appear to have been composed from notes taken from the examination of a number of specimens of a mixed collection of the two genera.

The very careful and accurate description of *Polytrema* by Merkel gives absolutely no support to Carter's views.

The coral may be in the form of flat encrusting disks, or of a short erect coralline structure rising from a flat and sometimes spreading base and showing an expanded crown springing from a constricted stalk terminating in a number of short arms or verrucæ (Plate 30, fig. 2, Plate 31, fig. 9). The size of the erect forms in my collection is from 5—6.5 mm. in height, 4—6 mm. in diameter across the crown, and 2—3 mm. in diameter across the stalk. The specimens of flat encrusting forms that I have seen are (1) from S. America 12 × 7 mm. and 8 × 8 mm.; (2) from Coin, Peros Banhos Atoll 6 × 8 mm. and 6 × 6 mm. The colour is nearly always red, but the tone of colour is darker and more purplish than is usually the case in *Polytrema*†.

One series of specimens from Coin, Peros Banhos Atoll, was pink, and I have seen

\* Pallas, p. 252, wrote "Americana varietas plerumque verrucæ magnæ inæqualis speciem habet, quæ superficie sparsos ramulos exserit." This is remarkable because it would apply admirably to many specimens of *Homotrema* in my collection but not to any specimens of *Polytrema*, and at present there is not any evidence that the genus *Polytrema* occurs on the American coast although *Homotrema* is common.

† Note on colour. As it is very difficult to express in words the exact difference in colour between these "red" corals I have consulted Mr H. Cadness of the Manchester Municipal School of Art and the suggestion he makes is that the term "apricot red" might apply to the specimens of *Polytrema* from the Mediterranean Sea and "salmon-colour" to the specimens from the West Indies. It is of considerable interest, in this connection, to note that Pallas in his description of *Millepora miniacea* records his observation of a difference in colour between his specimens from the Mediterranean and those from the American sea, the former being in all probability specimens of *Polytrema* and the latter of *Homotrema*. His words are, "Color hujus elegantissimi Corallioli ex Mari Mediterraneo allati, pallide roseus solet, interdum saturatior. Quod in Coralliis Indicis reperitur pulchre cinnabarinum colorem exhibet, saturatissimum vero specimina in Coralliis testisque exesis Maris Americani reperiunda."



some white specimens, but it is probable that all of these were technically dead. The distribution of *Homotrema* is still imperfectly known, but I have seen specimens from the Ki Islands 129 fms. and from Celebes in the Malay Archipelago, from various localities in the Indian Ocean, from the West Indies, and from the Coast of S. America.

In both *Homotrema* and *Polytrema*, as in other sedentary coralline structures, the form of the full grown skeleton is very variable, but the study of a large number of specimens shows that in *Polytrema* the ramification is more complete and the branches longer and more slender than in *Homotrema*. This difference between the genera is not only indicated by Pallas (p. 446 footnote), but also by Lamarck, who by the use of the word "sublobata" instead of "subramosa" suggests that his own specimens of *Millepora rubra* did not branch. In *Homotrema* the larger specimens often assume a mushroom shape, the free end being considerably expanded and giving off short blunt processes, whereas the proximal end is contracted into a relatively slender stalk.

The combination of the two characters of colour and form are frequently sufficient to determine a specimen without the use of any magnifying glass at all. But of course no specimen can be determined with certainty to be a *Polytrema* or a *Homotrema* until its surface characters have been examined by at least a half-inch microscope objective.

The description of the structure of *Homotrema* for comparison with that given for *Polytrema* on p. 445 is as follows.

The surface is marked by clearly defined areolae about 0.1 mm. in diameter perforated by a large number of small foramina, .001 mm. in diameter. The boundaries of the areolae are solid, and there are no pillar pores. Below the surface there may be seen a number of chambers communicating with one another by large open passages and bounded by solid walls. There are no hollow pillars and no foramina except those on the outer walls of the superficial chambers (Plate 32, figs. 19, 22, 28).

### 3. SPORADOTREMA.

The specimens of this genus that were first discovered were found by Captain Warren in the Gulf of Manaar and described by Carter (5) under the name *Polytrema cylindricum*. By the kindness of the authorities of the Public Museum at Liverpool I have been able to examine the type and co-type specimens. They belong to the "Amirante" facies\* of *Sporadotrema* but are very small specimens. The type specimen is 6 mm. in height and 2 mm. in diameter. The illustration of *Polytrema miniaceum* in Brady's Plate CI, fig. 5, of the Challenger "Foraminifera" represents a *Sporadotrema*. There is a specimen of *Sporadotrema* similar in general structure to the "Amirante" facies in the British Museum from the Macclesfield Bank and there is also in the same institution a pink specimen resembling the "Saya de Malha" facies. I have examined the type specimen of Carter's *Polytrema mesentericum* in the British Museum and found that it belongs also to the genus *Sporadotrema*, but it is a distinct species. The type specimen is very much water-worn and the locality from which it came is unknown, but I have found a number of fine specimens in a collection of Alcyonaria made by Professor Haddon in Torres Straits.

\* For an explanation of the use of this term see p. 451.



*S. cylindricum*, facies Providentiæ.

Providence (D. 7) 70 fathoms. Several large specimens (Plate 30, fig. 3).

*S. cylindricum*, facies Amirantiæ.

Amirante (E 1) 29 fathoms, 2 specimens.

Amirante (E 2) 29 fathoms.

Amirante (E 9) 34 fathoms (Plate 30, fig. 6).

Amirante (E 12) 32 fathoms.

Amirante (E 13) 20—22 fathoms.

All the above are salmon colour.

Saya de Malha (C 1) 150 fathoms.

Saya de Malha (C 16) 26 fathoms, 2 small specimens (Plate 30, fig. 7).

Providence (D. 4. 10. 05) 50—78 fathoms.

Cargados Carajos (B 9) 30 fathoms.

The above are orange coloured.

The type of the species is red in colour and belongs to the "Amirante" facies. It came from the Gulf of Manaar. In the British Museum there is an orange coloured specimen of the Amirante facies from the Macclesfield bank.

*S. cylindricum*, facies Saya de Malhensis.

Saya de Malha (C 16) 26 fathoms.

Saya de Malha (C 19) 29 fathoms (Plate 30, fig. 4).

Providence (D. 4) 78 fathoms.

In the British Museum there is a specimen of this facies, locality unknown.

*Sporadotrema mesentericum* (Carter).

This species is found in Torres Straits (Plate 30, fig. 5).

## V. SOME NOTES ON STRUCTURE.

*The siliceous spicules.* All the specimens of the three genera I have examined have the habit of picking up and incorporating the siliceous spicules of sponges. This habit is not peculiar to these genera but occurs in other genera, such as *Carpenteria*; and it is probably comparable with the habit of picking up sand grains and other foreign bodies by the arenaceous Foraminifera, as in some cases I have found grains of sand and the frustules of Diatoms (*Coscinodiscus*, etc.) enclosed in the chambers. Lister (11) speaks of the sponge spicules taken up by *Polytrema* as "a temporary scaffolding for the support of the extended pseudopodia, in advance of the proper wall." The number of sponge spicules seen in different specimens varies very considerably. In many specimens of *Sporadotrema* the spicules are so numerous that the free edges may be said to bristle with them, in others only a few scattered spicules may be observed. (Some of the spicules may be faintly seen in Plate 31, fig. 16.) In the chambers broken fragments of siliceous spicules are invariably found but in the solid calcareous walls of the chambers and particularly in the central hard core of the larger specimens of *Sporadotrema* very few spicules can be found. It is difficult to



believe that any of the spicules that are seen at the free edges are cast off when they have served the purpose of a "temporary support for the extended pseudopodia" because the greater number of them are firmly fixed into the solid calcareous skeleton and cannot be withdrawn by pulling hard with a pair of forceps. Nevertheless there are far fewer spicules in the calcareous substance, at a little distance from the free edges, than one would expect to find if it is a fact that they remain unchanged as a matrix for the deposit of the calcium carbonate. I am forced to the conclusion that in the process of the deposition of the calcareous skeleton many of these siliceous spicules are dissolved. If there is not some solution of the siliceous spicules it is very difficult to account for the numerous fragments of spicules that occur in the intralocular protoplasm. The spicules are taken up whole at the ends of the branches and so far as I can observe at the ends of the branches only. No spicules or fragments of spicules can be seen in the foramina that perforate the sides of the main stem, base or branches. The fragments of spicules in the chambers therefore must be derived from spicules taken up when those chambers were first formed and at the growing points, or possibly passed down to them with the flow of protoplasm from other chambers at the growing points. At the growing points however all the spicules seem to be perfect, at least they are much longer than the diameter of the chambers and very much longer than most of the fragments of spicules found in the older chambers. The sponge spicules must therefore either be forcibly broken or partly dissolved after they are incorporated into the substance of the organism and it seems to me that the view that they are partly dissolved is the more reasonable of the two.

It is difficult to account for the presence of the spicules in these Foraminifera. They are quite constant in their occurrence and consequently it seems probable that they play some essential part in the physiological processes of the species. The regularity of their arrangement and the fact that, usually, very few other foreign bodies than the monaxon siliceous spicules of sponges are found, show that they are not picked up at random but selected from the mud in the neighbourhood and deliberately placed in position.

That they are of foreign origin there can be no reasonable doubt. The sponges from which they collect their spicules must live in the neighbourhood of the Polytremids, or the Polytremids must live in a region where sponge spicules play an important part in the formation of the sand or mud. Not infrequently the sponges cover a part of the Foraminifer or, in some cases, completely overwhelm it. This is a special danger to which the Polytremidæ and some other calcareous organisms are exposed. Forty years ago there was an interesting discussion on the origin of the siliceous spicules in these Foraminifera. Gray (7) and Carpenter (2) maintained that both the siliceous spicules and the calcareous skeleton are the products of the same organism, Max Schultze (15) and Carter (3) on the other hand strongly opposed these views and maintained that the siliceous spicules are of foreign origin. The controversy would be of little more than academic interest in these days were it not for the fact that in a recent paper Kirkpatrick (9) has suggested that *Merlia*, which he considers to be a sponge, does actually secrete siliceous spicules and a calcareous chambered shell. Having had an opportunity of examining the structure of specimens of *Merlia* and arrived at different conclusions to those of Kirkpatrick I will postpone the discussion of this question to a subsequent paper.



*The structure of the shell.* In comparing the three genera, attention may be called to the relative hardness and density of the skeleton. In *Sporadotrema* and particularly in the "Providentiæ" facies of the genus and in *S. mesentericum* the skeleton as a whole is very hard and rigid. This hardness of the skeleton may be expressed by the use of Carter's words "Consistence stony." In *Polytrema* on the other hand the consistence of the skeleton is very brittle. It may be easily crushed into fragments between the finger and thumb. In *Homotrema* the consistence of the skeleton is intermediate between that of *Sporadotrema* and *Polytrema*.

This difference in consistence is due to the difference in structure of the three genera. The structure of the branches of *Polytrema* is very difficult to understand when taken by itself. The structure of the branches of *Homotrema* and *Sporadotrema* seem to me to throw light upon it and render its understanding more easy. If the growing end of a branch of a *Sporadotrema* is examined it will be found to consist of a circle of more or less biconvex or almost spherical chambers arranged on edge at the tip of the branch. The convex surface facing outwards of each of these chambers is perforated by foramina, the convex surface facing inwards is not perforated by foramina (Text-fig. A). The free edge of each chamber is produced into three or four tubular processes sometimes arranged like the points of a cock's comb (Plate 31, figs. 15 and 16). In well-preserved specimens one or more of these tubes has a trumpet-shaped mouth the lips of which are the beginnings of a new chamber. Tubular processes similar to those at the edge are sometimes situated on the inner convex surface. Surrounded by these terminal chambers there is an interocular space (Text-fig. A i).

The structure of the branches of *Polytrema* is far more difficult to understand, and the descriptions given of it by Schultze, Möbius and Merkel are not consistent. After careful observation of several specimens from different parts of the world I am quite convinced that there is a wide range of structure of these parts and that a new series of investigations based on the study of a large number of specimens is very desirable. There can be no doubt that zoologists who have given their attention to the Foraminifera have been inclined to "lump" all the Polytremitidæ into one species. I believe that when the detailed structure is more carefully examined there will be a swing of the pendulum and the genus *Polytrema* will be split into a large number of species.

However, I will in this statement refer only to one or two points upon which there is inconsistency of statement in the descriptions of previous writers and then describe what I believe to be the structure of the growing point of specimens of *Polytrema miniaceum* from the Mediterranean.

Möbius describes in the branches of specimens of *Polytrema* he obtained in Mauritius a central canal (eine centrale Kammer) around which the chambers are arranged spirally or in circles. Merkel denies the existence of a true central canal but describes excentric canals and spaces opening to the exterior with imperforate walls (Scheidewände) formed by the fusion of the pillar walls. Lister writes of "axial spaces" which open widely at the ends of the branches.

The spaces with imperforate walls, sometimes opening to the exterior at the end of the branches, can be clearly distinguished in some specimens (Text-fig. B i); but in a very



large number of specimens they do not occur at all and the presence of centric or excentric canals is certainly not an essential feature of the structure of the branches of the genus *Polytrema* or of its species *P. miniaecum*. The statement that the branches of *Polytrema* consist of 3—4 joints (gliedertartigen Abschnitten) made by Merkel and confirmed by a good figure, is not of general application. I have examined a very large number of specimens from the Mediterranean Sea and from other localities and I have not yet been fortunate enough to discover a single one that corresponds with this description. The chambers of the arm of a *Polytrema* are very variable in shape and size and they communicate freely with their neighbours of the same row or stratum. Their outlines are indicated only by the pillars (Text-fig. B P). At the free end of a branch there may be seen a variable number of openings. In the diagrammatic text-illustration B, I have shown four such openings. Of these three may be regarded as homologous with the

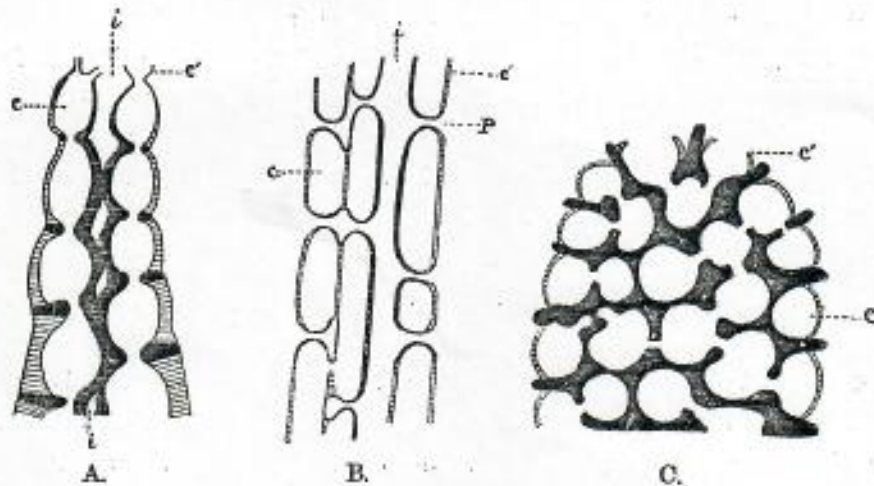


Fig. 1. Diagrams to illustrate the structure of the growing points of A. *Sporadotrema*, B. *Polytrema*, C. *Homotrema*, c' incomplete chambers, c completed chambers, i interocular spaces, P pillar pores of *Polytrema*.

openings of incomplected chambers and the fourth (i) as the opening of an interocular canal or space. The incomplected chambers have walls perforated by foramina on the sides that are free and external as in *Sporadotrema*, but unlike *Sporadotrema* the walls separating one chamber from another that lies internal to it are also perforated by foramina.

The wall of a chamber that separates it from an interocular space is imperforate.

At the growing point of a *Sporadotrema* (text-illustration A) there is, as a rule, only one circle of chambers enclosing an irregular interocular space. In *Polytrema* on the other hand there may be a cluster of chambers, two, three or more deep on one side, and one or two deep on the other, enclosing an excentric or possibly in some cases a centric interocular space. The pillars P represent the distal and proximal sides of chambers of a row and their cavities are really interocular spaces which may be continuous with the walls of the deep seated interocular canals.

The characteristic feature of the branch of a *Polytrema* is that the chambers appear to be very irregular in outline and this is due to fusion of neighbouring chambers which



may be explained as an expansion of the communicating passages which are seen in *Sporadotrema* and *Homotrema*.

In *Homotrema* (text-illustration C) there are apparently no interocular spaces. In a vertical section through one of the verrucæ a cluster of chambers may be seen, communicating with one another by large irregular passages. All these chambers, except those at the surface, have solid walls which are not perforated by foramina. The chambers at the surface exhibit a convex outer wall perforated by foramina. At the apex of each verruca a few chambers, with incomplete outer walls, can always be seen.

*The foramina.* When a specimen of *Sporadotrema* is decalcified and stained, one of the most noteworthy features to be seen is a series of approximately parallel moniliform tubes which break up into branches at the inner end before terminating in a perforated membrane on the outer wall of a chamber and open by a single large aperture at the surface (Plate 32, fig. 32).

These tubes line the foramina, as can be seen in a stained section of hard and soft parts together, and they are of a chitinous texture. Similar chitinous tubes have been described and figured for *Polytrema* by Merkel and Möbius, but whereas in *Sporadotrema* the tubes may be as much as 2 mm. in length, in *Polytrema* they are rarely more than .02 mm. in length. In *Polytrema* the tubes are usually simple, but as Merkel has correctly pointed out they sometimes divide at their inner ends. In *Sporadotrema* they are simple only in the region of the terminal chambers; but, on the branches and stems they always divide into a considerable number of smaller tubes which terminate in the chambers. In the figures I have drawn only three or four of these secondary tubes—that is the number that can be seen in a thin vertical section—but there must be actually nine or ten branches springing from each of the main foraminal tubes.

In many of the tubes there may be seen a few or in some cases several chitinous plates stretching transversely across the tubes and these plates have all the appearance of the tabulæ of a tabulate coral except in texture. In the specimen of *Sporadotrema mesentericum* that I have examined these tabulæ seem to be more pronounced than in the other species and, as shown in Plate 32, fig. 25, the foraminal tubes in this species have the appearance of being regularly tabulate.

Two important questions naturally arise concerning these tabulæ: (1) Are they complete tabulæ, that is to say, do they completely occlude the foramen? (2) Are they supported in any way by calcareous tabulæ?

To the first of these questions it is difficult to give a definite answer. In nearly all the good sections I have examined of decalcified sections and of ground sections of the hard parts they seem to be perforated, but it is still quite possible that in some cases they do completely close the passage. With such delicate structures as these are, it is always difficult to determine the extent of the damage done either by the process of decalcification or of grinding.

To the second question the answer is that in *Sporadotrema mesentericum* there are certainly narrow projecting shelves of calcareous substance supporting the chitinous tabulæ (Plate 32, fig. 33), and it is probable that they also occur in some of the older foramina in *S. cylindricum* as well.



In *Carpenteria* the chitinous tubes were shown by Möbius (13) to be marked by transverse lines, and these lines probably represent ring-shaped thickenings of the chitin.

In *Polytrema* they are shown to be marked by a series of rings (see Plate 32, fig. 31, copied from Merkel (12)).

In *Sporadotrema* (fig. 32) they are usually moniliform and frequently marked by a series of ring thickenings. These facts alone, which are easily demonstrable, point to the conclusion that the growth in thickness of the outer wall is not continuous but marked by a series of intermittent stages of activity, and it is at each of these stages of activity that the narrow calcareous shelves are or may be formed.

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## EXPLANATION OF THE PLATES.

## PLATE 30.

- Fig. 1. *Polytrema miniaceum*. A specimen from 90 metres off Ki Islands  $\times 4\frac{1}{2}$  diameters, showing the characteristic pale pink (or apricot red) colour.
- Fig. 2. *Homotrema rubrum* from Providence 50—78 fathoms  $\times 4\frac{1}{2}$  diameters, showing a darker (salmon colour) red tint.
- Fig. 3. *Sporadotrema cylindricum*, fac. Providentiæ; from Providence 70 fathoms  $\times 2$  diameters, showing the characteristic orange yellow colour.
- Fig. 4. *Sporadotrema cylindricum*, fac. Saya de Malhensis. Saya de Malha 29 fathoms  $\times 2$  diameters, showing the pale pink colour.
- Fig. 5. *Sporadotrema mesentericum* from Torres Straits  $\times 2$  diameters, showing the characteristic dark red colour.
- Fig. 6. *Sporadotrema cylindricum*, fac. Amirantiæ. Amirante 34 fathoms  $\times 2$  diameters, showing a darker red colour than (in Fig. 4) fac. Saya de Malhensis.
- Fig. 7. *Sporadotrema cylindricum*, fac. Amirantiæ. Saya de Malha 26 fathoms  $\times 1\frac{1}{2}$  diameters. This is an orange coloured variety of the facies.

## PLATE 31.

- Fig. 8. *Polytrema miniaceum*. A specimen from 90 metres off Ki Islands (Siboga Expedition)  $\times 4\frac{1}{2}$  diameters, showing the branching method of growth.
- Fig. 9. *Homotrema rubrum* from Providence 50—78 fathoms  $\times 4\frac{1}{2}$  diameters, showing the characteristic solid and tuberculate method of growth.
- Fig. 10. *Sporadotrema cylindricum*, fac. Providentiæ; from Providence 70 fathoms  $\times 2$  diameters. Note that the magnification of this is much less than that of Figs. 8 and 9.
- Fig. 11. *Sporadotrema mesentericum* (Carter) from Torres Straits (Haddon coll.)  $\times 2$  diameters.
- Fig. 12. *Sporadotrema mesentericum* from Torres Straits  $\times 2$  diameters. Side view showing the convex surfaces marking the outlines of the chambers.
- Fig. 13. *Sporadotrema cylindricum*, fac. Saya de Malhensis. Saya de Malha 29 fathoms  $\times 2$  diameters.
- Fig. 14. Transverse section through a stem of *Sporadotrema cylindricum*, fac. Providentiæ  $\times 5$  diameters, showing the thick outer wall perforated by the foramina, and the ring of chambers surrounding a more solid core. Pl. 32, fig. 20.
- Fig. 15. *Sporadotrema cylindricum*, fac. Saya de Malhensis. A terminal branch  $\times 9$  diameters. To show the outlines of the chambers clearly marked at the extremity where they are superimposed, becoming less clearly marked as the walls thickened and quite obliterated at the base of the branches and below.
- Fig. 16. *Sporadotrema cylindricum*. View of the same specimen as in fig. 15, to show the free edge. The spout-like openings of the terminal chambers may be seen and also the scaffolding of spicules which support the growth of the terminal chambers.
- Fig. 17. Vertical section through *Polytrema cylindricum*, fac. Providentiæ  $\times 6\frac{1}{2}$  diameters, showing the arrangement of the chambers in the stem and in one of the branches.

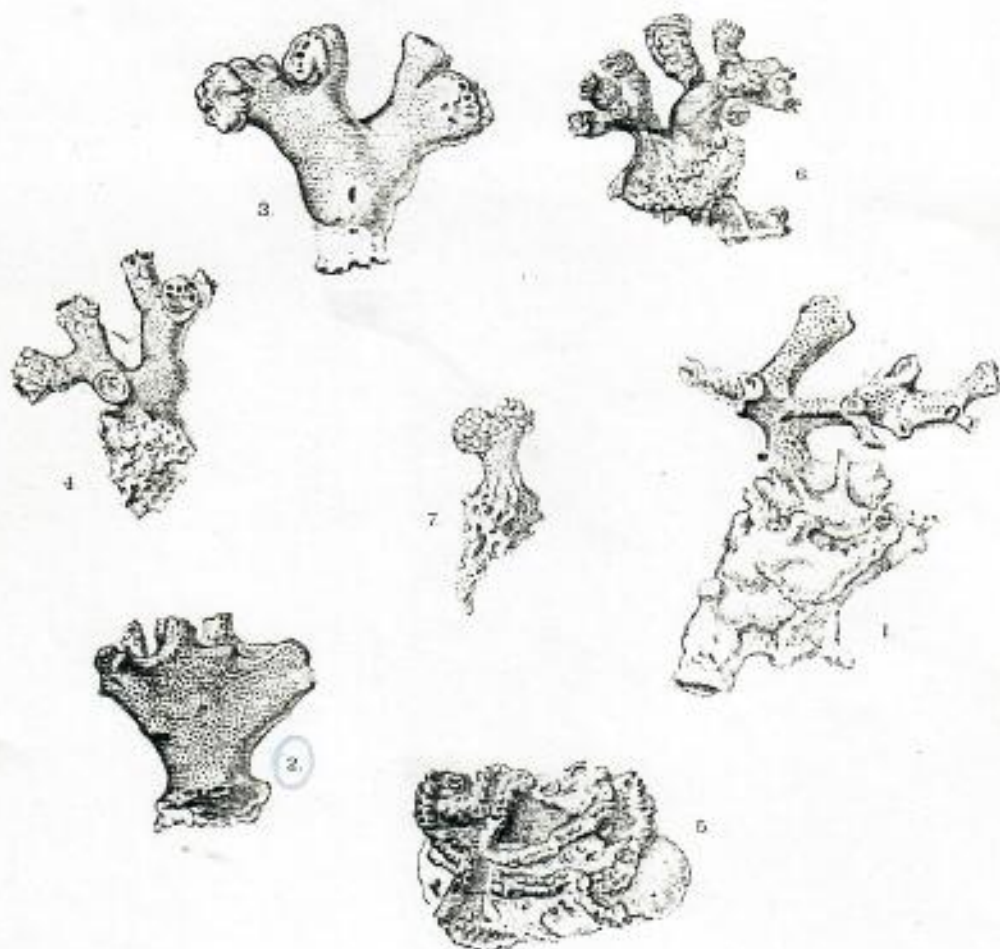
## PLATE 32.

- Fig. 18. Transverse section of a thick branch of a *Polytrema*, showing four concentric circles of chambers.  $\times 100$  diameters. p. pillar pores.
- Fig. 19. Transverse section of one of the verrucose processes of a *Homotrema*, showing that the outer wall (O) of the outer circle of chambers alone are foraminate. The other chambers composing the process are not arranged in definite circles, have imperforate walls but communicate with one another by large open passages.  $\times 100$  diameters.



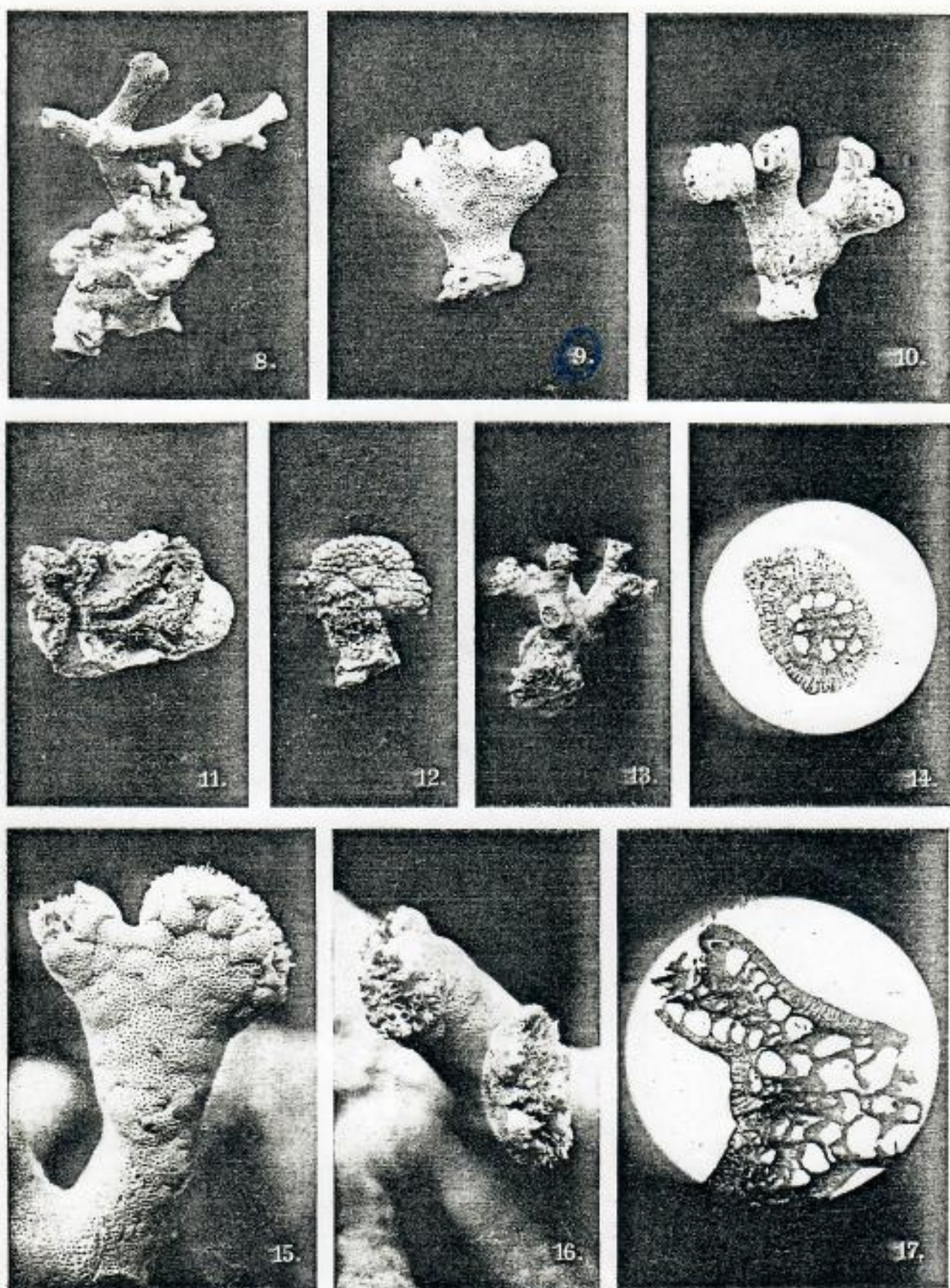
- Fig. 20. Transverse section through the base of a branch of *Sporadotrema*, showing a single circle of chambers with very thick and continuous outer walls perforated by foramina (*f*). Within the circle of chambers there is a core of calcium carbonate perforated by interocular passages (*i*).  $\times 6$  diameters. Compare this drawing with the photographs on Plate 31, figs. 14 and 17.
- Fig. 21. Surface view of a portion of a stem of *Sporadotrema*, showing the irregular arrangement of the foramina (*cc*).  $\times 50$  diameters.
- Fig. 22. Surface view of a portion of a *Homotrema*, showing the areolæ (*A*) perforated by foramina and bounded by solid walls.  $\times 50$  diameters.
- Fig. 23. Surface view of a portion of a *Polytrema*, showing the pillar pores (*P*) and the foramina perforating all the other parts of the surface (*f*).  $\times 50$  diameters.
- Fig. 24. Drawing of a growing point of a specimen of *Sporadotrema cylindricum*, fac. *Amirantia*, showing the young chambers (*cc*) at the edge with a cock's comb row of short tubes (*T*) opening freely on the distal margin.  $\times$  circa 9 diameters. Compare this drawing with the photographs on Plate 31, figs. 15 and 16.
- Fig. 25. Vertical section through a lamina of *Sporadotrema mesentericum* to show the tabulæ in the foramina (*f*). These tabulæ are probably never quite complete but perforated in the centre by a pore (compare fig. 33).  $\times 20$  diameters.
- Fig. 26. Transverse section of a part of a branch of *Sporadotrema* to show the relation of the foramina to the chambers (*c, c*).  $\times$  circa 18 diameters.
- Fig. 27. Transverse section of a part of a branch of *Polytrema* to show the relation of the pillar pores (*P*) to the chambers (*c*) and the interocular spaces (*i*).  $\times$  circa 200 diameters.
- Fig. 28. Transverse section of a part of a branch of *Homotrema* to show the perforated outer walls of the external chambers and the passages which establish communication between the chambers.  $\times$  circa 200 diameters.
- Fig. 29. Vertical section through the base of the stem of *Sporadotrema cylindricum*, fac. *Amirantia*, showing three of the initial chambers (*i.c.*). These chambers can be recognised by their regular oval shape and by the foramina which perforate their walls. Camera drawing  $\times 10$  diameters.
- Fig. 30. Chitinous tubes lining the foramina of *Carpenteria raphidodendron*. Copied from Möbius (13). Plate VI, fig. 3.  $\times 150$  diameters.
- Fig. 31. Chitinous tubes lining the foramina of *Polytrema miniacum*. Copied from Merkel (12).  $\times 580$  diameters.
- Fig. 32. Chitinous tubes lining the foramina of *Sporadotrema*.  $\times 150$  diameters.
- Fig. 33. One of the joints in a foramen of *Sporadotrema*, very much enlarged, to show the narrow shelf-like tabula.





1. POLYTREMA    2. RHINOTREMA    3-7. SPORADOTREMA





8. *Polytrema* x 4 $\frac{1}{2}$ . 9. *Homotrema* x 4 $\frac{1}{2}$ . 10. *Sporadotrema* x 2.  
11-17. *Sporadotrema*, various magnifications.

POLYTREMA FROM THE INDIAN OCEAN



Plates?

Pac.  
QL 641  
.G55  
1978

Chelonia - p 453  
See 460-61

# UNITED STATES EXPLORING EXPEDITION.

URING THE YEARS  
1838, 1839, 1840, 1841, 1842.

UNDER THE COMMAND OF  
CHARLES WILKES, U.S.N.

## HERPETOLOGY.

BY  
CHARLES GIRARD,

PROFESSOR OF MEDICINE AND SURGERY; CORRESPONDING MEMBER OF THE BOSTON SOCIETY OF NATURAL HISTORY;  
THE ACADEMY OF NATURAL SCIENCES OF PHILADELPHIA; THE SOCIETY OF NATURAL HISTORY OF NEW YORK;  
THE HALLIOT SOCIETY OF NATURAL HISTORY OF CHARLESTON, S. C.; THE CALIFORNIA ACADEMY OF  
NATURAL SCIENCES, SAN FRANCISCO; THE "SOCIETE HELVETIQUE DES SCIENCES NATURELLES";  
THE "NATURFORSCHENDE GESELLSCHAFT IN BERLIN;" AND THE "SOCIETE  
DES SCIENCES NATURELLES DE NEUCHÂTEL, (SWITZERLAND)," ETC. ETC.

WITH A FOLIO ATLAS.

PHILADELPHIA:  
J. B. LIPPINCOTT & CO.  
1858.

496pp



## ORDO IV. CHELONIA.

We come now to the last order, that of the Chelonians, which stands at the head of the class of Reptiles. Turtles seem to be the link, the transition, between their class and the higher classes of vertebrata: the Birds and Mammals.

Nothing more easily recognizable than a reptile of the Chelonian order: a double shield, one more or less convex or arched, is on the back, and known as the carapax; the other is flat or nearly so, opposed to the former, and called the plastron or sternum, both so combined as to constitute a kind of inflexible box or trunk, between the extremities or edges of which, the head, limbs, and tail, may, in most cases, be either entirely or partly retracted or withdrawn.

In all vertebrata, the solid frame is composed of a series of subcylindrical bones, the vertebrae, constituting a flexible chain in the direction of the longitudinal axis of the body, and on the sides of which the ribs are inserted, whilst the sternum, or breast bone, is placed under the latter, forming together a cavity, in which are found the principal viscera of the animal economy, the flesh or muscles enveloping the bony frame. In the Chelonians, the dorsal vertebrae and the ribs expand, and unite more or less intimately together, to form the rigid carapax and the sternum or plastron, both being protected exteriorly either by the skin alone, or else by horny and epidermic shields or large scales; the muscles as well as the viscera being lodged interiorly, the muscles along the inner surface of the bones, the viscera in the cavity proper.

The Chelonians have no teeth properly so to be called; the jaws are generally stout and robustly built, protected by a horny sheath, constituting a bill, in shape not unlike that of some Parrots and birds of prey, their edge being, however, occasionally serrated. The palate is toothless also. As to the tongue, it is thick and fleshy, freely mov-



ble, composed of numerous muscles, though not exertile, and filling altogether the lower floor of the mouth. The eyes are provided with distinct eyelids, and the drum of the ear or tympanum is either visible exteriorly or hidden under epidermic plates. The legs are short, thickish, and variously constructed, according to habits. The tail is subconical, and the vent or cloacal aperture circular.

The Chelonians are oviparous: the eggs, once laid, receive no further attention from their parents; the young, therefore, are left to their own care. They have numerous enemies in the shark and other carnivorous tribes, of which a large number become an early prey.

In the newly just-hatched young, the carapax is longer than broad in the sub-order of *Cheloni*, whilst it is circular in that of *Testudinata*. In the *Cheloni* also, the snout is more acute, and the upper jaw provided above with a pointed process, which disappears gradually during ulterior growth: the *Testudo nasicornis*, of Lacépède, and the "Rhinceros Turtle," of Shaw, allude to that transient peculiarity.

As a question of nomenclature, we do not see the propriety of retaining the name of *Testudinata* to designate this Order. True, it is older than that of *Chelonia*, but Klein,\* who was the first using it as a prefix to the Turtles, did not characterize the latter as a natural group; and moreover, the terrestrial species being enumerated first on his list, if the name is at all to be preserved, it will naturally revert to the sub-order including those species.

Alex. Brongniart† established the order of Chelonians upon a scientific basis, and his name is the one that ought to be retained.

It is preposterous, at any rate, to use the name of *Testudinata* in one sense, and that of *Chelonians* in another sense, in speaking of these Reptiles.‡

When the law of priority, in regard to scientific nomenclature, cannot be strictly enforced—and such is the case for a good many names of divisions higher than genera—it becomes the duty of the naturalist to select such names as may embody some philosophical idea, or recall to mind some historical fact, affording a safe guide towards further progress.

Thus, if it be admitted that the Reptiles under consideration were

\* De Quadrupedum dispositio a brevique historia naturalis, 1751.

† Bulletin de la Société Philomatique de Paris, 1800, 89.

‡ Contributions to the Natural History of the United States of America, I, 1857, 235 (note).

shown to constitute an Order, when the name of Chelonians (*Chelonia*) was applied to them, let these Reptiles be designated under the latter name.

Furthermore, the order of Chelonians subdivides into two natural sub-orders; and, since we find, in either of these sub-orders, a family and a generic name, typifying best their respective group, we deem it rational to call the first *Cheloni*, and the second *Testudinata*.

Syn.—*Cheloniæ*, BRONNI, in Bull. Soc. Philom. 1800, 89.—Cuv. Règn. Anim. II, 1817, 6; 24 ed. II, 1829, 5; & ed. illustr. Rept. 9.—DUM. & BISS. Répét. gén. I, 1834, 345; & II, 1835, 1.—TENN. & SCHLES. in Sibb. Faun. Japon. Esprit. 1838, 1. *Chelonia*, GRAY, in Ann. nat. Hist. I, 1838, 275; Catal. Tort. Croc. & Amphib. Brit. Mus. 1844, 3; & Catal. Shield. Rept. Brit. Mus. 1855, 1.—HOLAN. N. Amer. Herp. I, 1842, 21.

The synonyms of *Testudinata* will be found, further on, under the heading of that sub-order.

## SUB-ORDO I. CHELONII.

The Marine Tortoises are easily distinguished from the land and fresh-water tribes, and which constitute the sub-order of *Testudinata*. Their body is very much depressed, cordate or subcordate, generally even on the periphery of the carapax; the plastron, which is always much longer than broad, and immovable, is never completely ossified in the centre, being united to the carapax by a cartilaginous arch. The carapax and plastron, both, are either covered with horny scales or a leathery skin. The ribs remain free at their extremities. They are provided with four limbs, which cannot be withdrawn under the carapax: the anterior pair is much longer than the posterior pair, both of which being constructed to fulfil the act of natation; the digits are very long, individually immovable, firmly united into flippers, pallets, oars, or paddles, very much flattened, rendering their movements powerful and fast in water, powerless and slow on land, sandy beaches, and rocks. The hands are about four times longer than the forearms; and the feet about once again the length of the tibiae or

\* *Cheloniæ* and *Chelonia*, *Testudinidæ* and *Testudo*.



legs, properly so called. There are sometimes two claws to either flipper, at others only one, or else none at all. Whenever present, the thumb nail is more developed in the male sex than in the female. The tail is always short, thickish, subconical, and tapering.

The head is subquadrangular across the orbits, and more or less rounded, abbreviated, or subconical anteriorly, covered with polygonal plates, except in the adult of the "Leather Turtle" (*Sphargis*), in which the skin of that region is smooth and exposed as elsewhere. The orbits themselves are large. The nasal cavity rather small, and wider than long. The tympanum is hidden under the temporal plates. The neck is but little flexible: hence, the head is not retractile under the carapax.

Their food consists chiefly of marine plants, some species feeding likewise on crustacea and molluscs. Essentially of marine habits, they never leave the water, except at the period of laying eggs, which they deposit in the sand, not far from the shore.

This group includes the largest species of the order, and with whom the crocodiles alone, amongst other reptiles, can be compared as to size. The flesh of some of them is served upon our tables, as well as their eggs, which constitute an article of luxury. Others afford to commerce their "shells," which is used for various economical purposes, hence, of great utility to man, as well as a source of considerable revenue.

*Syn.*—*Chelonia*, *Oppel*, Rept. Prodr. 1811, 4, 6, & 8.—*Gray*, in Ann. of Philos. X, 1825, 210; & *Synops. Rept.* in *Griff. Anim. Kingd.* IX, 1831, 3.—*Wicam. & Rorup*, Handb. Zool. 1832, 163.—*Bonap.* Sages. Distr. Anim. Vertebr. 1831, 70; & *Chelon.* Tabul. Anst. 1836, 3.—*Agass.* Centr. nat. Hist. U. S. Amer. I, 1857, 249 & 308.  
*Pinnata*, *Marr.* Tent. Syst. Amph. 1820, 17.—*Bell*, in Zool. Joura. III, 1823, 516.

*Carettoidea*, *Fitz.* Neue Class. Rept. 1826, 5.

*Eretmochelone*, *Rorup*, in Nov. Act. Acad. nat. cur. XIV, 1823, 269.

*Oicropoda*, *Wagl.* Naturf. Syst. Amph. 1820, 133.—*Fitz.* Syst. Rept. I, 1843, 30.

*Thalassites*, *Dun. & Binn.* Erpét. gén. II, 1835, 506.

*Thalassides*, *Cuvon*, Catal. Rept. Malay. Pca. 1847, 11.

*Sea Tortoises or Turtles*, *Shaw*, Gen. Zool. III, 1, 1802.

*Observ.*—Two families constitute this sub-order, the *Sphargidae*, or Leather Turtles, and the *Cheloniidae*, or Scaled Tortoises: of the latter alone, do we find representatives in the collection made by the U. S. Exploring Expedition.

## FAM. CHELONIDAE, BOUAP.

The *Cheloniidae* may be distinguished from the *Sphargidae* at the very first glance by the existence of large epidermic scales covering the carapax and sternum, and by the presence also of horny plates over the head. In *Sphargis*, cephalic plates are observed only in young specimens; in the old, the head exhibiting the naked skin, as well as the surface of the limbs, which in *Cheloniidae* are protected by scales and plates of various size and shape. The apex of the lower jaw in *Sphargis* is serrated and curved upwards, whilst the upper jaw is notched laterally as well as anteriorly. In *Cheloniidae* the shape and structure of the jaws is peculiar in each genus. It may be that the same would be the case amongst *Sphargidae* were there more than one genus composing it.

*Syn.*—*Cheloniidae*, *Gray*, in Ann. of Philos. X, 1825, 212; Catal. Tert. Croc. & Amphib. Brit. Mus. 1844, 51; & Catal. Shield. Rept. Brit. Mus. 1855, 70.—*Bell*, in Zool. Joura. III, 1823, 516.

*Cheloniidae*, *Bonap.* Sagg. Distr. anim. vertebr. 1831, 71; & *Chelon.* Tabul. anal. 1836, 4 & 9.

*Chelonioides*, *Agass.* Contr. Nat. Hist. U. S. Amer. I, 1857, 324.

*Chelonia*, *Wicam. & Rorup*, Handb. Zool. 1832, 165.—*Fitz.* Syst. Rept. I, 1843, 30.

*Observ.*—Whilst the family of *Sphargidae* is composed of but one genus and a single well-determined species, that of *Cheloniidae* embraces various genera, some of which being composed of several species.

## GENUS THALASSOCHELYS, FITZ.

*GEN. CHAR.*—Head very large; jaws robust, anteriorly compressed, sharp and even upon their margin, and curved towards one another at the tip. Two pairs of frontal plates; an interfrontal, sometimes divided; a vertex plate; and two pairs of parietals. A middle occipital, very large; two pairs of latero-occipital; and several post-occipitals. Three postoculars. Mental shields present. Side of lower jaw protected by angular plates. Ca rapax cordate, ovate, posteriorly indented upon its periphery, covered with fifteen un-



imbricated shields, ridged in the young, even in the adult; marginal shields twenty-five or twenty-seven in number. Plastron ridged in the young, with six middle pairs of shields and four lateral ones; several postaxillar shields. Two claws to either flipper.

*Syn.*—*Les Cheloniés caouanes*, DUM. & BISS. *Erpét. gén.* II, 1835, 551.

*Thalassochelys*, FITZ. in *Zool. Ann. Wien. Mus.* (1836), 1841, 128; & *Syst. Rept.* I, 1843, 30.—BOYD. *Amph. Europ.* 1839, 12.—AGASS. *Contr. Nat. Hist. U. S. Amer.* I, 1857, 383.

*Caouana*, GRAY, *Catal. Tort. Croc. & Amphib. Brit. Mus.* 1844, 52; & *Catal. Shield. Rept. Brit. Mus.* 1855, 72.

*Caouanes*, CANTON, *Catal. Rept. Malay. Pen.* 1847, 13.

**ONSEY.**—The head is much larger than in any other genus of *Cheloniidae*, and the apices of the jaws more powerfully hooked and curved towards one another. The middle occipital plate is remarkable for its development; it seems to be the centre around which most of the others are disposed.

Daménil and Bibron were the first to distinguish the Loggerhead Turtle as a subgeneric group, without however giving any particular name to it. A year afterwards Fitzinger coined for it the generic appellation of *Thalassochelys*; and we dare say that, when John Edward Gray, in 1844, proposed to designate it under the name of *Caouana*, he meant to reinstate that which ought to have been adopted from the very beginning. In that manner the scientific nomenclature would simply have consecrated a vernacular appellation long since in use.

In the "Catalogue of Shielded Reptiles," Gray claims priority for his genus *Caouana* over that of *Thalassochelys*, referring the reader to the "Annals of Philosophy for 1825," where we have been unable to detect it.

The species for which the same author proposes the name of *Caouana elongata* (*Catal. Tort. Croc. & Amphib. Brit. Mus.* 1844, 53; & *Catal. Shield. Rept. Brit. Mus.* 1855, 73), belongs either to *Thalassochelys* or to *Lepidochelys*, but it is too imperfectly known to enable us to decide that question. It appears to be closely allied to *Testudo cepediana* (DAUD. *Hist. nat. Rept.* II, 1805, 50. *Pl.* XVII, fig. 1), which, in our judgment, bears stronger affinities to *Lepidochelys* than to *Thalassochelys*.

### THALASSOCHELYS CORTICATA, Grd.

(Plate XXIX.)

**SPEC. CHAR.**—Carapax rather elongated, subcordiform, nearly even in the old, exhibiting three longitudinal ridges in the young, in which the posterior margin is likewise more indented than in grown-up individuals. Marginal shields twenty-seven. Interfrontal plate divided. Four moderate mental shields in a transverse series. Four unequal, medium-sized plates on the side of the lower jaw, and several small ones posteriorly. Reddish-brown above; yellowish-brown beneath.

*Syn.*—*Testudo corticata*, ROXB. *Fisc. Mar.* 1554, Lib. XVI, Cap. iii.

*Testudo marina*, GESS. *Hist. Anim. Quadr. Ovip.* 1554, 114; & *Nomencl. Aquat. Anim.* 1560, 183.—ALDROV. *Quadr. Ovip.* 1621, 712. *Tab. decxiv.*—OLEAR. *Mus.* 1666, 27. *Tab.* XVII, fig. 1.—GORTW. *Physik. Anat. Bemerk. Schildd.* 1781, Figs. 1-4.

*Testudo caretta*, LINS. *Syst. Nat. ed. X*, I, 1758, 197; & *ed. XII*, I, 1766, 351.—WALL. *Chelonogr.* 1782, 4 & 95.—GUEL. *Linn. Syst. Nat. ed. XIII*, I, 31, 1788, 1038.—SCHAEFF. *Hist. Test.* 1792, 67 & 74. *Tab.* XVI, XVI b, & XVII, fig. 3.—DORSN. *Zool. Beitr.* III, 1798, 9.—LATR. *Hist. nat. Rept.* I, 1802, 53.—SHAW, *Gen. Zool.* III, 1, 1802, 85. *Tab.* XXIII, XXIV, & XXV (Bad).—CUV. *Règn. Anim.* 2d ed. II, 1829, 14; & *ed. illustr.* *Rept.* 20.—HOULAR. *N. Amer. Herp.* II, 1842, 33. *Pl.* IV.

*Testudo marina caouana*, CATESB. *Nat. Hist. Carol.* II, 1771, 40. *Tab.* XL.—RAY, *Synops. Meth. Anim. Quadr.* 1693, 257.

*Testudo cephalo*, SCUN. *Allg. Naturg. Schilddkr.* 1783, 303.

*Testudo caouana*, BONNAT. *Encycl. méth. Erpét.* 1789, 20.—BONNAT. *Zoogr. Naturg. Amph.* I, 1802, 110.—DAUD. *Hist. nat. Rept.* II, 1805, 54. *Tab.* XVI, fig. 2.—CUV. *Règn. Anim.* II, 1817, 13.

*Chelonia caouana*, SCHWENK. *Prodr. Monogr. Chelon.* in *Arch. Königl.* I, 1812, 292 & 418.—WAGL. *Naturl. Syst. Amph.* 1830, 133. *Tab.* I, figs. 1 & 26.—GRAY, *Synops. Rept.* in *Griff. Anim. Kingd.* IX, 1831, 53.—BINN. & BOYD, *Expéd. scient. de la Morée*, III, 1, *Zool.* 1832, 64.—DUM. & BISS. *Erpét. gén.* II, 1835, 552.

*Caretta cephalo*, MESS. *Tent. Syst. Amph.* 1820, 18.—MAXIMIL. *Beitr. Naturg. Bras.* I, 1825, 25.—Risso, *Hist. nat. Eur. mérid.* III, 1826, 85.

*Chelonia caretta*, GRAVENH. *Deic. Mus. Zool. Vratisl.* I, 1829, 7. *Tab.* I, fig. 3.

*Chelonia virgata*, WAGL. *Descr. & Icon. Amph.* 1838, 8. *Tab.* XXIX.

*Chelonia pelagiorum*, VALENC. *Rept. Mor.* 1832, 62. *Tab.* X.

*Chelonia* (*Caretta*) *cephalo*, LESS. in *Bélang. Voy. Ind. Orient. Zool.* 1834, 300.

*Chelonia cephalo*, TEMM. & SCHLAG. *Faun. Japon.* *Erpét.* 1833, 23. *Tab.* IV, figs. 1-8.

*Thalassochelys caouana*, FITZ. in *Zool. Ann. Wien. Mus.* I, 1841, 128; & *Syst. Rept.* I, 1843, 30.—AGASS. *Contr. Nat. Hist. U. S. Amer.* I, 1857, 384. *Pl.* VI, figs. 12-32, & *Pl.* VII, fig. 30.



*Croceana caretta*, GRAY, Catal. Tort. Croc. & Amphib. Brit. Mus. 1844, 52; & Catal. Sheld. Rept. Brit. Mus. 1855, 72.  
*Chelonia ruppellii*, GRAY, Brit. Mus. *Festulicaria marinciae pulfus*, SENN., Thez. Nat. I, 1734. Tab. LXXIV, fig. 4.  
*Tortue podibus pinniformis*, de GÜNKOV. Zoophyl. 1781, 71.  
*Tortue Kichourne*, DUFREY. Hist. nat. Antil. II, 1662, 228.  
*Les Crocans*, LABAT, Voy. Aux Isles de l'Amér. I, 1722, 304 & 308.—LACEP. Quadr. Océp. I, 1788, 95.—Cuv. Règn. Anim. II, 1817, 13; 2d ed. II, 1829, 14; & ed. illustr. Rept. 20.—TEMN. & SCHLEG. in Sch. Faun. Japon. Expéd. 1833, 23.  
*Morskikhvost*, MEYER, Zeitvertr. I, 1748. Tab. xxx & xxxi.  
*The Loggerhead turtle*, BROWN, Cir. & Nat. Hist. Jamaica. 1756, 465.—CATZSCH. Nat. Hist. Carol. II, 1771, 40. Tab. XI.  
*The Mediterranean tortoise*, BROWN, New Illustr. Zoolog. 1776, 116. Tab. XLVIII, fig. 5.  
*Tortugine di mare*, CETTI, Stor. di Sardegna, III, 1777, 12.  
*Croceana*, PARRA, Deser. Hist. nat. 1787. Tab. XLIII.  
*La Tortue nasicornue*, LACEP. Quadr. Océp. I, 1788, 103.—BONNAR. Encycl. méth. Expéd. 1789, 21. Pl. III, fig. 3.  
*La Tortue croceane*, BONNAR. Encycl. méth. 1789, 20.—BOSS, in Nouv. Dict. d'hist. nat. XXXIV, 1819, 256.  
*Rhinoceros turtli*, SHAW, Gen. Zool. III, 1, 1802, 95. Tab. XIV.

ONERAV.—There are various opinions entertained regarding the specific identity or difference between the Loggerhead Turtles of the Mediterranean Sea, and the eastern coast of the Atlantic, and those occurring on the western or American coast of that ocean. That they may cross the expansion of water just alluded to, is plausible; for they have been met with in the open sea. Still, the question recurs as to whether we have the same species on the American side, as on the European? It will take a long series of investigations to solve the problem, since it will become necessary to collect extensively, and study them very closely, in either places, and afterwards compare the specimens at various stages of growth.

Not having any other specimen at hand, except the one brought from Madeira, we are not prepared to institute any comparisons towards the elucidation of this subject. We have restored to it the oldest name given to the Loggerhead of the Mediterranean, which is also the oldest bestowed upon the species: so that if it is ever satisfactorily shown that the "Croceane" of the West Indies is of a different species, the name of *Thalassechelys croceana* is the one that will properly revert to it. Then we would have two genuine species in the genus, and two only; for, we propose to show, further on, that the Loggerheads of the Pacific, *Chelonia olivera* and *C. dussumieri*,

belong to a different genus. The long list of synonyms will have to be subdivided and referred each to its proper species.

The shell of the Loggerhead Turtle is too thin to be of any use to the arts. Its flesh is of a very inferior quality and unfit for the table. The fat is transmuted into oil, which is used in the arts.

More than a century and a quarter ago, Labat, in his "Voyages aux Isles de l'Amérique," in speaking of the "Caouane," or Loggerhead Turtle, states, that it grows to a larger size than either the "Green Turtle," or the "Caret," of the same localities.

DESCR.—The specimen which lies before us, and from which the accompanying figure was made, is a little over one foot in total length; it is the only one brought home by the Expedition. The vertebral protuberances are still quite prominent, whilst the lateral ones have almost completely disappeared. The periphery of the carapax is likewise still conspicuously serrated. The plastron itself exhibits four interrupted ridges; the two middle ones extending over the six pairs of contiguous shields, forming a sort of stretched ellipsis, whilst the two outer ones extend over the lateral shields, and are a good deal shorter, and less conspicuous. The specimen represented in fig. 1, exhibits an anomaly in the anterior vertebral shield, which is irregularly subdivided into two; the anterior division being the smaller of the two, and more developed upon the left side, where it affects the anterior middle marginal shield, which is quite reduced in width.

The upper aspect of the head is subconvex; its very surface is rendered uneven by elevations and shallow grooves: the middle region of most plates being somewhat raised, whilst their commissure is depressed. The middle occipital plate (*a*) is the largest; the anterior latero-occipitals (*b b*), are next in size; then the anterior parietals (*c c*), the postfrontals (*d d*), the postparietals (*e e*), the vertex plate (*f*), the posterior latero-occipitals (*g g*), the prefrontals (*h h*), the central post-occipital (*i*), the lateral postoccipitals (*k k*), and finally, the interfrontals (*l l*), which are the smallest when subdivided; whilst, if united into one, it would be subequal with the lateral postoccipitals.

We dare say, the relative size of the cephalic plates may change somewhat, according to the size of the specimen under examination, especially the occipitals of various denominations; still, we believe they never do vary so much as to render their study unavailable for zoölogical purposes. These plates are so accurately represented in



fig. 3, that a more minute description of them is not deemed necessary. The same is the case regarding the plates on the sides of the head, exhibited in fig. 4: five temporal shields (or plates), of considerable development, may be seen: three in front, one above, and one below the tympanic region, properly so called, and which is covered by plates a good deal smaller. On the sides of the lower jaw, there are four irregular plates of moderate size, and about half a dozen of smaller ones, which approximate the angle of the mouth. The mental shields are small, four in number, disposed upon a transverse series, contiguous to the horny sheath of the lower jaw. The rest of the chin exhibits an indurated epidermis variously plaited.

The color is dark reddish-brown above, and yellowish-brown beneath. The cephalic plates are reddish upon their middle region, and yellowish at their periphery.

*Loc.*—The specimen figured was collected at Madeira, in 1838, on the passage out of the Expedition.

Plate XXIX, fig. 1, represents *Thalassochelys corticata*, in profile.

Fig. 2, exhibits the same animal from below.

Fig. 3, is an upper view of the head; and,

Fig. 4, a side view, with the mouth open, in order to exhibit the outline of the jaws.

All these figures are drawn half the natural size of the specimen.

#### GENUS LEPIDOCHELYS, Fitz.

*GEN. CHAR.*—Head moderate; anteriorly compressed; snout rather protruding; jaws sharp and even upon their margin, curved towards one another at the tip. Eye moderate. Two pairs of frontal plates, a vertex plate, and three pairs of parietals. A middle occipital, moderate, sometimes subdivided; two pairs of latero-occipitals; one pair of postoccipitals and occasionally a few small additional ones. Three postoculars. Carapax subcordate, or subelliptical, ample, posteriorly indented upon its periphery, covered with seventeen to twenty-one unimbricated shields, ridged in the young, smooth in the adult. Marginal shields, twenty-seven in number. Plastron

with six middle pairs of shields, and four lateral ones. One claw to each flipper, either well developed or blunt and rudimentary.

*SYN.*—*Lepidochelys*, Fitz. *Syst. Rept.* 1, 1813, 30.

*ONSEAY.*—This genus is more closely allied to *Thalassochelys* than any other of the same family. It differs from it by a somewhat smaller head, smaller eye, the disposition or arrangement of the cephalic plates, and especially by the presence of one claw only to each hand and foot. Eschscholtz already spoke of the affinities of his *Chelonia olivacea* with *C. cephalota*, one of the names given to the Loggerhead or *T. corticata*. Duméril and Bibron themselves placed their *C. dussumieri*, which they consider as identical with *C. olivacea*, in the same subgeneric group with the Loggerhead properly so called. In a philosophical point of view it may be stated that *Lepidochelys* represents in the East Indies the Loggerheads or *Thalassochelys* of the Atlantic Ocean. The flesh is equally unpalatable to a civilized population.

In tracing the further history of *L. olivacea* and *L. dussumieri*, the naturalist must not lose sight of *Coccyzus elongata* and *Testudo cephalota*, already alluded to above (p. 430).

#### 1. LEPIDOCHELYS OLIVACEA, Fitz.

*SPEC. CHAR.*—Anterior pair of parietal plates contiguous upon their inner margin, and interposing themselves between the vertex plate and the postfrontal pair. Second and third pair of parietals rather large; second pair of postoccipitals smaller than the first pair. Carapax subcordate. Seven unequal vertebral shields, and six or seven costal pairs. Posterior extremity of the carapax but slightly emarginated. A blunt nail to each flipper. Greenish-olive above; pale yellow beneath.

*SYN.*—*Chelonia olivacea*, Eschsch. *Zool. Atlas*, 1, 1829, 2, Tab. III.—CANTOR, *Catal. Rept. Malay. Penins.* 1847, 13.

*Chelonia coccyzus*, var. *B. GRAY*, *Synops. Rept. in Griff. Anim. Kingd.* IX, 1831, 54.



*Thalassochelys olivacea*, Fitz. in Zool. Ann. Wien. Mus. I, 1841, 128.

*Lepidochelys olivacea*, Fitz. Syst. Rept. 1, 1843, 30.

*Casowia olivacea*, Gray, Catal. Tort. Croc. & Amphib. Brit. Mus. 1844, 53; *♂*, Catal. Shield. Rept. Brit. Mus. 1855, 73.

OSSEBY.—Eschscholtz, who was the first to describe this species, speaks of two specimens which fell under his observation: a young and an adult. According to his own statement, these specimens exhibited various differences, which might have been looked upon as specific, had he not made a comparative study of them. Thus, the width of the carapax when compared to its length, is smaller in the adult than in the young. The young exhibits a prominent ridge along the vertebral line, produced behind in the shape of a spine, and which is no longer observed in the adult, except that the first and fifth vertebral shield are rather convex. The costal shields are seven on either side in the adult, and in the young six on the left side, and seven in the adult. The lateral edges in the adult are horizontal.

The cephalic plates are identical in both the young and the adult, the latter, however, exhibiting an additional odd occipital plate, thrust between the hind part of the postoccipitals. The margin of the jaws is even in either case. The adult is provided with a blunt nail to each fore and hind flipper, whilst the young is clawless.

Most of these differences, however, are of minor importance, with the exception of one, which teaches a morphological fact of great value: we refer to the presence of a blunt nail or claw in the adult, and which the young does not possess. Hence we may conclude, that when the young exhibits any claws whatever, the latter are likely to be found in the adult.

The first pair of cephalic plates might be taken for a third pair of frontals, from the fact of their being contiguous upon the middle line of the cephalic region, and situated in advance of the vertex plate. Whichever be their appellation, the distinctive mark remains the same. Three pairs of contiguous plates are observed in advance of the vertex plate, which is elongated and hexagonal.

The digits are mostly naked or scaleless; the rest of the paddle, or anterior portion of the limbs, is protected by conspicuous scales.

Loc.—Chinese Seas.

## 2. LEPIDOCHELYS DUSSUJIERI, Grd.

SPEC. CHAR.—Anterior pair of parietal plates not contiguous upon their inner margin, between which the vertex plate is interposed, the latter touching the postfrontal pair; second and third pairs of parietals rather small; postoccipitals subequal. Carapax subelliptical. Five vertebral shields: three middle ones narrow and elongated; fifth expanded sidewise. Six pairs of costal shields. Posterior extremity of the carapax deeply emarginated. A well-developed and acute claw to each hand and foot. Reddish-brown above; limbs darker than the carapax, except the claws, which are yellowish. Head and neck lighter; centre of cephalic plates reddish, with a yellow margin; jaws yellowish.

SYN.—*Chelonia dussumieri*, Duv. & Brn. Expét. gén. II, 1855, 557. (*Exelus. syn.*)

OSSEBY.—The carapax is subelliptical; that is, less tapering posteriorly than in *L. olivacea*. The first pair of parietal plates, obliquely directed forwards, are situated on the sides of the vertex plate, which is elongated and hexagonal, and contiguous anteriorly to the postfrontals. The second and third pairs of parietals are rather narrow or exiguous, and smaller than the latero-occipitals. The postoccipitals are subelliptically elongated. There are three small additional postoccipitals, one behind the commissure of the typical plates of the same name, the others behind the latero-occipitals. The inferior and middle postorbitals are subequal, elongated, larger than the upper. The temporal plates, or shields, are unequal. The neck is covered with small scales, and the paddles with small plates, largest along the digits and along the edges of these organs.

Loc.—Coast of Malabar.

REMARKS ON *CHELONIA VINGATA*, Schw.

The generical affinities of this species remain yet a subject for further investigations. Cuvier supposed it to be more intimately related to the "Caret," of the Red Sea, spoken of by Bruce, than to any of the other types. The figure in the "Iconographie du Règne ani-



mal," is suggestive of a closer relationship to *Lepidochelys* than to *Chelonia*.

The specimen from California, referred to *Chelonia virgata* by Agassiz, exhibits the same generic affinities. A further study of them, together with a comparison of specimens from the various localities where they are said to occur, will undoubtedly reveal some curious results. We subjoin the following references:

*Syn.*—*Chelonia virgata*, SCREW. Prodr. Monogr. Chelon. in Arch. Koenigsb. I, 1812, 291 & 411.—Cuv. Règ. anim. 2d ed. II, 1829, 14.—Güér. Iconogr. du Règ. anim. 1834, Rept. Tab. I, fig. 4.—DUX. & BIRN. Expét. gén. II, 1835, 541.—GRAY, Catal. Tort. Croc. & Amphibis. Brit. Mus. 1844, 54; & Catal. Shield. Rept. Brit. Mus. I, 1855, 74.—CANTON, Catal. Rept. Malay. Penins. 1847, 11.—AGASS. Contr. Nat. Hist. U. S. Amer. I, 1857, 379.

It is easier to conceive how a sea-turtle might, from the eastern coast of Asia, reach the Red Sea, than its passage from the same coast to California, or vice versa.

#### GENUS CARETTA, MERR.

*GEN. CHAR.*—Head small, anteriorly compressed and tapering forwards; snout declivous and protruding; jaws robust, with a blunt and even margin, which is nearly horizontal to the tips. Two pairs of frontal plates; a vertex plate and one pair of parietals; a middle occipital, rather large; two pairs of latero-occipitals, and one pair of postoccipitals. Three postoculars. Mental shields none. Side of lower jaw with an elongated plate. Carapax cordate, ovate, covered with thirteen imbricated shields; marginal shields twenty-five, constituting posteriorly a serrated edge. Plastron, with six middle pairs of shields, and four lateral ones; several postaxillars. Two claws to either flipper.

*Syn.*—*Caretta*, MERR. Tent. Syst. Amph. 1820, 17.—FIRZ. News Class. Rept. 1826, 5.—BOVAR. Amph. Europ. Æ. 1830, 12.—GRAY, Catal. Tort. Croc. & Amphibis. Brit. Mus. 1844, 53; & Catal. Shield. Rept. Brit. Mus. I, 1855, 73.  
*Cheloniae imbricatæ*, DUX. & BIRN. Expét. gén. II, 1835, 547.  
*Cheloniae imbricatæ*, CANTON, Catal. Rept. Malay. Penins. 1847, 12.  
*Eretmochelys*, FIRZ. Syst. Rept. I, 1848, 30.—AGASS. Contr. Nat. Hist. U. S. Amer. I, 1857, 380.

*Observ.*—Although the name *Caretta* was framed as early as 1820, this genus was really distinguished and characterized as a natural group, by Duméril and Bibron, fifteen years later, and not by Fitzinger, who wrote eight years after the second volume of the "Ergologie générale" was published, and who, moreover, never characterized the genus.

A better name than *Caretta* could not have been selected to designate this genus, viewed in the same light as *Crocodon* for the Loggerhead; and, it having priority over its competitor, *Eretmochelys*, there is no plausible reason for rejecting it. To say that its present limits are not those originally ascribed to it by Merrem, is more trifling. Was the Shell Tortoise, *Caretta imbricata*, not included in it by Merrem himself? How many genera of the older writers have met with the same fate, and yet have been universally adopted, although in a restricted sense.

Hence, we cannot perceive why the name *Eretmochelys* should "now be retained," and on what ground "no one has a right to change it hereafter."\*

There are several well-marked species of Carets distributed over the warm temperate and torrid zones of both hemispheres. The typical one, and, perhaps, the most ancient on scientific record, is that of the West Indies, or *Caretta imbricata*, MERR. The East Indian species, *Caretta squamosa*, must have been known to navigators and traders before the discovery of America by Columbus; but its history is interwoven with that of *C. imbricata*, to such an extent as to make it a difficult task to divide the various synonyms between the two. We dare say most of the writers of the eighteenth century have spoken of the two indiscriminately, whether they drew their descriptions or observations from specimens or simply quoted their predecessors. At any rate, if the specimens were before them, they never questioned the identity of the two species, hence, never instituted a series of critical comparisons, owing, perhaps, to the fact, that the materials at their command were in too fragmentary a condition.

The Carets of the Polynesian Sea constitute likewise a peculiar species, distinct both from *C. imbricata* and *C. squamosa*. Furthermore, we should not be surprised at hearing of the existence of more than one species in the South Pacific Ocean. The specimens brought home by the U. S. Exploring Expedition seem to furnish that such is

\* Contrib. to the Nat. Hist. of the U. S. of Amer. I, 1857, 380.



the condition of things. Future investigators alone will be competent to decide the question rightfully, should they enter the field well prepared for conducting a series of observations upon all the specimens which an Antarctic cruise is likely to place before their eyes.

The "Note-book" of the Expedition, under the head of Broken Bay, Southeast Australia, states that a small specimen of the Caret genus had been observed at that place, and that "it might prove distinct from the *Fœcjes* species."

The various species of the genus *Carettæ* yield the Tortoise-shell of commerce, which is of various qualities, affecting its market price.\* This fact alone would seem to point at a diversity of species. Their flesh is, generally speaking, of an inferior quality, and unpalatable, to Europeans, especially in the East and West Indies. Indeed, in the West Indies, it is spoken of not only as unpalatable but as possessing highly cathartic properties. In the South Pacific Ocean, however, we are informed that "it was tried repeatedly, and not found at all inferior" to that of the true Chelonise.

#### I. CARETTA IMBRICATA, MERR.

**SPEC. CHAR.**—Carapax subcordiform, rather elevated; dorsal region shelving; periphery deeply emarginated posteriorly. Vertebral shields ridged along their middle: anterior one triangular; the remaining four rhomboid. Middle occipital plate much broader than long. Middle postorbital smaller than the other two. Skin of the neck without horny plates. Ground color yellow or fawn, marmorated with brown.

**SYN.**—*Testudo imbricata*, LINN. Syst. Nat. ed. X<sup>o</sup>, I, 1768, 197; & ed. XII<sup>o</sup>, I, 1766, 350.—WALL. Chelonogr. 1782, 46 & 110.—SCHN. Allg. Naturg. Schildk. II, 1783, 309; & Beytr. Naturg. Schildk. in *Leypz. Magaz. z. Naturk.* 1786, 253.—GMEL. in *Linna. Syst. Nat.* ed. XIII<sup>o</sup>, I, III, 1788, 1036.—LACER. *Quadr. ovip.* I, 1788, 105. Tab. II.—SCHEFFER, *Hist. Testud.* 1792, 83. Tab. XVIII A, & XVIII B.—DOUON. *Zool. Beytr.* III, 1798, 3.—CUV. *Tabl. élem. d'hist. nat.* 1798, 289; *Régn. anim.* II, 1817, 13; 24 ed. II, 1829, 18; & ed. illustr. *Rept.* 19.—LARR. *Hist. nat. Rept.* I, 1802, 50. Pl. I, fig. 2.—SHAW, *Gen. Zool.* III, 1, 1803, 89. Tab. XXVI & XXVII.  
*Testudo caretta*, RAY, *Synops. meth. Anim. Quadr. & Serp. gen.* 1698, 258.

\* *Annals and Magazine of Natural History. Second Series. Vol. IV, 1849, 297.*

*Testudo caretta*, KNORR, *Delic. nat.* II, 1767, 124. Tab. XXX.—CATESS. *Nat. Hist. Carol.* II, 1771, 39. Tab. XXXIX.—BOSSAT. *Encycl. méth. Expét.* 1789, 21. Pl. IV, fig. 1.—DAUB. *Hist. nat. Rept.* II, 1805, 39. Pl. XVII, fig. 2.  
*Chelonia imbricata*, SCHW. *Prodr. Monogr. Chelou.* in *Arch. Koenigsb.* I, 1812, 291 & 408.—MAXMILL. *Beytr. Naturg. Bras.* I, 1825, 21.—GRAYESCH. *Delic. Mus. Zool. Vratisl.* I, 1829, 6. Tab. I, fig. 2.—WAGL. *Naturl. Syst. Amph.* 1830, 133.—GRAY, *Synops. Rept.* in *Griff. Anim. Kingd.* IX, 1831, 52.—DUX. & BRAN. *Expét. gén.* II, 1835, 548.—TEM. & SCULCR. in *Sicb. Faun. Japon.* *Expét.* 1838, 13. Tab. V, figs. 1 & 2.—HOUSER. *N. Amer. Herp.* II, 1842, 39. Pl. VII.—FACH. *Faun. Peruan. Herp.* 1845, 22.—BELL, *Hist. Brit. Rept.* 1849, 1 (vignette).  
*Carettæ imbricata*, MERR. *Tent. Syst. Amph.* 1829, 19.—GRAY, *Catal. Tort. Croc. & Amphib.* Brit. Mus. 1844, 53; & *Catal. Shield. Rept.* Brit. Mus. I, 1855, 74.  
*Chelonia imbricata*, KUNL, *Beytr. Zool. & vergl. Anat.* 1820, 78.  
*Eretmochelys imbricata*, FITZ. *Syst. Rept.* I, 1849, 30.—AGASS. *Constr. nat. Hist.* U. S. Amer. I, 1857, 381.  
*Testudo marina exarivana*, SEBA, *Theat. nat.* I, 1734. Tab. LXXX, fig. 9.  
*Testudinis marinas pullos*, SEBA, *Theat. nat.* I, 1734. Tab. LXXXIX, fig. 6.  
*La Tortue Caret*, DURET. *Hist. gén. Antill.* II, 1662, 229.—BOSSAT. *Encycl. méth. Expét.* 1789, 21.  
*Shield tortoise-shell*, GREW, *Mus. Reg. Soc.* 1681, 38. Tab. III, fig. 4.  
*Le Caret*, LABAT, *Voy. aux Isles de l'Amér.* I, 1722, 304.—LACER. *Quadr. ovip.* I, 1788, 105. Tab. II.—CUV. *Régn. anim.* II, 1817, 13; 2d ed. II, 1829, 18; & ed. illustr. *Rept.* 19.—BOSS. in *Nouv. dict. d'hist. nat.* XXXIV, 1819, 255.  
*La tortue*, DAUB. *Dict. Encycl.*  
*The Hawk's bill Turtle*, BLOWNE, *Civil and Nat. Hist. of Jamaica*, 1756, 465.—CATESS. *Nat. Hist. Carol.* II, 1771, 39. Tab. XXXIX.  
*La Chelone Caret*, LESS. in *Bélang. Voy. Ind. Orient.* *Zool.* 1834, 300.

**OBSEKV.**—The above specific characters are derived from the "Erpétologie générale." The synonymy is given for the reasons already stated, that the history of this species is interwoven with that of *Carettæ squamozæ*.

**LOC.**—Atlantic Ocean: West Indies especially.

In the Zoology of Bélanger's "Voyage aux Indes Orientales," pp. 301 & 302, Lesson mentions, as occurring in the Atlantic Ocean:

1. *Chelonia pseudocaretta* (La Chelonee faux Caret), and
2. *Chelonia bicarinata* (La Chelonee à sternum bicaréné).

But his descriptions of the same are so inaccurate as to leave us in doubt regarding the true affinities of these Turtles.



## 2. CARETTA SCAMOSA, Grd.

(Plate XXX, figs. 1-7.)

**Spec. CHAR.**—Carapax cordiform, rather broad across the middle; back subconvex; periphery moderately serrated. Three middle vertebral shields largest and subrhomboid; anterior one smallest. Median postoccipital plates rather broad, sometimes as broad as long. Middle postorbital much larger than the other two. No mental shields. Skin of the neck studded with small horny plates. Ground color yellowish and brownish-olive, maculated with black.

**SYN.**—*Testudo scamosa*, RAY, *Synops. meth. Anim. Quadr. & Serp. gen.* 1693, 260.

*Testudo imbricata*, PENN. *Ind. Zool.* 1769, 87.

*Eretmochelys scamata*, AGASS. *Contr. Nat. Hist. U. S. Amer.* I, 1857, 382.

*Le Caret*, ERSM. *Hist. nat. Holl. Equinox.* 1767, 50.

**ONSEBY.**—About two centuries ago, Bontius figured and described, under the name of *Testudo scamata*,<sup>8</sup> an animal inhabiting the rivers of the Island of Java, and which cannot claim a place in the order of Chelonians. If at all a reptile, its relationships must be sought for amongst the Saurians.

The prefix *Testudo*, however, has so much influenced his followers, that the animal referred to has invariably been placed amongst the Turtles.

Thus, Linnaeus† makes it a synonym to the Shell-Tortoise, or *Testudo* (*Caretta*) *imbricata*, without further comment.

Joh. Gottl. Schneider‡ takes some pains to inquire into the nature of the animal, and, although struck with the great resemblance between the figure of *Testudo scamata*, of Bontius, and the quadrupeds now known as *Maxis*, he still thinks that Bontius must have had a Turtle in view. He dissents from Linnæus as to its being a marine species, and places it in the fresh-water group.

<sup>8</sup> *Historiæ naturalis et medicæ Indiæ orientalis Libri sex. Lib. V. Historiæ animalium.* 1658, 82.

† *Systema Naturæ*, &c., ed. XII.

‡ *Allgemeine Naturgeschichte der Schildkröte*, nebst einem systematischen Verzeichnisse der einzelnen Arten. 1783, 340.

Jo. Frid. Gmelin,\* probably influenced by Schneider, concluded to withdraw it from the Sea Turtles, and place it amongst the fresh-water species, inferring, from Bontius's statement, that it might prove a link between the Lizards and the Turtles.

Lacépède† leaves *Testudo scamata* amongst the synonyms of *Chelonia imbricata*, just as he found it in the twelfth edition of the "Systema Naturæ."

Daudin‡ admits the *Testudo scamata*, of Bontius, which he quotes as a species of Turtle, without adding anything of his own on the subject.

After the lapse of about half a century, during which *Testudo scamata* seemed as though entirely forgotten, the name was again exhumed, and applied to a Sea Tortoise, of the Caret group.§

J. Ray|| is the only one, among the early authors, who perceived the differences between the Carets of the two oceans; but he has remained forgotten altogether.

The "Caretta or Sea Tortoise," alluded to by Bruce¶ as occurring in the Red Sea, may prove identical with the present species. The figure is sufficiently accurate to enable us to decide upon its general affinities. Its specific characters require a careful reconsideration.

**DESCR.\*\***—The occipital plate is the largest; the parietals come next in order; then the postoccipitals, and anterior latero-occipitals, which are subequal; the postfrontals, the posterior latero-occipitals, and the prefrontals, successively.

The prefrontals are transversely elongated, almost parallelogramic in shape. The postfrontals are irregularly angular, subtrapezoid. The vertex plate is subhexagonal, somewhat longer than broad, and nearly as wide anteriorly as posteriorly; it is contiguous in front to the postoccipitals, sideways to the parietals, and behind to the middle occipital. The parietals are elongated, rather narrower anteriorly than posteriorly.

\* Caroli a Linné, *Systema Naturæ*, &c., ed. XIII, artic. reformata I, III, 1788, 1040.

† *Histoire naturelle des Quadrupèdes ovipares et des Serpents.* Vol. I, 1788, 105.

‡ *Histoire naturelle des reptiles*, II, 1805, 216. (*Tortue dentifère de Bontius*.)

§ Contributions to the Natural History of the United States of America, I, 1857, 382.

|| *Synopsis methodica Animalium Quadrupedum et Serpentium generum, vulgarum notus characteribus, rariorum Descriptiones integras exhibens*, &c. 1693.

¶ Travels to discover the Sources of the Nile, in the years 1768-1772. Vol. V, 1790, 215. Pl. XLII.

\*\* The following description is based upon figures 1-4.



riorly. The middle occipital is sub-octagonal, its anterior extremity forming an obtuse concave angle, for the reception of the posterior extremity of the vertex plate; its lateral angles are contiguous to the parietals and anterior latero-occipitals; whilst, posteriorly, it comes into contact with the postoccipitals. The latter are somewhat longer than broad, and irregularly angular; a small accessory interoccipital may be seen at the posterior extremity of their commissure. The anterior pair of latero-occipitals is much larger than the posterior pair; both being broader than long. The rim of the orbit is formed superiorly, by the parietal and both pair of frontals, posteriorly by three postorbital plates, and inferiorly by the upper jaw. The middle postorbital is much larger and longer than the two remaining ones; the uppermost is the smallest; the lowermost advances nearly as far as the middle of the orbit. There are three temporal shields, irregularly angular, subequal with the upper and lower postorbitals, whilst five smaller ones occupy the tympanic region, properly so called. The eyelids are covered with coriaceous plates, the uppermost of which are considerably more developed than the rest. The nostrils, large and subcircular, rest upon a notch at the superior and anterior margin of the upper jaw. An elongated shield may be observed on the side of the lower jaw; a few small coriaceous plates occupy the space about the angle of the mouth. There are no mental shields; the skin over the chin and neck is naked, though wrinkled in various ways. The upper surface of the forearm and carpus is protected with polygonal, rather well-developed plates, larger towards their anterior margin than upon their middle; largest and transversely elongated at their posterior margin. The under surface of the arm is mostly covered with the naked skin, some scattered subelliptical and subcircular plates being observed toward its anterior margin alone. On the palms, the plates are more numerous, quite large, and transversely elongated towards their anterior margin, whilst, posteriorly, the skin is exposed. The digits are all plated; the two exterior bear a stout claw, and exhibit the largest plates on their surface; the plates which cover the third and fourth fingers are subquadrangular and well developed, except the terminal one of each, which is more elongated and irregular in shape. A large subelliptical plate occupies the posterior margin of the flipper at the extremity of the fifth finger.

The plates which cover the surface of the hind flipper exhibit the same general aspect as those just described. The two exterior toes

are provided with an equally stout, depressed, and tapering claw. The first, second, and third toes are closely approximated; the fourth and fifth diverge, the interdigital space being covered above and below with much smaller plates. The antero-posterior region of the tarsus and sole exhibiting a naked skin, whilst a rather large, subpentagonal plate may be observed at the posterior margin of the tarsus.

The carapax, which is two feet long, measures likewise two feet across its middle region. In shape it is coriiform, of rather broad appearance, as the measurements just alluded to would lead us to expect. The back is subconvex, somewhat ridged posteriorly. The marginal shields are twenty-five in number: twelve pairs and an odd anterior one. The six anterior pairs are rather narrow, whilst the six posterior pairs are broader, increasing in width backwards. The periphery is but moderately serrated from the seventh pair of marginal shields. The vertebral shields are broader than long, the anterior one is the smallest, the three middle are somewhat larger and subequal with the fifth or posterior one, which is differently shaped, less of a rhomboid figure than the three middle ones. The posterior pair of lateral or costal shields is much smaller than the other pairs.

The eyelid is light blue, and the cornea black. The neck and shoulders are bluish, with pink reflections. The carapax is yellowish and brownish-olive, maculated with black. The plates of the head and flippers exhibit a jet-black spot upon their middle, whilst their periphery is yellow or brown.

Loc.—Sooloo Seas and Indian Ocean.

Plate XXX, fig. 1, represents a profile of *Caretta squamata*, from the Sooloo Seas, considerably reduced in size.

Fig. 2, an outline of its carapax, viewed from above.

Fig. 3, the head, seen from above;

Fig. 4, a side view of the same.

Figs. 5 & 6, represent outlines of the head of another specimen whose labelling, as to locality, was lost.

Fig. 7, is an outline of a carapax, the label of which has likewise been lost.



3. *CARETTA ROSTRATA*, Grd.

(Plate XXX, figs. 8-13.)

CHAR. SPEC.—Carapace subcordiformi per transversum thoracis quam pelvis angustiori; tergo antice rotundo, postice subconvexo; periphæria modice serrata. Scutis vertebralibus tribus medianis quam reliquos majoribus. Scuto occipitali latiori quam longiori; scutis postoccipitalibus elongatis, longioribus quam latioribus. Fusco-olivacea, nigro maculata.

SPEC. CHAR.—Carapax subcordiform, narrower across the chest than the pelvis; back anteriorly rounded, posteriorly subconvex; periphery moderately serrated. Three middle vertebral shields largest. Occipital plate broader than long; postoccipitals elongated, longer than broad. Olivaceous-brown, maculated with black.

Srs.—?

ONSEAV.—The heads and carapaces figured constituting all the materials at our command, a complete description of this species cannot well be drawn up at the present time.

As compared to the preceding species, the one under consideration may be distinguished by a proportionally longer head, and especially a more elongated rostrum. The cephalic plates, the occipitals amongst others, exhibit corresponding differences, which, when once alluded to, are sufficiently prominent to enable any one discriminating between the two species. The outline of the carapax affords also a few peculiarities worthy of special notice: its contraction across the pectoral region, the structure of its anterior margin, the great development of the vertebral shields, are of the number.

The pattern of coloration is the same as in *C. squamosa*, although the black maculae are more confluent, giving the entire body a much darker appearance.

The flesh of this species was tried repeatedly by the Exploring Expedition party, and was not found at all inferior to that of the true Cheloniae.

Loc.—The specimens were procured at the Feejee Islands. How far the species extends over the South Sea has not been ascertained.

Plate XXX, figs. 8 & 10, represent, each, an upper view of two heads of *Caretta rostrata*, somewhat reduced in size; Figs. 9 & 11, being their profiles.

Figs. 12 & 13, are upper views of two carapaces.

## GENUS EUCHELYS, GIRARD.

CHAR. GEN.—Capite parvo, rotundato; rostro obtuso, abbreviato; maxillis robustis, cum marginibus acutis et integris; epice maxillae inferioris recurvato; maxilla superiori antice emarginata. Scutorum frontatum et parietatum pari uno; scuto verticis uno; occipitali medio amplissimo; scutorum latero-occipitalium paribus duobus, et pari uno postoccipitalium transverse elongatorum. Scutis postoccipitalibus quatuor. Scutis mentalibus praesentibus. Scuto elongato ad maxillae inferioris laterem. Carapace cordiformi, tredecim scutis non imbricatis tecto; periphæria integra. Sterno sex paribus scutorum medianorum et laterum quatuor coæperto; scutis postaxillaribus pluribus. Palmis plantisque unguibus duobus praesentibus.

GEN. CHAR.—Head small, rounded; snout obtuse and abbreviated; jaws robust, with a sharp and even margin; lower jaw curved upwards at the tip; upper jaw somewhat emarginated upon its middle. One pair of frontal plates; a vertex plate, and one pair of parietals. A middle occipital, very large; two pairs of latero-occipitals, and one pair of transversely elongated postoccipitals. Four postoculars. Mental shields present. Side of lower jaw with an elongated plate. Carapax cordate, covered with thirteen non-imbricated shields. Periphery even. Plastron with six middle pairs of shields, and four lateral ones; several postaxillar shields. Two claws to either flipper.

ONSEAV.—This genus partakes of the characters of both *Thalassochelys* and *Chelonia*; of *Thalassochelys*, by the presence of two claws to each hand and foot; of *Chelonia*, by the structure of the head and



jaws. It differs, however, from both, by zoölogical characters easily appreciable.

From *Lepidochelys* it differs in the relative number of the claws, and also by the same structural characters of the head which distinguish it from *Thalassochelys*.

Its nearest relationships are, however, with *Chelonia*, if we take the cephalic plates into consideration. The very great development of the anterior flippers may acquire a generic value from the moment a second species should be found presenting the same feature.

#### EUCHELYS MACROPSUS, Grd.

(Plate XXXI, figs. 9-11.)

Spec. CHAR.—Uniform blackish-brown above, with the edge of the carapax and the flippers whitish or yellowish; beneath yellowish, with a black patch on each flipper.

Syn.—*Festudo macropus*, WALS. Chelonogr. 1782, 112.  
*Festudo mydas*, SCHÜTZER, Hist. Testud. 1792, 78. Tab. xvii, fig. 2.—LATR. Hist. Nat. Rept. I, 1802, 22. Tab. 1, fig. 1.

Observ.—The above synonyms, we dare say, are but a portion of those that may hereafter be referred to this species when its natural history shall have been better investigated, and the various authors, who have treated this subject, better understood, a task which at present was premature to perform. For, it must be remembered that the only materials at our disposal are two immature specimens, one of which we have caused to be figured on the accompanying Atlas, and from which the following description is made.

A great similarity is likely to be found between the young of this species and *Chelonia viridis*, and we are inclined to think that they have often been taken for one another. One character, however, will always be a sure guide: we allude to the presence of two nails to each flipper in *Euchelys macropus*, and one only in *Chelonia viridis*. Authors, when speaking of *Chelonia viridis*, sometimes ascribe to it one nail to each flipper, and at others, two, without further inquiry into the value of that structure.

DESCR.—The snout is quite compressed, the superior region of the upper jaw, immediately in advance of the nostrils, exhibiting a subacute process which seems to occur in most *Cheloniidae* during the early stages of their growth. The anterior aspect of the upper jaw is shelving inwardly downwards, a trait which is gradually obliterated as the animal grows older.

The middle occipital plate is proportionally very large, heptagonal, narrowest anteriorly, the odd angle, which is contiguous to the vertex plate, being the smallest. The vertex plate itself is small, pentagonal, anteriorly acute, engaging between the frontals, which are six-sided and very much elongated. The parietals, which are next to the middle occipital in size, are subrounded and obscurely heptagonal, presenting a broad side to the middle occipital; two small sides: one to the vertex plate, another to the frontals; two others, equally small: one to the anterior latero-occipitals, another to the upper postorbitals; whilst the remaining two sides constitute, together with the frontals, the superior rim of the orbits. The latero-occipitals are obscurely six-sided, the anterior pair being somewhat larger than the three remaining ones, which are either subequal, else, the uppermost or first is the smallest, and the second occasionally larger than the first and third, which in that case are subequal. The temporal shields, or plates, are, as usual, smaller over the tympanum than at its periphery. The extremity of the lower jaw is curved upwards as in *Thalassochelys*. An elongated infra maxillary shield may be observed, followed by three or four quite small plates, beneath the angle of the mouth. The mental shields are but three in number, transversely arranged over the chin. The gular region, throat, and neck exhibit numerous, small, plate-like, dermic indurations, similar to those which may be seen about the axillar and inguinal regions.

Viewed from above, the carapax is regularly cordiform; the vertebral ridge is very obtuse, and the costal ridges very obsolete; its periphery is but very slightly emarginated at the commissure of the marginal shields. Its entire surface is minutely pitted, assuming a somewhat reticulated appearance. The second and third vertebral shields are more developed, transversely, than any of the others, and more regularly hexagonal also, than the first and fifth; the fourth is penta-



gonal. The first and fourth costal shields are subtrapezoid; the second and third pentagono-pyramidal. The marginal shields are twenty-five in number, subequal, somewhat longer than broad posteriorly than anteriorly; the anterior odd one is the largest of all.

The ridges over the plastron are more conspicuous than those of the carapax, without, however, being too prominent; they are more developed along the middle region, than towards the extremities. The vitelline split is yet distinctly seen between the fourth and fifth pair of shields. As usual, the shields constitute six middle pairs, and an anterior odd one, small and triangular in the specimens now before us. The three anterior pairs are narrower than the fourth and fifth. There are four lateral pairs of angular, subequal shields, and from six to eight quite small, postaxillar plates, and a few still smaller preinguinal ones. The skin about the axillae and groins is covered with very small, irregular, and unequal plates, or scales; or dermic indurations, which- ever called.

The anterior flippers are very large; when stretched backwards along the periphery of the carapax, they will reach the edge of the last pair of marginal shields. Both their upper and lower surfaces are plated, the plates over the middle region being much smaller than towards the edge. The first and second fingers exhibit each an acute nail, more conspicuous on the first than on the second, which is protected by three plates, the one bearing the nail being larger than the two remaining ones combined.

The hind flippers are very broad and thin, and when extended forwards, along the sides of the plastron, they do not quite reach the axillae. Their upper and lower surfaces are likewise plated, and the plates over their middle regions are much smaller than towards their margin. The first and second toes exhibit also an acute nail, stouter on the first (or thumb) than on the second.

The tail is very small, subconical, and plated; the series of plates along its upper aspect being larger than the rest, and transversely elongated.

The upper surface of the head and carapax is blackish-brown; the temporal plates are blackish in the centre, and yellowish at their margins; the edge of the upper jaw, beneath the eye, is black also; the eyelids and rest of the snout are yellowish-brown. The chin and neck are greyish. The edge of the carapax and the entire plastron are yellowish. The upper surface of the flippers is blackish in the

middle, and yellowish upon their edges. Their inferior surface is mostly yellowish; a black patch existing towards their posterior region, without, however, reaching the terminal edge. The nails are tipped with black. The upper surface of the tail is blackish; the rest is of a dull yellow; the same hue which exists over the inguinal and axillar regions, though blackish maculae may here and there be observed.

Loc.—Mangsi Island, Philippine Archipelago.

Plate XXXI, fig. 9, represents an upper view of *Echelys macropus*, size of life.

Fig. 10, is an under view of the same animal;  
Fig. 11, exhibiting its head in profile.

#### REMARKS ON THE GENUS HALICHELYS OF FITZINGER.

Wishing to place mere historical facts on record, we will first quote from the authors:

*Testudo unguibus acuminatis, palmis-que plantarumque solitariis*, Linn. Ann. Acad. I, 1749, 284.

*Testudo atra*, Linn. Mus. Adolph. Fridr. I, 1754, 50.

The above refer to the young of *Chelonia viridis* or *mydas*, as it is oftentimes called, and which, according to Linnæus's own statement, came from the Island of Ascension.

*Thalassochelys atra*, Fitz. in Zool. Ann. Wien Mus. I, 1841, 128.

What has guided Fitzinger in referring *Testudo atra*, of Linnæus, to the genus *Thalassochelys*, we are at a loss to determine; a prominent trait of the latter genus consisting in the presence of two nails to either flipper.

*Halichelys atra*, Fitz. Syst. Rept. I, 1843, 80.

Again, when the same author established his Genus *Halichelys*, he evidently entertained the idea that its natural affinities were with *Thalassochelys*, since these genera follow one another in his System.



There is a most striking resemblance between the young *Chelonia*, properly so called, and the young *Euchelys*; so much so, that the latter has been figured under the name of *Chelonia mydas* (see p. 448), and quoted as such by various authors. It may, therefore, also have been mistaken for *Testudo atra*.

Walbaum,\* in speaking of his *Testudo macropus*, says explicitly that there are two claws or nails to either flipper: "*Scuto ovato, carinato, emarginato, sterno gradato, pedibus pinniformibus, maximis, bifariam unguiculatis.*"

Could Fitzinger have been guided by the above statement in framing his genus *Malichelys*? This might partly account for its association with *Thalassochelys*, which has, likewise, two claws to either flipper; then again how could he omit mentioning Walbaum's *Testudo macropus* as a synonym?

#### GENUS CHELONIA, BRONX.

GEN. CHAR.—Head small, anteriorly blunt and rounded; snout very obtuse; jaws robust, with a serrated margin, which is nearly horizontal, the lower jaw being slightly curved upwards at the tip, and the upper one slightly emarginated. One pair of frontal plates; a vertex plate, and one pair of parietals. A middle occipital, moderate; two pairs of latero-occipitals, and one pair of longitudinally elongated postoccipitals. Four postoculars. Mental shields extant. Sides of lower jaw protected by an elongated and a few small plates. Carapax cordate or subelliptical, covered with fourteen non-imbriated epidermic shields; marginal shields twenty-five, constituting a nearly even edge. Plastron with six middle pairs of similar shields: four lateral, and several small additional postaxillary ones. One claw to either flipper.

SYN.—*Chelonia*, BRONX. in Bull. Soc. Philom. 1800, 89.—OPPEL, Rept. Prodr. 1811, 8.—CURV. Règn. anim. II, 1817, 12; 2d ed. II, 1829, 13; & ed. illustr. Rept. 18.—WAGL. Naturf. Syst. Amph. 1830, 133.—DUM. & BRN. Erpét. gén. II, 1835, 550.—FITZ. Syst. Rept. I, 1843, 30.—GRAY, in Ann. of Philos. X, 1825, 210; Catal. Tort. Greed. & Amphib. Brit. Mus. 1844, 51 & 54; & Catal. Shield. Rept. Brit. Mus. 1855, 74.—TAYL. & SCULEA. in Sicil. Faun. Jap. 1838, 12.—BRONX. Amph. Europ. 1839, 12.—AGASS. Contr. Nat. Hist. U. S. Amer. I, 1857, 377.

\* Cheloniographia ad archetypos nativos curiosorum naturae peregrinorum causa latino stylo stricte exarata.

*Chelonia franchesi*, DUM. & BRN. Erpét. gén. II, 1835, 555.  
*Euchelonia*, TACH. Faun. Pernan. Herp. 1845, 92.  
*Chelonia liberata*, CASTOR, Catal. Rept. Malay. Peins. 1847, 11.

OBSERV.—This genus is restricted, by modern writers, to the esculent species of the family, those that are most esteemed as an article of food, and generally known under the name of Green Turtles. Their shell is too thin to be made any use of in the arts. Labat states that the West Indies species does not grow as large as the Log-headed of the same localities, it being intermediate in size between the latter and the "Scaled Tortoise," or "Caret."

Accurate graphic illustrations of *Chelonia viridis* are still a desideratum. Being the typical species of the genus, figures of the others can have but a secondary interest in themselves. Had we had an authentic specimen, from the West Indies, at our command, we might have enlarged upon the remarks and criticism which we offer further on, respecting the species that came under our observation.

The references to the "Green Turtle" bearing somewhat upon the history of its congeners, it was deemed advisable to present them to our readers according to the plan we have adopted.

#### I. CHELONIA VIRIDIS, TEMM. & SCHLEG.

OBSERV.—The twelfth chapter, in Vol. I, of Labat's "Voyages aux Isles de l'Amérique," is full of vivid information respecting the mode of catching and use of the Green Turtles of the West Indies.

SYN.—*Testudo viridis*, SCHN. Allg. Naturg. Schildkr. 1783, 309. Tab. II.—LATR. Hist. nat. Rept. I, 1802, 48.

*Testudo mydas*, LINN. Syst. Nat. ed. X, 1, 1758, 197; & ed. XII, I, 1766, 350.—BRONX. Erpét. méth. Erpét. 1789, 19. Pl. III, fig. 2.—CURV. Tabl. élém. d'hist. nat. 1798, 288; Règn. anim. II, 1817, 13; 2d ed. II, 1829, 13; & ed. illustr. Rept. 19.—DUM. Hist. nat. Rept. II, 1805, 10. Tab. XVII, fig. 1.—OPPEL, Rept. Prodr. 1811, 9.

*Testudo viridi-spinosa*, BONNAT. Encycl. méth. Erpét. 1789, 29.

*Chelonia mydas*, SCHW. Prodr. Monogr. Chelon. in A. vrb. Koenigsb. I, 1812, 291 & 412.—GRAY, in Ann. of Philos. X, 1825, 212; & Syn. Rept. in *Griff. Anim. Kingd.* IX, 1831, 62.—GAUVENR. Delic. Mus. Zool. Vratisl. I, 1829, 5. Tab. I, fig. 1.—WAGL. Naturf. Syst. Amph. 1830, 133.—LESS. in *Zool. Voy. Ind. Orient. Zool.* 1834, 208.—DUM. & BRN. Erpét. gén. II, 1835, 538.—HORN. N. Amer. Herp. II, 1842, 25. Pl. III.—AGASS. Contr. Nat. Hist. U. S. Amer. I, 1857, 378.



- Caretta esculenta*, MENA. Tent. Syst. Amph. 1820, 18.  
*Chelonia esculenta*, WIKOM. & KURIE, Handb. Zool. 1832, 164.  
*Chelonia viridis*, TEMM. & SCHLEG. in Sicb. Faun. Jap. 1838, 18. Tab. IV, figs. 4-6; & Tab. VI, figs. 1-2.—GRAY, Catal. Tort. Croc. & Amphib. Brit. Mus. 1844, 54; & Catal. Shield. Rept. Brit. Mus. I, 1855, 75.  
*Chelonia* (*Euchelonia*) *mydas*, TSCH. Faun. Peruan. Herp. 1845, 22.  
*La Tortue franche*, DURETIN. Hist. nat. Antil. II, 1692, 227.—LABAY, Voy. aux Isles de l'Amér. I, 1732, 182 & 304.—LACEP. Quatr. Ovip. I, 1788, 54. Fig. 1.—BOSSAT. Encycl. méth. Expét. 1780, 19. Pl. III, fig. 2.—BOSS. Nouv. Dict. d'hist. nat. XXXIV, 1819, 252.  
*La Tortue franche* ou *Tortue verte*, CUV. Règn. anim. II, 1817, 13; 2d ed. II, 1829, 13; & ed. illustr. Rept. 19.  
*Tortue de Mer*, EDW. Hist. nat. Oia. IV. Tab. cccii.  
*La Tortue à écailles vertes*, LACEP. Quatr. Ovip. I, 1788, 92.—BOSSAT. Encycl. méth. Expét. 1789, 20.  
*Testudo marinis viridis*, CARZEB. Nat. Hist. Carol. II, 1771, 88. Tab. xxxviii.  
*T. studinis marinis pullos*, SEBA, Thes. nat. I, 1734, 127. Tab. lxxix, fig. 5.

It remains yet to be proved, whether

- T. viridis japonica*, THUNB. Koenig. Veitsnak. Acad. Nya Handl. VIII, 1787, 178. Tab. VII.—SCHUS. in Schrif. Gesellsch. Naturf. Fr. Berl. X, 266,  
*Caretta thunbergii*, MESA. Tent. Syst. Amph. 1820, 19,

refer to a species identical with that of the West Indies, or whether it is the one met by Siebold, on the coast of Japan. The figure given by Thunberg, however, is suggestive of *Leptochelys olivacea*.

*Chelonia pseudomydas*, LASS. is *Belang*. Voy. Ind. Orient. Zool. 1834, 299,

is also one of those species requiring to be carefully looked into before it can be either admitted as distinct, or referred as a synonym to another.

## 2. CHELONIA MACULOSA, CUV.

Appears to be a good species, which may, however, prove closely related to that of the Japanese Seas.

SYN.—*Chelonia maculosa*, CUV. Règn. Anim. 2d ed. II, 1829, 13; & ed. illustr. Rept. 19.—DUM. & BRAN. Expét. Gén. II, 1835, 644.

## But whether

*Chelonia lacrymata*, CUV. Règn. anim. 2d ed. II, 1829, 13; & ed. illustr. Rept. 19, is identical with it, we are not, for the present, prepared to decide.

## 3. CHELONIA MARMORATA, DUM. & BIBR.

(Plate XXXI, figs. 5-7.)

SPEC. CHAR.—Head rather small; vertex plate small; middle occipital large; postoccipitals moderate. Lowermost and third postorbitals larger than the second and uppermost; the second occasionally subdivided so as to give five postorbital plates. Upper temporal shield moderate, subequal with the rest, which are smallest over the tympanum. Carapax subovate, elongated; back quite arched or convex. Middle vertebral shields longer than broad. Marginal shields rather large, twenty-five in number.

SYN.—*Chelonia marmorata*, DUM. & BRAN. Expét. Gén. II, 1835, 644. Pl. xxiii, fig. 1

*Chelonia midas*, SHAW, Gen. Zool. III, 1, 1802, 3. Tab. xxii.

OBSERV.—This species is here introduced for the sake of comparison with the following one, in order that a certain series of characters of both could be satisfactorily shown. Space did not permit giving a figure of the carapax on the accompanying Atlas. In its outline it differs widely from that of *C. formosa*; it is more of a subelliptical form, the back being more arched, the sides steeper, and the periphery more declivous. The shape of the epidermic shields vary in the same proportion, since their absolute number is the same in both species; the middle dorsal ones are longer than broad.

The head is a good deal smaller than in *C. formosa*, and the cephalic plates, though of a similar type, exhibit various modifications characteristic in either species. The middle occipital, hexagonal in shape, is the most conspicuous; the postoccipitals, subtrapezoid, hexagonal in shape, then the elongated frontals, the subpentagonal parietals, and the irregular latero-occipitals. The vertex plate is the smallest, pentagonal, narrow posteriorly, and angular in front. There are a few supple-



mentary small postoccipitals, resembling more or less the scales scattered over the neck; two, larger than the rest, are placed in immediate contiguity with the posterior pair of latero-occipitals and the temporal shields. The normal number of the postorbital plates is four, though five may occasionally be seen on one side; in the latter instance we found the second subdivided into two. The first or lowermost is elongated and the largest of its series, sometimes subequal with the third, which is similarly elongated; the uppermost is the smallest. The second, when undivided, is intermediate in size between the upper and the lower.

We will not proceed any further, since the specimens of the following species lack the plastron, limbs, and neck.

Loc.—The specimen before us was caught in the Atlantic Ocean.

Plate XXXI, fig. 5, represents an upper view of the head of *Chelonia varrostrata*, somewhat reduced in size.

Fig. 6, is a profile; and,

Fig. 7, an under view of the same region.

#### 4. CHELONIA FORMOSA, Grd.

(Plate XXXI, figs. 1-4.)

CHAR. SPEC.—Capite amplissimo; scuto verticis medio; occipitali medio parvo; sculis postoccipitalibus amplissimis. Scuto postorbitali inferiori quam tres reliquos subaequales majori. Scuto temporalis superioris quam reliquos sat amplius majori. Carapace subcordato, latiori; tergo depressiusculo. Sculis vertebralibus multo longioribus quam lateribus; marginalibus mediis, quinque et viginti. Fusca, fuscis vel olivaceo maculata.

SPEC. CHAR.—Head rather large; vertex plate moderate; middle occipital small; postoccipitals large. Inferior postorbital larger than the remaining three, which are subequal. Upper temporal shield much larger than the rest, which are well developed. Carapax subcordate, broad; back rather depressed. Vertebral shields

much longer than broad; marginal shields moderate, twenty-five in number. Brown, maculated with yellowish or olive.

DESCR.—The size of the cephalic plates, as given in the above diagnosis, is comparative with the corresponding ones in *C. varrostrata*, and must be understood as expressing their proportional development in both species. For, if we enumerate these plates in point of absolute size in the species which is the subject of the present article, the postoccipitals are the largest of the set; the middle occipital comes next in order; then the parietals, the frontals, and finally the latero-occipitals.

But to return to each of those plates: they differ greatly in form from one another. Thus the frontals are elongated, their sides nearly rectilinear, not to say parallel, for they are somewhat narrower anteriorly than posteriorly, in conformity with the general outline of the snout, which is obtusely subconical forwards. A diminutive inter-nasal may be observed at the anterior extremity of the frontal (frontonasal) plates, between their commissure. Posteriorly, the frontals are obtusely triangular, the inner edge of that triangle admitting the anterior portion of the vertex plate, whilst the external edge of the same triangle is contiguous to the parietals. The vertex plate is the smallest, subhexagonal, elongated; narrowest posteriorly, where it emarginates somewhat the anterior edge of the middle occipital; laterally it is contiguous to the parietals. The latter are a little wider than long, obscurely hexagonal, their exterior edge forming with that of the frontals the upper rim of the orbit. Each parietal is contiguous posteriorly to the upper postorbital and anterior latero-occipital, and anteriorly to the middle occipital, and as already observed, to the vertex plate itself. The middle occipital is longer than broad, heptagonal, posteriorly acute-angled, anteriorly subconcave upon its contiguity with the vertex plate. Its latero-anterior edges are contiguous to the parietals, laterally to the anterior latero-occipitals, whilst its posterior acute angle engages between the post-occipitals, whilst its are quite elongated, sublanceolated, broadest posteriorly, subtruncated behind, and acute-angled in front. Their anterior acute angle engages between the middle occipital and the anterior latero-occipitals, whilst laterally they are contiguous to the posterior latero-occipitals. The anterior latero-occipitals themselves are obscurely hexagonal, longer than broad, anteriorly contiguous to the middle occipital and the



parietals, sideways to the postfrontals and upper postorbital, and behind to the posterior latero-occipitals and uppermost temporal shield. Finally, the posterior latero-occipitals, subtrapezoid and broadest behind, with their longest side contiguous to the postorbitals, are contiguous anteriorly to the anterior latero-occipitals, and exteriorly to the temporal shields. An accessory pair of acutely triangular latero-occipitals may be seen pointing towards the postorbitals, contiguous by their longest side to the posterior latero-occipitals, their base being directed towards the temporal shields.

The posterior rim of the orbit is formed by four plates, the three upper ones subequal, subangular, rather longer than broad; the lowermost, much longer than broad, and the largest of the set, extends as far under the orbit as the middle of the latter aperture. The remaining portion of the inferior rim of the orbit is formed by the maxillary shield. We have already stated that the upper rim was formed by the edges of the frontal and parietal plates.

The temporal shields (or plates) are irregularly angular, unequal, and variously shaped. The two anterior ones, placed in contiguity with the three upper postorbitals, are the largest, and larger also than the postorbitals themselves. The lowermost, placed immediately behind the inferior postorbital, is next in size, elongated, and subequal with the upper and posterior one, which is contiguous superiorly to the posterior latero-occipital plates. Over the tympanum they are moderate-sized, and smallest towards the articulation of the lower jaw. The latter exhibits a large and elongated shield, along its branch, and two small ones towards its articulation. There is also a series of narrow and elongated submaxillary shields, which are somewhat injured upon the prepared specimen before us. The mental shields were removed in the preparation.

The neck and limbs were not preserved; neither was the plastron. The carapax is subcordiform, broad across the middle region, and somewhat contracted upon the pectoral region. The back is rounded, slightly ridged. We observe the usual number of epidermic shields; five vertebral ones, and four on either side. The three middle dorsal shields are much longer than broad, whilst the first and fifth are broader than long; hence, differently shaped, the fifth much larger than the first. The marginal shields are of moderate development, and twenty-five in number. The periphery of the carapax is undulating upon its posterior half, instead of being narrow and even, as in

*C. maculosa*. Its anterior margin, immediately above the neck, is but very slightly concave; the same is the case immediately above the anterior limbs.

In the young, the dorsal shields are proportionally shorter, compared to their width. The general outline of the carapax does not differ from that of the adult.

The ground color is yellowish-olive, shaded with brown; but this tint appears distinctly on the neck, breast, shoulder, and tail only. The plates which protect the head and the limbs are of a dark blackish-brown, with the very edge alone yellowish. The carapax is densely mottled, clouded, or marmorated, with black and brown, interspersed with whitish or yellowish specks, the remnants of the ground color. The snout and the portion of the jaws not covered by the plates are reddish-brown, a tint which may likewise be traced along the periphery of the carapax, the ciliary and supraciliary edges being yellowish.

Loc.—Feejee Islands.—“This species, together with the following (*Caretta rostrata*), seems to be most frequent about the extensive reefs to the leeward of the principal islands. We saw them principally in pairs, at Muthunta. As an article of food, both are used indiscriminately.”—(Note-book Expl. Exped.)

Plate XXXI, fig. 1, represents *Chelonia formosa*, in profile, reduced. Fig. 2, is an outline of the carapax, seen from above. Fig. 3, an upper view of the head; and, Fig. 4, a side-view of the same region.

##### 5. CHELONIA TENUIS, Grd.

(Plate XXXI, fig. 8.)

CHAR. SPEC.—Carapace subcordiformi, elongato, per transversum thoracis quam pelvis angustiori. Tergo depresso. Scutis vertebralibus subaequalibus, subrhomboidaleis, aequae latis ac longis, aut latioribus quam longioribus. Scutis marginalibus septem et viginti. Fulca et olivacea, fusco et nigro maculata.

SPEC. CHAR.—Carapax subcordiform, elongated, narrower across the pectoral region than across the pelvis. Back depressed. Vertebral



shields subequal, subtrapezoid; as broad as long, else broader than long. Marginal shields twenty-seven in number. Yellow and olive, maculated with brown and black.

OSSEAY.—The carapax, an outline of which is subjoined, is all that we at present know of this species. Nothing would have proved more interesting than the head and flippers of a turtle apparently so remarkable. Its frame is lightly built; the bones and horny shield being very thin, contrasting strangely with that of *Chelonia formosa* and *Caretta rostrata*, with which it is associated, amongst the Polynesian or Coral Islands.

The anterior edge is subconcave, the odd marginal shield quite narrow and transversely elongated; the next two pairs being the smallest of the series. The posterior pair is longer than broad. The third vertebral shield is the narrowest of the series; this, however, may not prove a constant character. The dorsal region itself is depressed; the sides gradually sloping towards the periphery, which is nearly even, slightly undulated posteriorly. The thoracic region is narrower across its middle than the pelvic region.

The coloration consists of an admixture of brown, black, yellow, and olive, so as to assume a marmorated appearance.

The following remarks we copy from the "Note-book" of the Expedition, under the head of *Rosa Island*:

"Several individuals were seen, and one captured, viz., a young male. Their trails were frequent in the sand, to the upper part of the beach, visited apparently for the purpose of depositing their eggs; but none of the latter were discovered, though careful search was made. In the shallow part of the lagoon I had an opportunity of witnessing the speed with which they travel in the water, and was surprised to find them to all appearances quite a match for the shark in this respect. The one captured had the alimentary canal crowded with seaweeds (the *Gracilaria*, seen at Karaka), and I am at a loss to imagine where a sufficient supply of this substance can be procured, unless at considerable depth. This may also account for the general scarcity of these animals among these islands where marine vegetables are so rare."

Under the head of Honden Island, we likewise read:

"Two specimens observed near the surf were females, and had very short tails. A male had the tail seventeen inches long, and was found

half way to the beach, a fore and hind flipper chopped off by the sharks, and it was supposed that it had remained ashore to keep out of their way. A fourth specimen, found in the same situation, had a hole bitten out of its side. They were frequently seen swimming from the boats, and probably numbers might have been taken by remaining a night on the island. There is here no vegetable food for them, unless the plants on shore, which did not appear to be cropped."

Loc.—Honden Island, Paumotu Group; Tahiti and Eimeo; Rosa Island.

Plate XXXI, fig. 8, represents an outline, seen from above, of the carapax of *Chelonia tenuis*, considerably reduced in size.

## SUB ORDO II. TESTUDINATA.

The representatives of this group inhabit either dry land, marshy districts, or fresh waters. Their body is generally depressed, broader than deep, rounded, elliptical, or ovate in its outline, which is either even, or variously serrated or emarginated, and covered with epidermic or horny scales, or a soft skin. The plastron is broad, or narrow; immovable, or movable either upon its anterior or posterior half, or both ways at the same time. There are four limbs, an anterior and a posterior pair, subequal, moderate in length, slender or stout, and more or less retractile. The hands and feet are club-shaped, palmated, or semi-palmated, the fingers and toes being always movable, terminated in part or in totality by blunt nails or accreted claws, which vary from three to five. The tail is conical, tapering, long or short.

The head is subquadrangular or subcircular across the orbits, protected with plates, or covered with a naked skin; the snout being pointed or abbreviated. The neck is retractile or simply contractile; generally naked, exhibiting sometimes membranous flaps or appendages, and occasionally covered with scales. The eyes, as a general feature, are large, and in a few instances, quite small, compared to the size of the animal. The nostrils are anterior, quite approximated.

The food of the *Testudinata* consists of animal and vegetable substances, according to the genera and species.



UNITED STATES

EXPLORING EXPEDITION

DURING THE YEARS

1838, 1839, 1840, 1841, 1842

UNDER THE COMMAND OF

CHARLES WILKES, U. S. N.

ATLAS

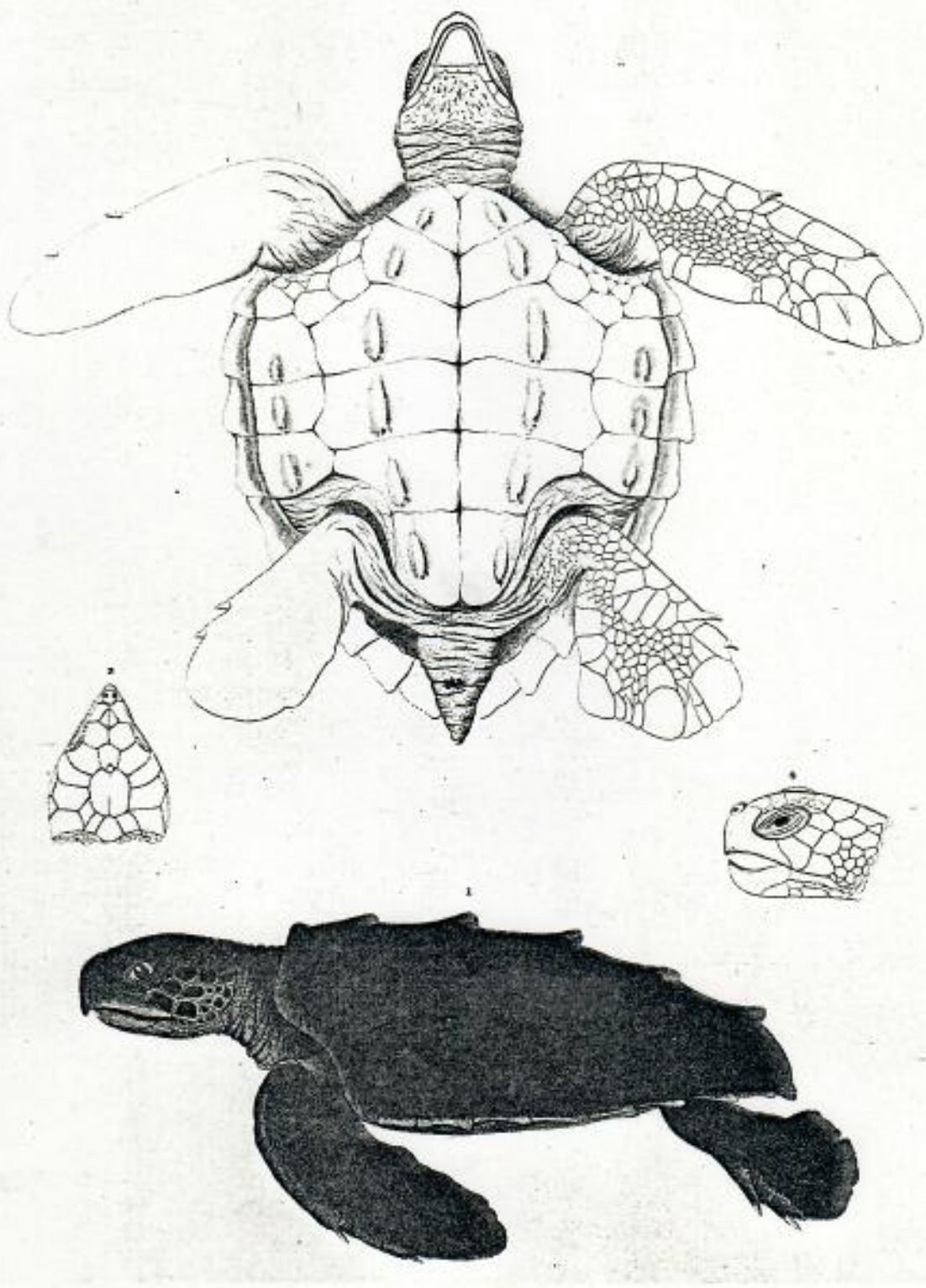
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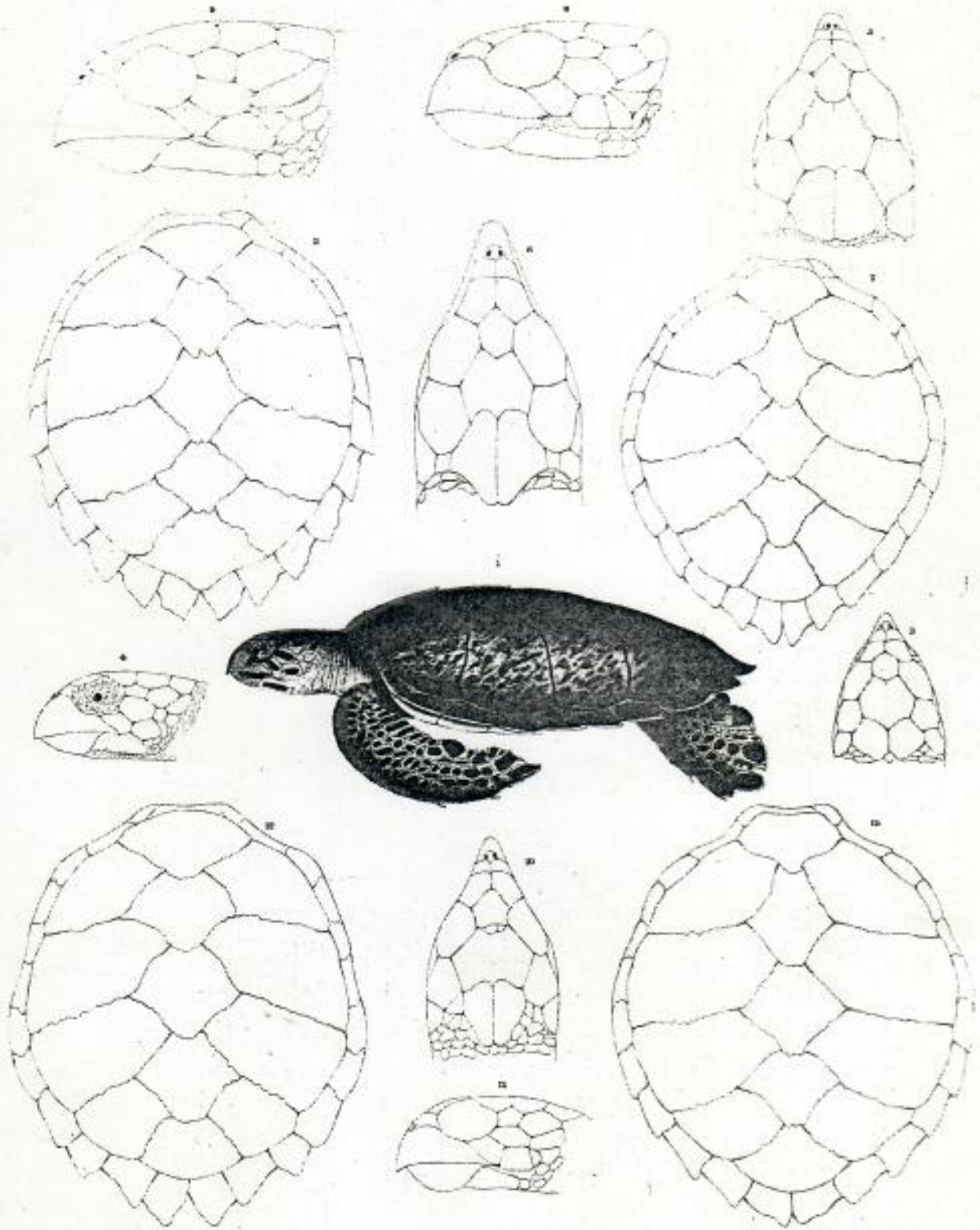
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*Thalassochelys corticata*, G.

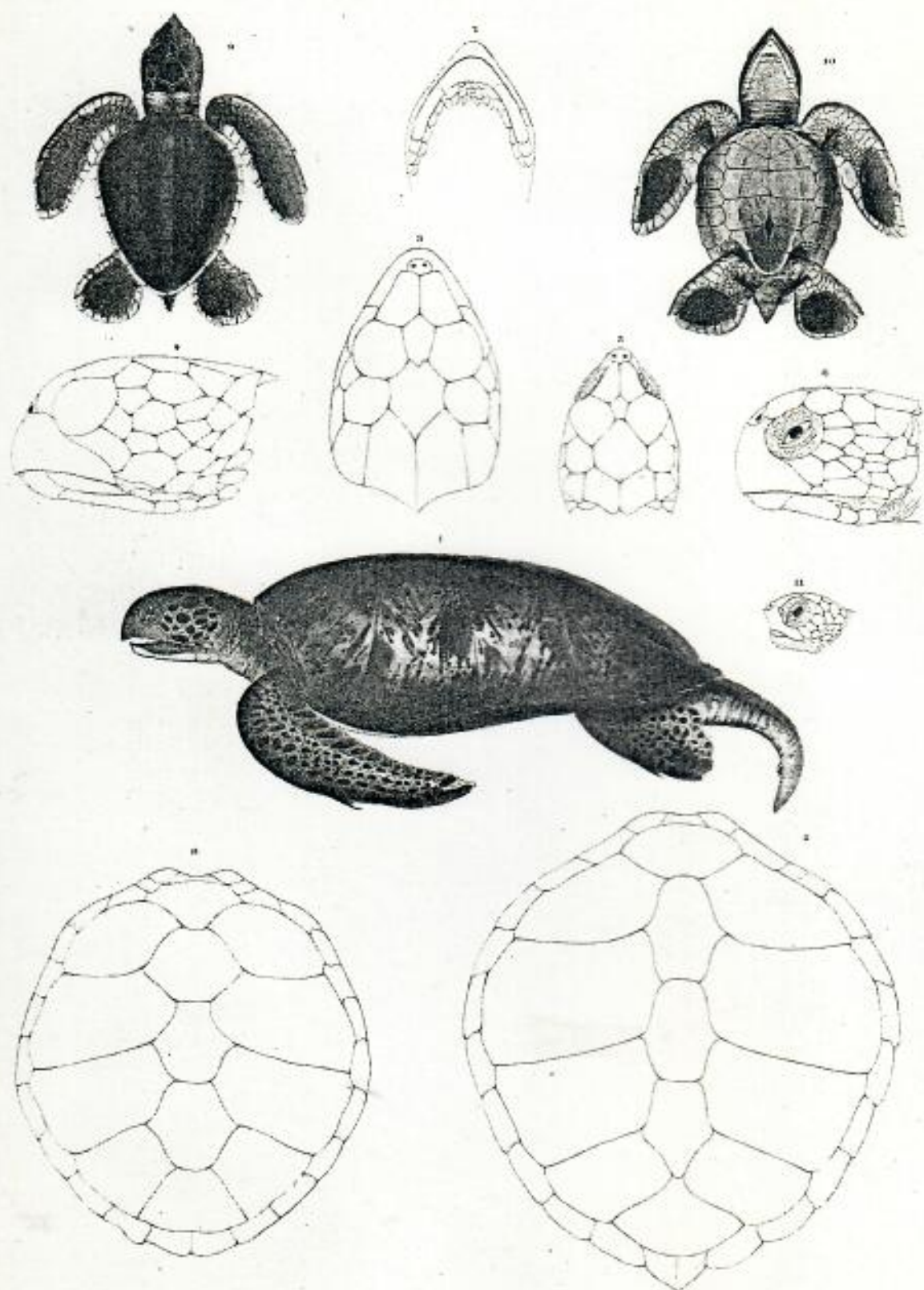




Figs. 1-7. *Caretta squamata*, G.

Figs. 8-13. *Caretta rotata*, G.





Figs. 1-4. *Chelonia formosa*, G. | Figs. 5-7. *Euclyptus macrops*, G.

Fig. 8. *Chelonia tessis*, G.