

TIGHAR TRACKS

THE JOURNAL OF THE INTERNATIONAL GROUP FOR HISTORIC AIRCRAFT RECOVERY





*... that they might escape the teeth of time and
the hands of mistaken zeal.*

— JOHN AUBREY
STONEHENGE MANUSCRIPTS
1660

About TIGHAR

TIGHAR (pronounced “tiger”) is the acronym for The International Group for Historic Aircraft Recovery, a non-profit foundation dedicated to promoting responsible aviation archeology and historic preservation. TIGHAR’s activities include:

- Compiling and verifying reports of rare and historic aircraft surviving in remote areas.
- Conducting investigations and recovery expeditions in co-operation with museums and collections worldwide.
- Serving as a voice for integrity, responsibility, and professionalism in the field of aviation historic preservation.

TIGHAR maintains no collection of its own, nor does it engage in the restoration or buying and selling of artifacts. The foundation devotes its resources to the saving of endangered historic aircraft wherever they may be found, and to the education of the international public in the need to preserve the relics of the history of flight.

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On the Cover

*Is this engine now on Canton Island?
See “The Canton Engine,” page 16.*

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Hell & High Water

Niku III was the expedition that couldn't happen, but we made it happen anyway, and for a while we wished we hadn't, but then we were awfully glad we did.

Making It Happen

In the spring of 1996, prospects for another major expedition to Nikumaroro looked promising. We had just concluded a short preliminary trip to the island (our first since 1991) which had turned up some interesting new artifacts—the plexiglas and the radio cables (see TIGHAR Tracks Vol.12, 2&3). Two project supporters had made pledges totalling nearly \$200,000 which gave us an excellent start toward putting together the estimated \$1,000,000 budget for a major operation in the fall of that year. For media coverage, the PBS science series NOVA had indicated a strong interest in doing a documentary about the expedition. The coming year, 1997, was to mark the 60th anniversary of Earhart's disappearance and the 100th of her birth. If there was ever a time to solve the mystery "Once And For All," this was it. Accordingly, we made a commitment to mount the long-awaited Niku III Expedition and began the always daunting task of assembling the logistics, the team, the technology, the media, and the funding.

The first problem that turned up was ship scheduling. No suitable vessel was available for our desired September/October time period. November looked like a possibility. Then NOVA decided that they would prefer that the expedition happen early in 1997. We were a bit concerned that this would put us into the Central Pacific's cyclone season, but the region around Nikumaroro rarely experiences storms, so we agreed to reschedule the trip. NOVA also insisted that we provide some way for them to get aerial views of the island. That meant equipping the expedition with an ultralight aircraft—a major expense and complication—but two team members came to the rescue with an offer to equip the expedition with an ultralight aircraft on floats. NOVA made it clear that they wouldn't pay a rights fee for the privilege of filming the expedition, but they indicated

a willingness to pay their share of the ship charter and to give TIGHAR a share in videotape sales of the documentary. They also wanted to cover the expedition live on their internet website. We weren't at all comfortable with that idea, but everyone agreed that such issues could be worked out in negotiations toward a mutually acceptable written contract.

Then both of our financial supporters backed out of their pledges. No hard feelings, but no money. Contributions from the TIGHAR membership made it possible for us to continue to look for major funding, but it ultimately turned out to be a fruitless search. Dozens of proposals to corporations met with the same response: no. However, getting product support (as opposed to cash) was relatively easy. A growing number of companies were pledging and providing technology and services, but without funding there could be no expedition. By mid-January the situation was desperate. Our credibility as an organization rested upon our promise to do this expedition, but there was no money to do it with. On top of that, after six months of work and assurances, there was still no contract with NOVA and negotiations were stalled on a number of issues.

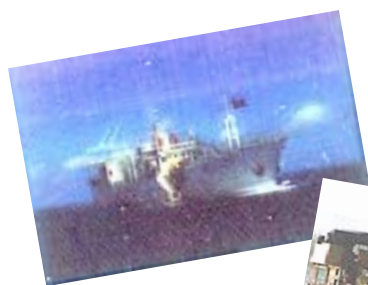
By reducing the projected stay at the island from one month to two weeks, and by changing to a smaller, more economical ship, we were able to get the expedition's cash budget down to \$200,000, but it may as well have been \$2 billion. Then, in a triumph of generosity over judgement, a member of TIGHAR's board of directors offered to loan the organization \$100,000. Suddenly we were halfway home, but where could we possibly find the other half? Earlier, ABC News had expressed interest in the project but we had explained that we were trying to conclude a contract with NOVA. Now,

with the situation critical and those negotiations deadlocked, we notified NOVA that we were opening the door to other possible offers. ABC stepped forward and, with the Discovery Channel, offered to complete our expedition budget and produce two one-hour documentaries, one to air on the network's Turning Point series, and the other to air as a Discovery special. A formal contract was quickly concluded, we breathed a huge sigh of relief, and preparations for departure moved into high gear.

Our high spirits were short-lived. NOVA and its parent WGBH filed a lawsuit against TIGHAR and against its Executive Director personally, alleging that there had been an implied contract. Damages of \$101,354 were sought. ABC was not named in the suit. Our dismay can be imagined, and the need to make arrangements to defend against these allegations was the last thing we needed on the eve of departure, but if the intent of the suit was to stop the expedition, it didn't work. On February 20, 1997 the Niku III team departed Los Angeles aboard an Air Pacific 747 bound nonstop for Fiji.

The Expedition

Practice makes, if not perfection, at least familiarity. TIGHAR first sailed out of Suva for Nikumaroro in 1989 and fully half of the twelve-person team on this trip were veterans of that initial expedition. For the fourth time the TIGHAR flag flew from the masthead of a ship bound for the far away Phoenix Group. As we left the harbor, we passed the rusting hulk of *Pacific Nomad*. Nine years ago, proud and fit, she had been our home for Niku I. As we slipped by, with our graying hair and our reading glasses, she whispered to us of time, and mortality, and the false god Glory.



Pacific Nomad in her glory days, 1989. TIGHAR photo by M. DeWitt

Pacific Nomad in Suva Harbour, 1997. TIGHAR photo by P. Thrasher



Our ship this time out was *Nai'a* (pronounced "NIGH ya," meaning *dolphin* in Hawaiian), a graceful 110 foot motor sailer that normally makes her living as a live-



TIGHAR photo by P. Thrasher

aboard dive excursion vessel around the Fiji Islands. Able to support 18 passengers for an extended voyage, and with her towering sail providing added stability and enhanced fuel economy, she proved to be the ideal ship for our needs.

At 8 to 10 knots, the 1,000 mile passage to Nikumaroro took the usual five days, during which some team members studied up on technology, others debated search methodology, and a few laid seasick in their bunks and prayed for death. But Niku, like the dawn, always appears eventually and, one morning, it was there—a dark sliver that slowly spread across the horizon, turned green, and grew



Nai'a and friends. TIGHAR photo by P. Thrasher

a white line of surf along its base. The local dolphin delegation came out to surf the bow wave of their namesake as familiar landmarks became distinguishable along the shoreline.

As we approached the landing channel—a narrow, dynamite-blasted passage to the beach through the surrounding reef—we could see that we had a problem. Normally, the set of the sea swells at Nikumaroro is from the east, which puts the landing channel on the leeward or protected side of the island and makes for easy access to the shore. But these were not normal times. While we were en route, a tropical depression formed behind us, grew into a storm, and soon matured as a full-blown cyclone (as hurricanes are called in the South Pacific). The far away swirling disturbance was generating large swells that pounded Nikumaroro from the northwest and transformed the normally calm landing channel into a vicious, churning cauldron. For the next two weeks, just getting people and equipment on and off the island was to be



The plume of spray marks the entrance to the channel. This is the only way on and off the island. The launch, with a load of TIGHARs, is visible to the left of the breaking wave. TIGHAR photo by P. Thrasher.

had a daily near-death experience. Some planned operations to be scrapped entirely due to the high seas. The ultralight aircraft, obtained and transported at such trouble and expense, could not even be fully assembled, let alone flown. GPS (Global Positioning System) control of the archaeological work was defeated when the data-collecting base station on the beach had to be disassembled and moved to prevent it being washed away. Other operations were carried out through improvisation and determination. A remote-sensing EM (electromagnetic) survey of the



Tom King and Lonnie Schorer lay out a grid using the Pentax Pulse Laser. TIGHAR photo by P. Thrasher

area where the remains of a woman's shoe were found in 1991 turned up indications of a possible unmarked grave, but excavation failed to reveal signs that the earth had ever been disturbed in that spot. However, the remains of a very old campfire were discovered, excavated and recovered very close to where the shoe parts had earlier been found. In the lagoon, an EM and magnetometer survey, supplemented with visual searching by divers, failed to turn up any indication of airplane debris in the covered area. However, only a small fraction of the three mile long lagoon could be examined in the time available. In the abandoned

village, search and survey operations were hampered by torrential downpours that threatened expensive equipment and made life miserable for the soaked searchers. Still, over one hundred separate artifacts including a number of aircraft-related objects, were mapped and recovered for later analysis.

As the time approached for us to leave the island, Tropical Cyclone Gavin moved farther away allowing the seas to subside just enough for us to demobilize and get our gear and people back aboard *Nai'a*. But then, to our dismay, another tropical depression formed between us and Fiji and quickly grew to become Tropical Cyclone Hina. This was the "worst case scenario" everybody talks about—like finding a grizzly bear in the middle of the trail back to the cabin. Within four hours of departing Nikumaroro (a day earlier than originally planned),



Kent Spading and Veryl Fenlason search the lagoon with magnetometry and EM technology. TIGHAR photo by R. Gillespie.

we found ourselves in a white squall with driving rain and rising seas. Hour by hour the storm intensified. Wind speed became a matter of speculation when the anemometer was carried away. Sea heights eventually reached an estimated 40 feet, more than enough to capsize *Nai'a's* 30 foot beam had she been caught broadside. The ship had never before been asked to survive in such mountainous seas and all nonessential crew and passengers were confined to their cabins lest they fall (or be felled) on the wildly pitching deck.

With the storm continuing to build, the decision was made to abandon our course for Fiji and make for the sheltered waters of Funafuti Atoll in the island nation of Tuvalu. On the fourth day of our beleaguered return voyage, a battered but still buoyant *Nai'a* entered the atoll's spacious lagoon. During World War II the tiny island was a B-24 base and today Air Marshall Islands provides airline service to Fiji. It was hoped that we could still make our scheduled flight back to the U.S. and three team members took the last seats on the flight out that day. By late the next day the weather had improved

(cont. p. 8) 



Don



John



Veryl



Ric



Van



Tom



Tommy



Gary



Louie



Kent



Kris



Tonga



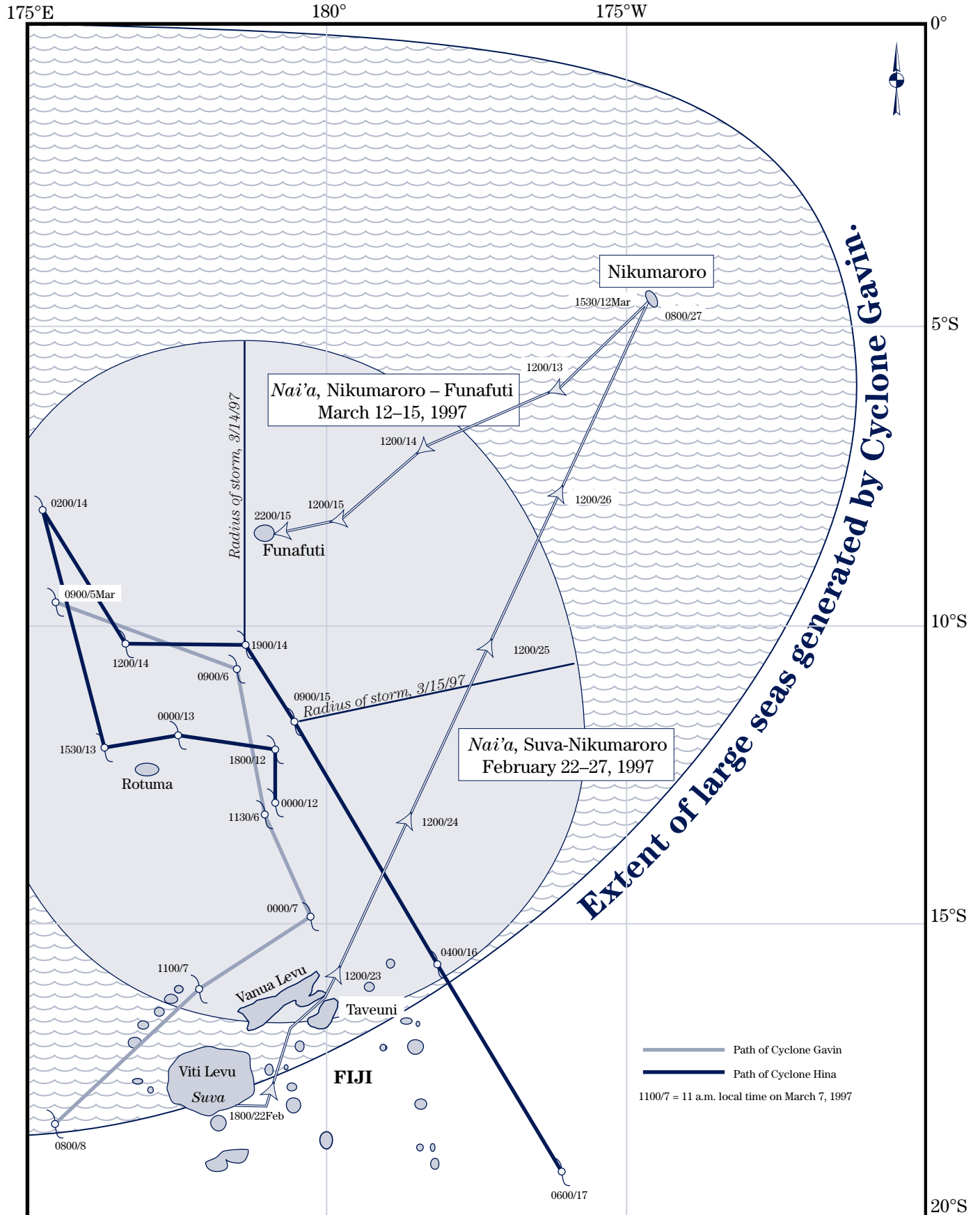
Pat

The Team

(clockwise from top)

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Chadds Ford, Pennsylvania

The Storms






Into the storm. Photo courtesy John Clauss.

enough for *Nai'a* to continue her voyage, but nine team members elected to stay behind on Funafuti and catch the following day's flight to Fiji. The flight did not come that day, or the next day, or the next. Air Marshall's entire fleet (both airplanes) was grounded by mechanical and crew availability problems for the next six days and the "Funafuti Nine" found themselves stranded on an island they never intended to visit in the first place. It seemed a frustrating end to a disappointing and often harrowing expedition, until the last day.

Some say it was the storm. Others contend that it was a change of heart by Nikumaroro's guardian spirit Nei Manganibuka. Still others say that perseverance simply pays off. Whatever the reason, beginning with the interviews that occurred that last day on Funafuti (see "I Saw Pieces Of An Airplane..." next page), TIGHAR's luck changed dramatically and the five months that have passed since the expedition's return have seen piece after piece of the Earhart puzzle suddenly fall into place. The new evidence that has surfaced since our return is providing a fresh picture of what really happened long ago on an island far away. Much of what was once speculation is now documented fact and the prospects for a "once and for all" solution to the Earhart enigma are very bright indeed. Even the NOVA suit appears to be on the brink of settlement. In June, a series of articles in the *Boston Globe* castigated NOVA/WGBH for its arrogance and poor business practices, includ-

ing a penchant for frivolous lawsuits. Ultimately, ABC offered to buy the footage NOVA shot of TIGHAR expedition preparations, in return for which NOVA has agreed to drop the suit and any allegation of wrongdoing by TIGHAR. As we go to press, the settlement documents await only their signature.

This expedition tested our resolve in many ways, and we met the test. Thanks to the unfailing support and encour-

agement of the TIGHAR membership we've come out on the other side of the storm with a new promise of ultimate success. There are still many questions to be answered on Nikumaroro. The world still wants a serial number, and that will come. For us, the questions now are not questions of whether or not, but questions of how, why and precisely where. As we approach the end of the puzzle, the pieces fall more and more quickly into place. This is the fun part. It was worth the effort. 



The Funafuti 9+1. Back row, L to R, Sam Painter (ABC cameraman), Kent Spading, Don Widdoes, Tommy Love, Kenny Kosar (ABC sound man), Howie Masters (ABC producer/director), Peter Cooper (a Kiwi stranded with the rest of us); front row, L to R, Van Hunn, Veryl Fenlason, Ric Gillespie. Photo courtesy Kent Spading.

I saw pieces of an airplane...

By our sixth and last day of being stranded on Funafuti, we had interviewed (out of sheer boredom) virtually everyone on the island who might have anything of interest to say about the old days in the Central Pacific. We had heard some interesting stories about Funafuti's time as an American airbase during the war and had even tracked down some B-24 wreckage, but nothing we had learned was of much use. The manager of the island's hotel had been born on Nikumaroro in 1959 and was, she told us, considered to be a granddaughter of the island's guardian spirit Nei Manganibuka. Because she was but a toddler when the island was abandoned in 1963, she could tell us little of life there but she did have a friend, slightly older, who had also lived on Nikumaroro as a child and whose father had been the island's schoolmaster. Unfortunately the old man was, according to his family, now senile. "That is very strange," she said. "He wasn't senile last week." Kent Spading and Ric Gillespie asked if they might pay a call upon the gentleman. The following are Kent's edited notes of that visit.

The Participants

Kenton Spading (KS) and Richard Gillespie (RG), interviewers.

Risasi Finikaso (RF), Manager of the Funafuti Vaiaku Lagi Hotel.

Ms. Finikaso was born on Nikumaroro in 1959. She is currently a resident of Funafuti. TIGHAR members spoke to her at length about TIGHAR, Amelia Earhart and Nikumaroro prior to the interviews described below. These discussions included the theories regarding the disappearance of Amelia Earhart's aircraft and the anecdotes involving the discovery of male and female bones on Nikumaroro. She speaks English as a second language and was very articulate. She mentioned that her husband is a lawyer.



Pulekai Songivalu, Risasi Finikaso, Richard Gillespie, and Tapania Taiki. Photo courtesy Kent Spading.

Pulekai Songivalu (PS), former Head Schoolmaster on Nikumaroro

Mr. Songivalu appeared to be 70+ years old. He is currently a resident of Funafuti. He arrived on Nikumaroro sometime after WWII and stayed for 4 years. He speaks English as a second language. We were warned before meeting him that about three weeks before our arrival he had been afflicted with occasional bouts of senility. We were told that he

might repeat himself a lot. On the contrary, he spoke well, was articulate and did not repeat anything unless asked.

Tapania Taiki (TT), Pulekai's daughter

Ms. Taiki was born in 1954 and arrived on Nikumaroro in 1958 or 59. She left in the early 1960's. She is currently a resident of Funafuti. She speaks English as a second language.

The Interview

This is the March 22, 1997 interview with Pulekai Songivalu at his home. The interview took place in the main room of the house.

RG: When did you arrive at Nikumaroro?

PS: I arrived sometime after the war.

RG: How long were you there?

PS: I worked there for 4 years as the head schoolmaster and then I returned. [Note: implying that he returned to Funafuti] ...

RG: Did people on the island use metal from the war to make things?

PS: ?? [Unclear answer]

RG: Do you remember any stories from the early days of the colony?

PS: Yes, I remember the ship wreck only. I think it was called [long pause, thinking] The Richards or something like that. [Ed. note: the ship is the S. S. Norwich City.]

RG: Do you remember stories of Nei Man-ganibuka?

PS: No, the Gilbertese would know about that.

RG: Do you remember any stories about clearing the land in the early days of the colony?

PS: Yes, the old men would tell stories. They had no houses when they first arrived. There was lots of hard work and lots of sunshine. The sunshine could last as long as 6 months.

RG: Do you mean a drought?

PS: Yes, a drought.

RG: Did they have a hard time finding water?

PS: Yes.

RG: Did you hear any stories of bones being found when the land was being cleared?

PS: No.

RG: What about fishing lures? How do you make them?

PS: [At this point Ms. Finikaso had to translate. He did not seem to understand the word "lure".] You get white or black chicken feathers and you tie them to the hook.

RG: How would you make the hooks? Explain to me how you make a hook.

PS: We would make hooks called tepi (sp?) for catching tuna. We would bend a piece of iron into a shape which is different from the hooks you buy. They were shaped like this [curling his fingers into the shape of a hook]. [Note: It looked to me like the modern "weedless" hooks.]...

RG: Did people use canoes to go between islands? Did people travel from one island to another, like up to Hull Island?

PS: Oh, that would be a long ways. But, yes they might. They would usually go in groups of at least four canoes.

RG: Would they do that from Nikumaroro?

PS: Yes, maybe a Gilbertese would. They are better seamen and have big fast canoes.

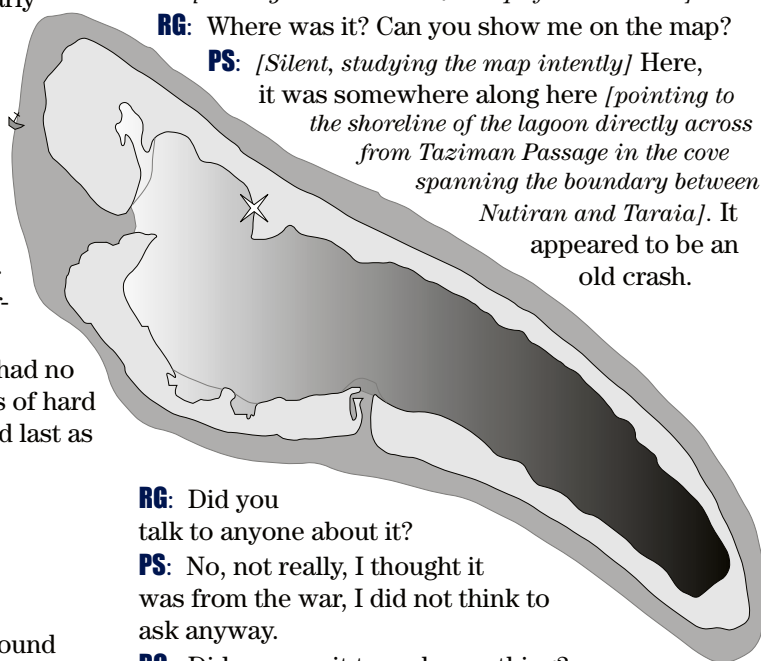
[At some point in here Ms. Finikaso got up and disappeared into the back room where I saw people standing earlier.]

RG: Have you heard of an airplane crash on Manra or Sydney Island?

PS: No, but I saw pieces of an airplane on the lagoon side [looking toward the 1943 map of Nikumaroro].

RG: Where was it? Can you show me on the map?

PS: [Silent, studying the map intently] Here, it was somewhere along here [pointing to the shoreline of the lagoon directly across from Taziman Passage in the cove spanning the boundary between Nutiran and Taraia]. It appeared to be an old crash.



RG: Did you talk to anyone about it?

PS: No, not really, I thought it was from the war, I did not think to ask anyway.

RG: Did you use it to make anything?

PS: Yes, they would use the metal to make plates and other things.

RG: Was the airplane near the lagoon?

PS: Yes. I think maybe it was a plane from Canton, I am not sure. I am trying to think of why it was there. I think the plane ran out of oil, or gas, maybe. They said the pilot was saved though. The people looked after him. I asked, "Where was the pilot taken?" They said he was taken by the Americans on a ship.

[Ed. note: there is no known record or rumor of an airplane crashing on Nikumaroro during World War II.]

RG: Did you ever visit Manra or Sydney Island?

PS: Yes, I went there to examine the school on a tour once.

RG: Have you heard of someone being buried far from the village on Nikumaroro?

PS: No. ...

RG: Did the people on the island use metal for cooking? How would they cook a fish?

PS: There are two ways to cook a fish. First you can bake it in an oven. Or, you can cook it on top of a piece of iron with a fire underneath. This is a very good way to cook a fish.

RG: Did you have much interaction with the local people?

PS: No, not too much.

At this point, Risasi reentered the room with Ms. Taiki. After introductions, Mr. Gillespie left Mr. Pulekai and me to talk while he engaged Ms. Taiki and Ms. Songivalu in conversation using the 1943 Nikumaroro map as a centerpiece. Ric and I had a conversation with Risasi after these interviews. She told us that, when we first arrived, Tapania was too shy to come into the main room of the house and meet us. No amount of persuading could change her mind. So Risasi asked her the following two questions:

RF: Have you ever heard of an airplane wreck on Nikumaroro?

TT: Yes.

RF: Have you ever heard of skeletons on Nikumaroro?

TT: Yes.

It was only after this exchange that she was able to convince her to talk to us. Risasi stated that these were the only two questions she asked Tapanai outside of our presence.

RG: When did you arrive on Nikumaroro? How old were you?

TT: I arrived there in 1958 or 59. I was 5 or 6 years old.

RG: Tell us what you saw on the reef.

TT: I saw a piece of airplane wing on the reef. I could see the ship wreck from there. It looked far away.

RF: I suppose it would look far away to a child.

RG: Show us where you saw it.

TT: *[Looking at the map]* It was along here somewhere. *[pointing to an area approximately halfway between Taziman Passage and the Norwich City along the reef]*

RG: What color did you say it was?

TT: *[pointing up at the exposed bottom of the dull, silver-colored corrugated steel roof on the house]* It was that color only much thicker. There were also a few other pieces of things laying around on the reef. It was not complete.

RG: What size was it?

TT: *[She seemed confused and not sure what to say]*

RG: Was it as big as this table? *[pointing to a table top approximately 4 wide by 9 feet long]*

TT: Yes *[she seemed unsure]*

RG: You also mentioned skeletons. Tell us about that.

TT: The older people said they saw the skeletons of a man and women, one each, the elders said "Do not go to where the plane is, there are ghosts there." They were trying to scare us to keep us away from there.

KS: Do you know others who have been to Nikumaroro?

TT: No.

RG: What about the European house?

TT: There was a European permanent house here. *[pointing to an area along the western shoreline of Nikumaroro approximately half way between Taziman Passage and the Norwich City.]* We would play with pieces of the airplane near there.

RG: Yes, we can see those structures in the old aerial photos right along that area.

Someone asked: Were the airplane and skeletons found together?

TT: No, the skeletons were there before the people arrived on the island.

RG: Had you heard of Amelia Earhart?

TT: No.

Note: At this point Ric told me that a man named Eti (sp?) at the hotel bar had told Risasi of an airplane wreck on Nikumaroro. I remembered seeing him also. He appeared to be between 30 and 40 years old.

TT, after an exchange of conversation: The kids would play with the pieces on the reef and near the European permanent house.

After a discussion of where airplane parts might end up on the island, Ms. Finikaso said, "When the people left the island they would likely have taken pieces of aluminum with them. When they left they took everything! They even took roof thatching with them. I clearly remember that.

Anything of value was taken along."

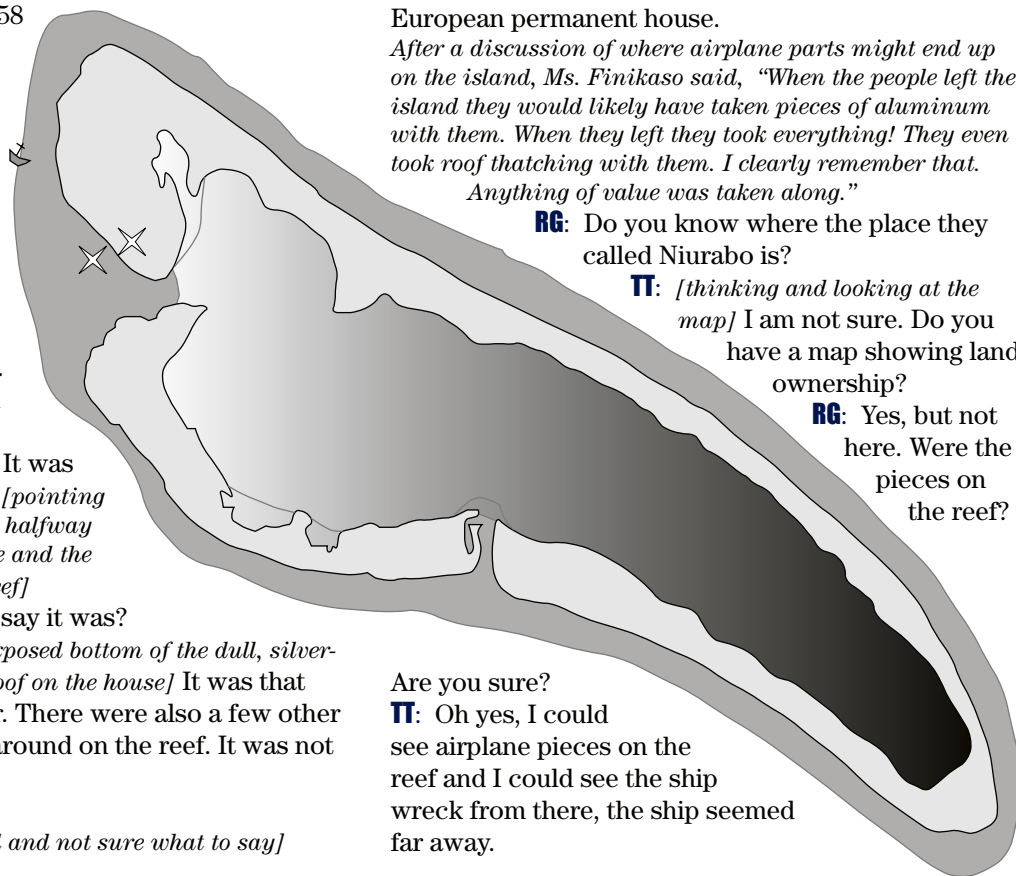
RG: Do you know where the place they called Niurabo is?

TT: *[thinking and looking at the map]* I am not sure. Do you have a map showing land ownership?

RG: Yes, but not here. Were the pieces on the reef?

Are you sure?

TT: Oh yes, I could see airplane pieces on the reef and I could see the ship wreck from there, the ship seemed far away.



RG: Did anyone say where the bones were?

TI: They never said where the bones were, but they were very clear....it was the skeleton of a man and a woman.

Ms. Finikaso and Ms. Taiki then started to debate how the islanders would have known the gender of the skeletons. Ms. Finikaso surmised that the island doctor would probably be able to recognize the difference.

At this point Ms. Taiki again related the story of the pieces of airplane being on the reef and on land in front of the European permanent house (where the New Zealand survey took place).

TI: Some white people came once in a government boat. They were taken in canoes to here (tracing a path with her finger from the village area across Tazi-man Passage along the shore toward the *Norwich City*) to take pictures of the airplane parts.

KS: What did they take the pictures with?

TI: A camera.

RG: What year were you born?

TI: 1954, I went to Nikumaroro at age 4 or 5. We left in 1961 or 62.



CORROBORATION

Prior to the interviews on Funafuti, the only account of a plane wreck on the island was from former PBY pilot John Mims (see *TIGHAR Tracks* Vol.11, No. 3 “Catch Of The Day”) who told of seeing an airplane control cable being used as heavy-duty fishing tackle during a visit to Nikumaroro in 1944 or ’45. The Gilbertese fishermen told him that the cable had come from a plane that been there when they first came to the island. When Mims asked where the plane was now, they just shrugged.

Now, for the first time, people who once lived on the island were telling us they had seen undisturbed aircraft wreckage in specific locations. Mr. Songivalu said he saw debris along the lagoon shore while his daughter, Ms. Taiki, recalled a piece of wing on the reef-flat and wreckage onshore near the main lagoon channel. These locations strongly suggest that the aircraft broke apart in the surf along the ocean reef and washed ashore in pieces. Anything that would float (seat cushions, fuel tanks, cabin skins with kapok insulation attached, etc.) might well end up along the lagoon shore directly opposite the channel. The stories made sense.

But, as we’ve said a hundred times, anecdotes are not evidence—they are merely folklore unless and until they lead to hard archival, photographic, or physical evidence. Without corroboration, the stories we heard on Funafuti are no more credible than are the tales told about the lady flier held prisoner on Saipan. We reasoned that if there was really airplane debris on the reef-flat in the late 1950s, it may have also been there in 1953 when detailed aerial mapping photos of the island were taken. We know that ferrous metal debris from the old shipwreck farther up the beach is scattered across the reef-flat in the area indicated by Ms. Taiki, but its rusty color is almost

identical to the reddish-brown of the coral. A debris field of aluminum wreckage should show up as small light spots distributed in a linear fashion. Any such anomalies would have to appear in at least two photos to insure that they weren’t flecks of dust or flaws in the developing process.

To find out if there was anything there we called on our old friend Jeff Glickman of Photek, Inc. of Hood River, Oregon. Photek’s state-of-the art digital imaging capabilities and Jeff’s forensic skills had already proved their worth in the Earhart investigation (see *TIGHAR Tracks* Vol. 11 No. 3 “The Earhart Electra, Part 2” and Vol. 12 No. 1 “The Niku III Preliminary Expedition”). A careful examination of the reef-flat in the indicated area revealed not only four objects which met the necessary qualifications for aluminum debris (light color, small size, linear orientation, appearing in two photos) but, in one photo, one of the light-colored objects was even exhibiting a specular reflection (the type of glint normally seen only from sunlight shining on metal).

Jeff next examined the shoreline for any sign of the airplane wreckage. No detailed photography was available of the lagoon shore where Mr. Songivalu reported seeing debris, but where Ms. Taiki said she saw wreckage on shore, a 1988 aerial photo taken by the Royal New Zealand Air Force revealed another specular reflection indicating the presence of shiny metal of a rounded, perhaps even capsular, shape. This portion of the island is known as Nutiran (pronounced NewZEEran) and was named after a New Zealand survey party that was camped there when the first Gilbertese settlers arrived. It is specifically because the area was closely examined in 1938 that TIGHAR has always considered it to be the least

likely area to hold aircraft wreckage. Consequently, very little searching has been done in this region. The photographic evidence corroborating the Funafuti anecdotes now suggests that the wreckage allegedly seen there in the late 1950s may have only washed ashore during or after World War Two. Because no aircraft is recorded as having been lost at or near Nikumaroro during the war, it must be assumed that either the wreckage was floating debris from a distant wartime wreck which happened to wash ashore, or that some time prior to the island's settlement in late 1938,

an aircraft landed on or near the reef-flat, sank out of sight at the reef edge, and was eventually broken up and washed ashore by storm activity.

In any event, we now have a specific, very promising and previously unsearched area to examine for aircraft wreckage when we return to the island next year.



In these two aerial mapping photos taken in 1953, the large land mass is Nutiran district at the island's west end. The photo at left shows the white line of breakers on the fringing reef and the broad reef flat between it and the beach. The photo at right shows Tatiman Passage which leads into the lagoon. The roads and structures of the village can be seen on the land to the south of the passage.



Enhanced enlargements of these photos, as processed by Photek, disclose four small (a few feet across) light colored objects visible down through an estimated three to four feet of water standing on the reef flat. In Photo 2 the fourth object is exhibiting a specular reflection characteristic of shining metal. This is the part of the reef flat where Ms. Taiki says she saw part of an airplane wing in the late 1950s.

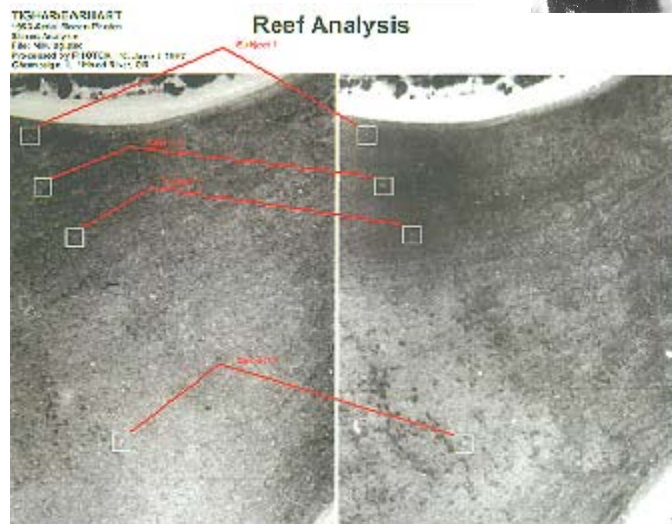
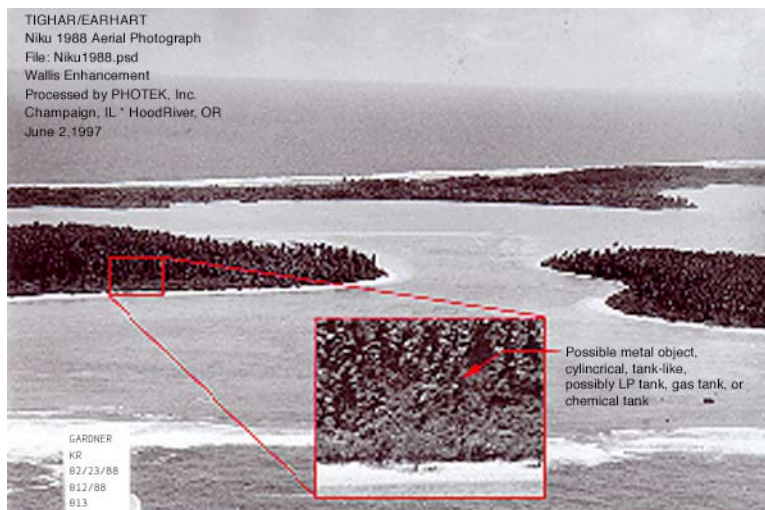


PHOTO 1

PHOTO 2



In this view of Tatiman Passage taken by the Royal New Zealand Air Force in 1988, Nutiran district is on the left and the now abandoned and overgrown village is on the right. Photek has identified a specular reflection from an unidentified object back in the dense vegetation along the Nutiran shore in the same area where Ms. Taiki says she saw airplane wreckage. The only "tanks" we've encountered on Nikumaroro are of ferrous construction and are heavily rusted.

Is This Earhart's Electra?

The photograph on this page has already stirred up quite a bit of controversy and will probably stir up more. About ten years ago Capt. George Carrington, USN(Ret.) brought this and another photo to Lockheed Aircraft saying that they had been given to him by a former British seaman who had served aboard the submarine tender HMS *Adamant* in the western Pacific in late 1946 and early 1947. Carrington said that the seaman, who wished to remain anonymous, had given him the pictures because the wrecked airplane in one of the photos reminded him of Earhart's airplane on the cover of a book Carrington had just self-published describing his own theory about Amelia Earhart's disappearance (she was a spy).

The seaman's other photo showed the beach of a tropical island from just offshore. A group of perhaps 40 men in shorts are standing about on the beach and in the shallow water. Most are shirtless. The level beach extends several hundred feet inland and is bordered by a few tall palm trees behind which the vegetation and terrain rise steeply upward to high jungled hills in the distance. According to Carrington, HMS *Adamant* had put these men ashore on the uninhabited island for the purpose of gathering sand used in fighting engine room fires and also for a little recreation. The seaman did not recall the name of the island, if he ever knew it. Supposedly he walked along the beach with a friend until they noted a couple of large coconut palms that had been knocked down. Back in the bush they found the wreckage of a twin engined airplane and took the photo shown at right.

First Lockheed, then the Smithsonian Air & Space Museum, and ultimately TIGHAR (with some hi-tech photo-analytical help) tried to determine:

- A. Is the airplane in the photo a Lockheed Model 10 Electra?
- B. If it is an Electra, what version is it?
- C. What clues may help determine just where the photo was taken?

The results were inconclusive. Most agreed that the aircraft was a Model 10, although there were dissenters. No compelling case could be made one way or the other as to whether it was a 10A (with 450 h.p. Pratt & Whitney R985 engines) or a 10E (with 550 h.p. Pratt & Whitney R1340 engines). Earhart's aircraft was, of course, a 10E.

Botanists at the Smithsonian's Museum of Natural History confirmed that the vegetation was appropriate for a Pacific island, but they pointed up some problems with the story. The mature coconut palms visible in the wreck photo are very sick trees, either due an infestation of rhinoceros beetles or from prolonged drought, whereas the trees in the photo of the men on the beach are healthy. The two photos could not have been taken on the same island at the same time. Further investigation turned up other inconsistencies. The seaman's name could not be found among the ship's company of HMS *Adamant* and the vessel's logs showed her to be docked in Hong Kong during the entire time period in question.



And so the matter stood for nearly ten years—an intriguing photo of a wrecked airplane that seemed to be a Lockheed 10, and might be a Lockheed 10E (but we thought probably not), on what might be Nikumaroro or any of a hundred other Pacific islands. Just one more dead end. Then, just recently, we discovered photographic evidence of a large light-colored metal object in the bushes along the island shoreline in 1988 (see “Corroboration,” page 12). Something about the setting was vaguely reminiscent of the old wreck photo. Forensic imaging has seen many advances since 1989 and we asked Jeff Glickman of Photek if he’d like to take a crack at scientifically quantifying the measurements and proportions of the airplane in the photo. Jeff took on the case and has been working with the photo for a few weeks now. We’re addressing the same three questions, but with much better research capability than we had before. Here’s what we know so far.

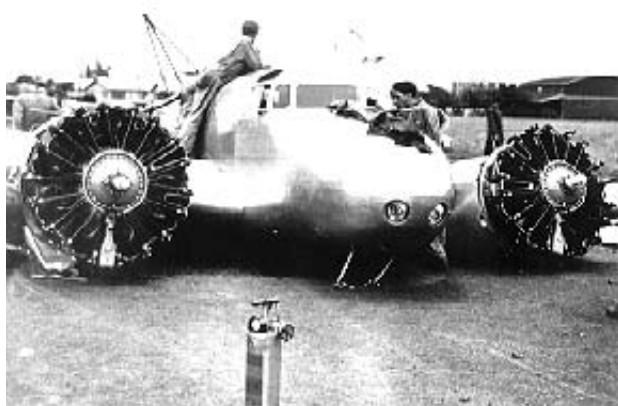
The airplane does indeed seem to be a Lockheed 10. All of the visible structural elements match the Model 10 and do not match any other aircraft we’ve been able to think of. Obviously, much of the airplane is gone. What we can see is the center section from engine to engine. The starboard engine is missing and the inboard leading edge of the starboard wing has been peeled down to reveal the two distinctive lightening holes characteristic of the Model 10. The port engine and propeller are intact and the cant of the engine suggests that the landing gear may be down. The ring cowl is in place but the rest of cowlings is missing. The nose section from the base of the windshield centerpost forward has collapsed. A few pieces of skin have been removed to reveal bulkheads and stringers that match the structure of the Electra.

But what Electra is it? There’s the rub. The primary difference between the four versions of the airplane was the engines. Each type of engine had a slightly dif-

ferent diameter so, theoretically, if we can measure the engine in the photo we can tell what engine it is and, perhaps, rule out the possibility that this is Earhart’s 10E. All versions of the Electra used a nine-foot Hamilton Standard propeller, so the unbent prop provides a convenient ruler. But, as Jeff Glickman explains, there’s a hitch (as usual). Because we’re looking at the engine from an oblique angle we have to correct for distortion and such corrections have a built-in error factor. To be sure about our conclusions, the error factor must be no more than half of the difference we’re trying to distinguish. The engine diameter difference between the R1340 S3H1 engine of the 10E and the R985 SB engine of the 10A is 5.6 inches. The error factor for the oblique projection in the photo is normally 4.58 inches—not good enough. So Jeff is having to extract the actual roll, pitch and yaw angles from the projection in order to get the error factor small enough to permit us to draw valid conclusions. At this point all we can say is that some features visible on the firewalls do not seem to match the 10A and do appear to be right for the 10E. Research continues.

And where is it? That’s even tougher. The story that came with the photo is clearly not accurate. We called George Carrington to see if he could explain the discrepancies, but he refused to help (TIGHAR is rather unpopular among the few remaining Earhart conspiracy advocates). So the photo has to stand on its own. Could the photo have been taken on Nikumaroro at the place where we see a reflection in the 1988 RNZAF photo? Not today. The background is wrong. But if the photo was taken in that spot prior to 1949 (when the tall trees were cut down), then—yes, it looks about right. The mature coconut palms would be from Arundel’s 1892 planting. Old photos and maps show a stand of cocos right in that area and they would show the effects of the droughts that plague the island. The grasses and sedges in the foreground, the bushes and low trees in the middle distance (*Scaevola* and *Tournafortia*), and tall trees in the distance (*Pisonia grandis*), all match what the area looked like prior to 1949.

Should the airplane measure out to be a Lockheed 10E, then the photo becomes very interesting indeed. Only 15 10E’s were built and only one was ever known to be in the central Pacific region. No one knows what became of it. Or do we?



Earhart’s wrecked Electra, Luke Field, Hawaii, March 1937. Negative has been reversed for comparison with photo opposite. Photo courtesy Purdue University Library Special Collections.



The Canton Engine



“I have taken some pictures and airlifted an engine that appeared to be a 1340 from the coral beach of Gardner Island.”

This sentence was part of an email message which greeted us immediately upon our return from the Niku III Expedition in late March. Sent by a man who teaches aviation maintenance at a California community college, it went on to explain when, how and why the recovery was made. We immediately contacted the individual and found him to be friendly and helpful. He told us that the engine had been “airlifted” by helicopter to Canton Island, about 200 miles northeast of Nikumaroro. The “pictures” referred to are 8mm home movie films. We soon made arrangements for a TIGHAR researcher to interview him on videotape and view the films. We also began an investigation into the informant’s credibility and started checking the verifiable parts of the story he told. After six months of investigation, the bottom line is that there is every reason to suspect that one of the engines from the Earhart aircraft is now on Canton Island.

Because Canton is readily accessible by air (the island has a 6,000 foot paved runway), we are not releasing the informant’s name nor the engine’s alleged specific location. If the engine is there, it should be recovered according to accepted archaeological standards.

We are, however, making the story public in the hope of attracting support for an on-site investigation and, if warranted, recovery. Here is what we have learned.

A Credible Informant

The informant is 54 years old, married with two children and has lived in the same house since 1970. He has taught aviation maintenance at the same school for the past 24 years and is now the head of his department. He has provided his information to TIGHAR freely and with no desire for publicity or payment. He has become a TIGHAR member and has been active in helping us verify the various parts of his story.

A Secret Project

In 1970 he was working as a mechanic for a helicopter operation in California when the firm went bankrupt. With a young family and a mortgage, he needed to find work.

That same year, the USAF’s Space and Missile Test Center was activated at Vandenberg AFB, California, and a test program was inaugurated which would use the Phoenix Islands (uninhabited since 1963) as a

target area for ICBMs. Temporary radar towers were erected on Canton, Hull, and Enderbury Islands to track the incoming missiles. Environmental surveys were carried out on other islands of the group including Sydney, Gardner, McKean, and Birnie. Three Sikorsky HH-3 helicopters supported these operations from the test program’s base at Canton, the largest atoll of the Phoenix Group. The helicopters were flown and maintained by civilian contract pilots and mechanics. Several employees of the defunct California helicopter company were hired for this work, including TIGHAR’s informant. He spent a total of four months at Canton Island in late 1970/early 1971.

Canton Island had been a major American base during World War II. After the war, its 6,000 foot, paved runway became a refueling stop for American and British trans-Pacific airline travel, but the advent of nonstop jet service in the mid-1960s caused the island to be abandoned.



During the missile test program the island was inhabited by approxi-

mately 300 men, mostly civilian contract employees with a few USAF personnel. The civilian helicopter crews enjoyed a great deal of freedom and the work of supporting the test program was often boring. The informant’s home movies show daily life on Canton and many scenes of helicopter airlift operations to outlying islands. Although he is quite sure that he filmed the events described below, he has been unable to locate that particular reel.

A 9 Cylinder, Single Row Radial

One day while flying low over one of the Phoenix Islands, he spotted what looked like an old radial aircraft engine awash on the reef flat not far from the beach at the western end of the atoll. Although the informant’s original message to TIGHAR said that the engine had been recovered from Gardner Island (now Nikumaroro), subsequent interviews and interrogation make it clear that he is not at all sure at which island the engine was found. That it was one of the Phoenix Group is certain. Other aspects of his recollections indicate that it was probably either Sydney, Hull or Gardner. Wherever he

was, he called the object to the pilot's attention and asked him to land on the beach. Being in no particular hurry, the pilot consented and the informant waded out through the knee-deep water to inspect the object. Seeing that it was a nine cylinder, single row, radial engine, the informant decided to bring it back to Canton as a curiosity. Attaching a cable from the helicopter, they picked up the engine and flew it home as a sling load. For approximately the next two weeks, the informant poked at the engine in his spare time. He was puzzled by the fact that the beat-up and badly corroded engine appeared to be either a Pratt & Whitney R985 or R1340, both of which types seemed far too small to have been on any airplane that could reach such a remote place as the Phoenix Islands. At this time, according to the informant, he had never heard of Amelia Earhart.

Eventually word came down that there was to be an inspection of the missile test facility by an Air Force general and, in cleaning up the maintenance area, the informant removed the engine to a remote location on Canton Island where, as far as he knows, it remains to this day. A former co-worker remembers that the informant had an old radial engine at Canton and that he later hauled it away.

Since the end of the test program in 1979, the island has seen almost no activity. A review of official records made available to TIGHAR by the U.S. Air Force details various environmental cleanup measures implemented when the project was shut down, but indicates that the area where the engine was allegedly deposited was not disturbed. The runway remains serviceable and jet fuel is available. Canton Island is now part of the nation of Kiribati. At present, a few families live there to make weather observations and maintain the aviation fuel farm in anticipation of future airline service.

The Right Engine?

TIGHAR research has shown the informant's initial impression to be correct. Although the P&W R985 and R1340 are still probably the most common radial engines in the world, no aircraft that operated in the Central Pacific before, during or since World War II used either type of engine, with three exceptions.

- ❁ The three Vought O3U-3 Corsair floatplanes launched from the battleship USS Colorado to search for Amelia Earhart in 1937 were powered by the P&W R1340. None of those aircraft was lost.
- ❁ The Vought OS2U Kingfisher carried on American cruisers and battleships during World War II was powered by the P&W R985, but none are known to have been in the Phoenix Islands area, let alone lost there.
- ❁ The only aircraft equipped with such engines and known to have been lost in the area is Earhart's

Lockheed 10E Special which carried two Pratt & Whitney R1340 S3H1s, serial numbers 6149 and 6150.

Not The Wright Engine

Could the informant have mistaken some other nine cylinder, single row radial for a P&W? The only candidate would be the Wright R1820 used on PBYS, C-47s and B-17s (among others). These engines develop twice the horsepower of the 985 or 1340 and are physically much larger. The informant, when asked to consider the possibility, is adamant that he would have known the difference. Even so, no aircraft equipped with the Wright R1820 is known to have been lost at any of the outlying Phoenix Islands.

Identifying The Engine

If there is a Pratt & Whitney R1340 on Canton Island, could expert analysis determine if it was from the Earhart aircraft? If the data plate is present and legible under the layers of rust and corrosion, identification would be easy. However, even without a data plate, positive identification of one of Earhart's engines may also be possible. The crankshafts and cams of R1340s have serial numbers and these components are protected deep within the engine. Pratt & Whitney maintains an excellent company archive and it should be possible, with their cooperation, to match the components to the production period and even the individual engine.

If the engine is there and turns out to be Earhart's we still won't know for sure which island it came from. Such a discovery would, however, effectively eliminate the theory that the aircraft went down at sea. By proving that Earhart and Noonan met their end at one of the islands of the Phoenix Group, the engine would lend significant support to the mounting evidence that Nikumaroro is that island.

Flying Down to Canton

To investigate this fascinating lead we'll need an aircraft capable of making the 2,000 mile flight from Hawaii to Canton. It should be a turbine aircraft because only Jet A is available on the island. The aircraft should carry a scientific team of at least six people and must have a door large enough to accommodate the dimensions of an R1340 (51.6 inches by 43.01 inches) and be able to handle the engine's 865 pound weight. While we're in the neighborhood, we'd want to overfly Nikumaroro and get the detailed aerial photography we've always wanted.



THE TARAWA FILE

The recent discovery of an obscure, formerly secret file in the Kiribati National Archives has come as a thunderbolt to TIGHAR's investigation of the Earhart disappearance. Labeled "Discovery of Human Remains on Gardner Island," the folder (List KNI 11/I, File 13/9/1) contains fifteen official telegrams and one letter which establish that, in 1940, bones and objects suspected at the time as being from the lost Earhart flight were found on Gardner Island. Knowledge of this event went all the way up to Sir Harry Luke, the senior British government official in the Pacific region. Incredibly, the matter was dropped on the basis of a dismissive and apparently casual identification of the remains as being those of an elderly Polynesian male. American authorities were apparently never notified.

For TIGHAR, the story begins with Floyd Kilts, a 68 year old retired Coast Guardsman who told an outrageous tale to a San Diego *Tribune* reporter in 1960. At the height of new allegations that Earhart had been a spy, Kilts came forward to say that the conspiracy buffs had it all wrong. He had been part of a work party sent to Gardner Island in 1946 to dismantle the wartime Loran radio station. While there he was told a story, through an interpreter, about an incident which had supposedly occurred when the atoll was first settled in 1938.

[A] native was walking along one end of the island. There in the brush about five feet from the shoreline he saw a skeleton. What attracted him to it were the shoes. Women's shoes, American kind. No native wears shoes. Couldn't if they wanted to—feet too spread out and flat. The shoes were size nine narrow. Beside the body was a cognac bottle with fresh water in it for drinking. The island doctor said the skeleton was that of a woman, and there were no native women on the island then. Farther down the beach he found a man's

skull, but nothing else. The magistrate was a young Irishman who got excited when he saw the bones. He thought of Amelia Earhart right away. He put the bones in a gunnysack and with the native doctor and three other natives in a 22 foot four-oared boat started for Suva 887 nautical miles away. The magistrate was anxious to get the news to the world. But on the way the Irishman came down with pneumonia. When only 24 hours out of Suva he died. The natives are superstitious as the devil and the next night after the young fellow died they threw the gunnysack full of bones overboard scared of the spirits. And that was that.

By the time we first heard the story in 1989, Kilts was long dead. Could there be any truth to it? A few parts tracked well with the island's known history—first settled in 1938, no women, a magistrate with an Irish name (Gallagher)—but other parts were clearly nonsense. Gallagher never tried to go to Fiji in a small boat and he made no mention of any bones in his detailed quarterly progress reports. He did die, but not at sea and not of pneumonia. And just where on the island were these bones supposedly found? Kilts says only "along one end of the island." Gallagher's clerk Bauro Tikana, now living in Tarawa, remembered something about bones being found on "the other end of the island," meaning not near the village. Dr. Teinamati Mereki, a former resident of Nikumaroro now living in the Solomon Islands, remembered hearing about the bones. He placed their discovery just east of the southern lagoon passage. This was the same area where we found pieces of a woman's shoe in 1991 and where we excavated and collected the remains of a very old campfire in March of this year. Was the shoe we found the mate to the one in Kilts' story? Had we found the place where the bones were found? Or was it all, as many warned, a fantasy built around unremarkable objects and wishful thinking?

File 13/9/1 Discovery of Human Remains on Gardner Island

Reproduced here, for the first time anywhere, are what may turn out to be the most important historical documents ever uncovered in the sixty-year search for the truth about what really happened to Amelia Earhart. Each piece of correspondence has been carefully duplicated in facsimile format in the interest of legibility. Misspellings and cross-outs are exactly as they appear in the original. TIGHAR is indebted to author Peter McQuarrie (TIGHAR #1987) who discovered the file while doing World War II research, and to Joseph Russell of Tarawa who helped us obtain photocopies of the actual documents.

Document #1

TELEGRAM.

From The Officer-in-Charge, Phoenix Scheme, Gardner Is.,

To The Ag. Administrative Officer, C.G.I.D., Tarawa.

No _____ **(Date)** 23rd Sept., 1940.

Please obtain from Koata (Native Magistrate Gardner on way to Central Hospital) a certain bottle alleged to have been found near skull discovered on Gardner Island. Grateful you retain bottle in safe place for present and ask Koata not to talk about skull which is just possibly that of Amelia Earhardt.

Gallagher.

Gerald B. Gallagher is the twenty-nine year old Colonial Service cadet who has recently been made Officer-In-Charge of the new Phoenix Island Settlement Scheme. Known to his fellow officers as "Irish" and to the Gilbertese islanders as "Karaka," Gallagher is a remarkable character. He is well over six feet tall, a Roman Catholic (unusual in the Colonial Service), and utterly dedicated to the impoverished islanders who are trying to carve out a life on the previously uninhabited islands of Sydney, Hull and Gardner in the Phoenix Group. Colonial officer Eric R. Bevington describes Gallagher as "the most Christ-like man I've ever known." Gallagher and Bevington had come out from England as Cadet Officers together in the spring of 1937. They were aware that Amelia Earhart had gone missing near Howland Island that summer and that her husband had put up a \$2,000 reward for information about her fate.

The addressee of this message is The Acting Administrative Officer of the C. (?) Gilbert Islands District in Tarawa. The chain of command goes this way: The Phoenix Island Settlement Scheme is part of the Gilbert & Ellice Islands Colony whose Resident Commissioner lives on Ocean Island. This

and other British colonies throughout the region answer to the Western Pacific High Commission headquartered in Suva, Fiji.

Koata is the Native Magistrate and senior Gilbertese official on Gardner Island. Apparently he is returning to Tarawa for medical treatment.

Document #2

TELEGRAM.

From The Officer-in-Charge, Phoenix Scheme, Gardner Is. , ..

To The Resident Commissioner, Ocean Island.

No 71

(Date) 23rd Sept., 1940.

Some months ago working party on Gardner discovered human skull - this was buried and I only recently heard about it. Thorough search has now produced more bones (including lower jaw) part of a shoe a bottle and a sextant box. It would appear that

- (a) Skeleton is possibly that of a woman,
- (b) Shoe was a woman's and probably size 10,
- (c) Sextant box has two numbers on it
3500 (stencilled) and 1542 - sextant
being old fashioned and probably painted
over with black enamel.

Bones look more than four years old to me but there seems to be very slight chance that this may be remains of Amelia Earhardt. If United States authorities find that above evidence fits into general description, perhaps they could supply some dental information as many teeth are intact. Am holding latest finds for present but have not exhumed skull.

There is no local indication that this discovery is related to wreck of the "Norwich City".

Gallagher.

This message is sent the same day as the first message—September 23, 1940—but goes to Gallagher's immediate superior, the Resident Commissioner of the Gilbert & Ellice Islands Colony at Ocean Island. Gallagher has only recently arrived on Gardner, having previously run the Phoenix Scheme from Sydney Island.



Photo courtesy Eric R. Bevington

Gerald B. Gallagher, O.I.C.,
Phoenix Scheme, in 1937.

Document #3

A week later the Administrative Officer in Tarawa says that Koata has handed over the bottle which he describes as a "benedictine" bottle. Benedictine is a specific product—a liqueur produced in Fecamp, France since 1510. Today Benedictine bottles have the name molded into the glass. If that was also the case in the past, it would explain the specific identification of the bottle. According to Eric Bevington, a Benedictine bottle was highly unusual in the Central Pacific of 1940.

TELEGRAM.

From The Administrative Officer, C.G.I.D., Tarawa Is.

To The Officer-in-Charge, Phoenix Scheme, Gardner Is.

No

(Date) 30th Sept., 1940.

Your telegram 23rd September. Koata has handed to me one benedictine bottle.

A.O.C.G.I.D.

Document #4

TELEGRAM.

From The Resident Commissioner, G & E.I.C., Ocean Island.

To The Officer-in-Charge, Phoenix Scheme, Gardner Is.

No ____ 66

(Date) 1st October, 1940.

Your telegram No. 71. Information has been passed on to the High Commissioner particularly with a view to identifying number of sextant box.

Information on following points, where possible, would be of interest:

- (a) How deep was skeleton buried when found,
- (b) How far from shore,
- (c) In your opinion does burial appear deliberate or could it be accounted for by encroachments of sand, etc.,
- (d) Is site of an exposed one (i.e. if the body of Mrs. Putnam had lain there is it likely that it would have been spotted by aerial searchers)?
- (e) In what state of preservation is shoe,
- (f) If well preserved does it appear to be of modern style or old fashioned,
- (g) Is there any indication as to contents of bottle.

Do you know anything of wreck of "Norwich City" - e.g. when did it take place, where any lives lost and how long were survivors marooned at Gardner Island?

Resident.

The next day, the Resident Commissioner replies to Gallagher. He has passed the word up to his boss, Sir Harry Luke in Fiji, but his questions indicate some skepticism of Gallagher's suspicion that this might be Earhart.

TELEGRAM.

From The Officer-in-Charge, Phoenix Scheme, Gardner Is.-----

To The Resident Commissioner, Ocean Island-----

No ____72____

(Date) 6th October, 1940.

Your telegram No. 66.

- (a) Skeleton was not buried - skull was buried after discovery by natives(coconut crabs had scattered many bones),
- (b) 100 feet from high water ordinary springs,
- (c) Improbable,
- (d) Only part of sole remains,
- (f) Appears to have been stoutish walking shoe or heavy sandal,
- (g) "Benedictine" bottle but no indication of contents,

There are indications that person was alive when cast ashore - fire, birds killed, etc.,
"Norwich City" wrecked and caught fire 1930 or 1932. Number of crew sailed to Fiji in lifeboat, remainder picked up later at Gardner by "Ralum". Think Board of Enquiry held Suva - loss of life not known. This information derived from gossip only.

Gallagher.

Document #5

Five days later Gallagher replies. His information about the wreck of the *Norwich City* "derived from gossip only," is not very good. The freighter went aground on the reef November 30, 1929 off the island's northwest end with the loss of eleven lives—five British seamen and six Arab stokers. Three bodies washed ashore and were buried. The twenty-four survivors were all rescued five days later by S.S. *Trongate* out of Samoa. No one was left on the island.



The S. S. Norwich City in 1937. Photo courtesy Eric R. Bevington.

Document #6

TELEGRAM.

From The Secretary, Western Pacific High Commission, Suva.

To The Officer-in-Charge, Phoenix Scheme, Gardner Is.

No 1.
Confidential.

(Date) 15th October, 1940.

Please telegraph to me particulars of finding of skeleton in Gardner Island, including where found and state reason for believing it to be that of a woman and whether this belief based on anatomical characteristics. State dental condition and whether any evidence of dental work on jaw, length of skeleton from vertex of skull to arch of foot, approximate age and condition of bones and whether any hair found in the vicinity of skeleton.

What have you done with skeleton? It should be carefully cared for and placed in a suitable coffin and kept in secure custody pending further instructions.

Keep matter strictly secret for the present.

Secretary,
Western Pacific High Commission

By the 15th of October the higher ups in Suva are very interested. This message comes directly from Henry Harrison Vaskess, Secretary of the Western Pacific High Commission. Gallagher is to provide more information to headquarters and "keep matter strictly secret." Note that this is telegram No. 1 from the WPHC to Gallagher. It's the first time the High Commission has had any need to communicate directly with the lowly O.I.C. P.I.S.S.

TELEGRAM.

From The Officer-in-Charge P.I.S.S., Gardner Island-----

To The Secretary for the W.P.H.C., Suva.-----

No 1.

(Date) 17th October, 1940.

Confidential.

Complete skeleton not found only skull,
lower jaw, one thoracic vertebra, half pelvis, part
scapula, humerus, radius, two femurs, tibia and fibula.
Skull discovered by working party six months ago - report
reached me early September. Working party buried skull but
made no further search.

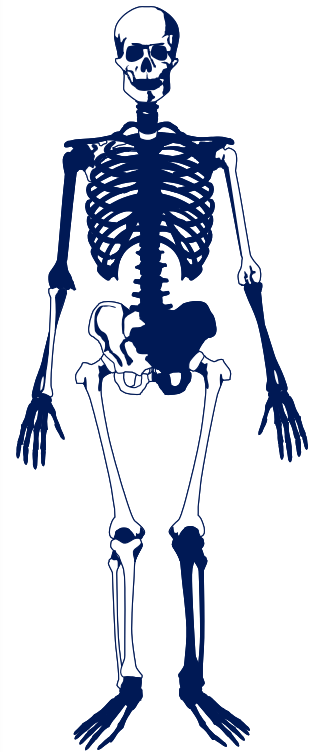
Bones were found on South East corner of
island about 100 feet above ordinary high water springs.
Body had obviously been lying under a "ren" tree and
remains of fire, turtle and dead birds appear to indicate
life. All small bones have been removed by giant coconut
crabs which have also damaged larger ones. Difficult to
estimate age bones owing to activities of crabs but am quite
certain they are not less than four years old and probably
much older.

Only experienced man could state sex from avail-
able bones; my conclusion based on sole of shoe which is
almost certainly a woman's.

Dental condition appears to have been good
but only five teeth now remain. Evidence dental work on
jaw not apparent.

Document #7

Gallagher answers the
Secretary's questions and
provides more details. A "ren"
tree is *Tournefortia argenta*,
a type of scrub tree typically
found in association with
dense underbrush.



*Unshaded portions of skeleton
are the bones recovered in
1940*

-2-

We have searched carefully for rings, money and
keys with no result. No clothing was found. Organized
search of area for remaining bones would take several weeks as
crabs move considerable distances and this part of island is
not yet cleared.

Regret it is not possible to measure length of
skeleton. No hair found.

Bones at present in locked chest in office
pending construction coffin.

Gallagher

Document #8

TELEGRAM.

From The Secretary for the Western Pacific High Commission, Suva,

To The Officer-in-Charge, Phoenix Scheme, Gardner Island.

No 2.
Confidential.

(Date) 26th October, 1940.

Your telegram 17th October. Organised
search should be made in the vicinity and all bones and
other finds, including box, sextant and shoe, should be
forwarded to Suva by the first opportunity for examination.

Secretary.

Shipping everything to the High Commission in Suva means jumping the normal chain of command, bypassing the colonial administration. There is also a misunderstanding that a sextant has been found.

GILBERT AND ELLICE ISLANDS COLONY.

Nikumaroro (Gardner) Island,
Phoenix Islands District,
27th December, 1940.

Confidential.

Sir,

I have the honour to acknowledge the receipt of your confidential telegram No. 2 of the 26th. October, 1940, and to state that two packages are being handed to the Master, R.C.S. "Nimanoa", for eventual delivery to the High Commission Office in Suva. The larger of these packages is the coffin containing the remains of the unidentified individual found on the South Eastern shore of Gardner Island; the second package is the sextant box found in the immediate locality and contains all the other pieces of evidence which were found in the proximity of the body.

2. The fact that the skull has been buried in damp ground for nearly a year, whilst all the other bones have been lying above ground during the same period, was probably not apparent from previous correspondence,

The Secretary,
Western Pacific High Commission,
Suva - Fiji.

Document #9

This is a letter rather than a telegram. The original probably accompanied the shipment to Suva. R.C.S. (Royal Colony Ship) *Nimanoa* was the rather decrepit sailing vessel that periodically serviced the islands.



R.C.S. Nimanoa, tied off to the wreck of the Norwich City, 1937.
Photo courtesy Eric R. Bevington.

- 2. -

but may be helpful in determining the age of the bones. In spite of an intensive search, none of the smaller bones have been discovered and, in view of the presence of crabs and rats in this area, I consider that it is now unlikely that any further remains will be traced. A similar search for rings, coins, keys or other articles not so easily destroyed has also been unsuccessful, but it is possible that something may come to hand during the course of the next few months when the area in question will be again thoroughly examined during the course of planting operations, which will involve a certain amount of digging in the vicinity. If this should prove to be the case, I will inform you of the fact by telegraph.

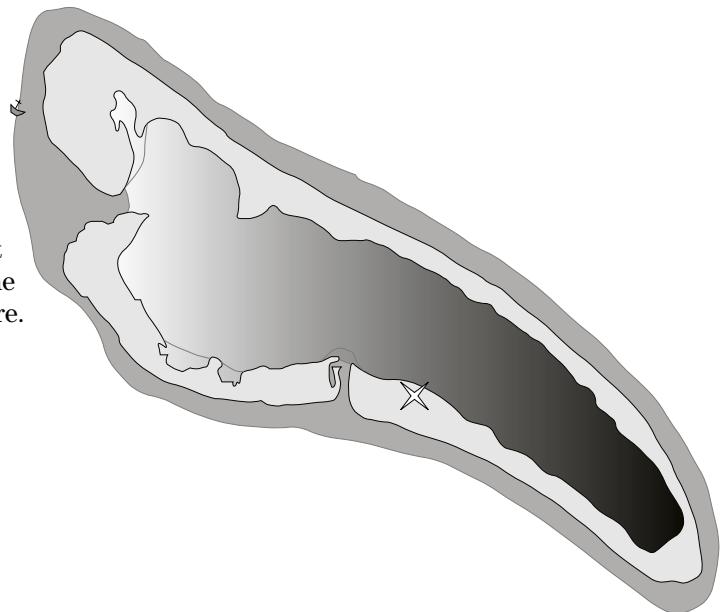
3. Should any relatives be traced, it may prove of sentimental interest for them to know that the coffin in which the remains are contained is made from a local wood known as "kanawa" and the tree was, until a year ago, growing on the edge of the lagoon, not very far from the spot where the deceased was found.

I have the honour to be,
Sir,
Your obedient servant,

(Sgd) Gerald B. Gallagher.

Officer-in-Charge,
Phoenix Islands Settlement Scheme

The location, as described (southeast part of the island in an area soon to be cleared and planted, specifically near the lagoon shore 100 feet above the high water line) matches perfectly the spot where TIGHAR found the shoes and campfire.



Document #10

This is trouble. More than three months later, on the way to Suva, the *Nimanoa* puts in at Tarawa where the senior medical officer gets wind of the bones. He is 30 year old Dr. Lindsay Isaac, who will later change his name to Lindsay Verrier. He has "no knowledge of the matter" because the affair has been classified as strictly secret. To him, it looks like young Gallagher is not properly acknowledging Isaac's position. Those who knew Isaac personally describe him as "a strange little man" and "very full of himself and easily offended."

TELEGRAM.

From The Medical Officer, Tarawa Island
To The Officer-in-Charge, Phoenix Islands.
No _____
(Date) 6th February, 1941.

I understand from the Master R.C.S. Nimanoa, that he has certain human remains on board consigned to Suva.

As I am in charge of Medical and forensic investigation of such objects throughout the whole colony and have no knowledge of the matter, I presume that the package was intended to be consigned to myself?

Isaac.

Document #11

TELEGRAM.

From The Resident Commissioner
To The Officer-in-Charge, Phoenix Scheme, Gardner Island.
(Date) 7th February, 1941.
No 3.

Senior Medical Officer repeated to me his telegram to you regarding human remains addressed to Suva on "Nimanoa". I am informing him of position and there is no need for you to take further action.

Resident.

The Resident Commissioner recognizes the problem and tells Gallagher he will straighten it out. Later correspondence implies a heated exchange between the Resident and the Doctor but Isaac examines the bones anyway.

Document #12

In one sentence, Isaac dismisses the bones. A present day physical anthropologist had this opinion of the probable accuracy of his analysis: "It's highly unlikely that a British colonial medical officer of the 1940s, or almost any other decade, would be conversant in physical anthropology. Some early and basic publications in physical anthropology were available at that time ... but I don't think that said medical officer would know them well enough to apply them competently."

TELEGRAM.

From The Senior Medical Officer, Central Hospital, Tarawa.
To The Officer-in-Charge, Phoenix Scheme, Gardner Is.
(Date) 11th February, 1941.

No -----
Confidential

For your information remains taken from "Nimanoa" part skeleton elderly male of Polynesian race and that indications are that bones have been in sheltered position for upwards of 20 years and possibly much longer.

Isaac.

Document #13

TELEGRAM.

From The Officer-in-Charge, Phoenix Scheme, Gardner Is.
To The Senior Medical Officer, Central Hospital, Tarawa.
No ----- (Date) 11th February, 1941.
Confidential

Your confidential telegram 11th February.
Many thanks - rather an anticlimax! ~~Personal should be delighted if you keep box but matter has been mentioned in private letter to High Commissioner who is interested in timber used and may ask to see it. It would be fun to make you one for yourself or perhaps a little tea table - we have a little seasoned timber left. Please let me know whether you prefer box or table and if former give any particular inside measurements.~~

Gallagher

The same day, Gallagher acknowledges and apparently accepts Isaac's evaluation, considers trying to placate him with an offer to build him a tea table, but then changes his mind and crosses out everything but the first sentence.

Document #14

TELEGRAM.

From The Senior Medical Officer, Central Hospital, Tarawa.

To The Officer-in-Charge, Phoenix Scheme, Gardner Is.

No

(Date) 14th February, 1941.

Your telegram 11th February. Confidential.
Matter became somewhat tense and complex after guillotine conversation between us. As I had (and still have) no information save presence of remains and therefore quarantine from no danger infection, I am still wondering how wretched relics can be interesting.

Isaac.

This message only makes sense if it is Gallagher's copy of a message Isaac directed to the Resident Commissioner. It's clear that Isaac still has no idea why everyone was so interested in these "wretched relics." There is some indication that he intends to quarantine the bones before sending them on to Suva.

Document #15

TELEGRAM.

From The Secretary for the Western Pacific High Commission, Suva.

To The Officer-in-Charge, Phoenix Scheme, Gardner Is.

No 2.....

(Date) 28th April, 1941.

Confidential

Your letter 27th December. Remains and sextant box received, but no sextant. Did you forward sextant?

Secoma.

It is almost two months later before the bones, etc. arrive in Suva, so maybe Isaac did quarantine them. There is still confusion about the sextant.

Document #16

TELEGRAM.

From: The Officer-in-Charge, Phoenix Scheme, Gardner Island,
To The Secretary, Western Pacific High Commission, Suva.

Confidential.

Date; 28th April, 1941.

Your telegram No 2. No sextant was found.
Only part discovered was thrown away by finder but was
probably part of an inverting eyepiece.

Gallagher

Gallagher clears up the confusion and provides one last detail, and with this the matter was apparently closed. In May, Gallagher came to Fiji on leave but we have no way of knowing if he tried to follow up on his discovery after Isaac's put down. He returned to Gardner in late September aboard the S.S. *Viti* but arrived gravely ill with peritonitis from a burst appendix. His friend, Dr. D.C. M. "Jock" MacPherson operated to try to save his life, but Irish died on the table in the house he had built on Gardner Island. He was buried beneath a cement monument which can be seen today.



The survival of the file itself seems little short of miraculous. Tarawa was virtually levelled during World War Two and we can only conclude that the folder now in the archives is that which was kept by Gallagher at his headquarters on Gardner Island (now Nikumaroro). His files must have been transferred to the colonial headquarters in Tarawa sometime after the war. When the British Gilbert & Ellice Islands Colony became the independent nations of Kiribati and Tuvalu in the late 1970s, the file became part of the Kiribati National Archives.



Gallagher's house on Nikumaroro, circa 1940. TIGHAR Collection.



Gallagher's grave. TIGHAR photo by John Clauss.

The Castaway of Gardner Island

Gallagher's description of where he found the bones and artifacts makes it clear that his discovery was made on the same part of the island where TIGHAR found some of the same items he describes (parts of a woman's shoe and a campfire). Unless this part of the island was once a Girl Scout campground, it would appear logical to conclude that Gallagher and TIGHAR recovered items from the same site. If this is a valid conclusion, then we can combine the information provided by Gallagher with the firsthand discoveries we have made and reconstruct the scene with considerable accuracy.

The illustration below is speculative only in the exact placement of the various elements. The most ardent skeptic of the notion that Earhart and Noonan were ever on Nikumaroro must accept that something really happened on the island prior to 1940 that left this scene behind.

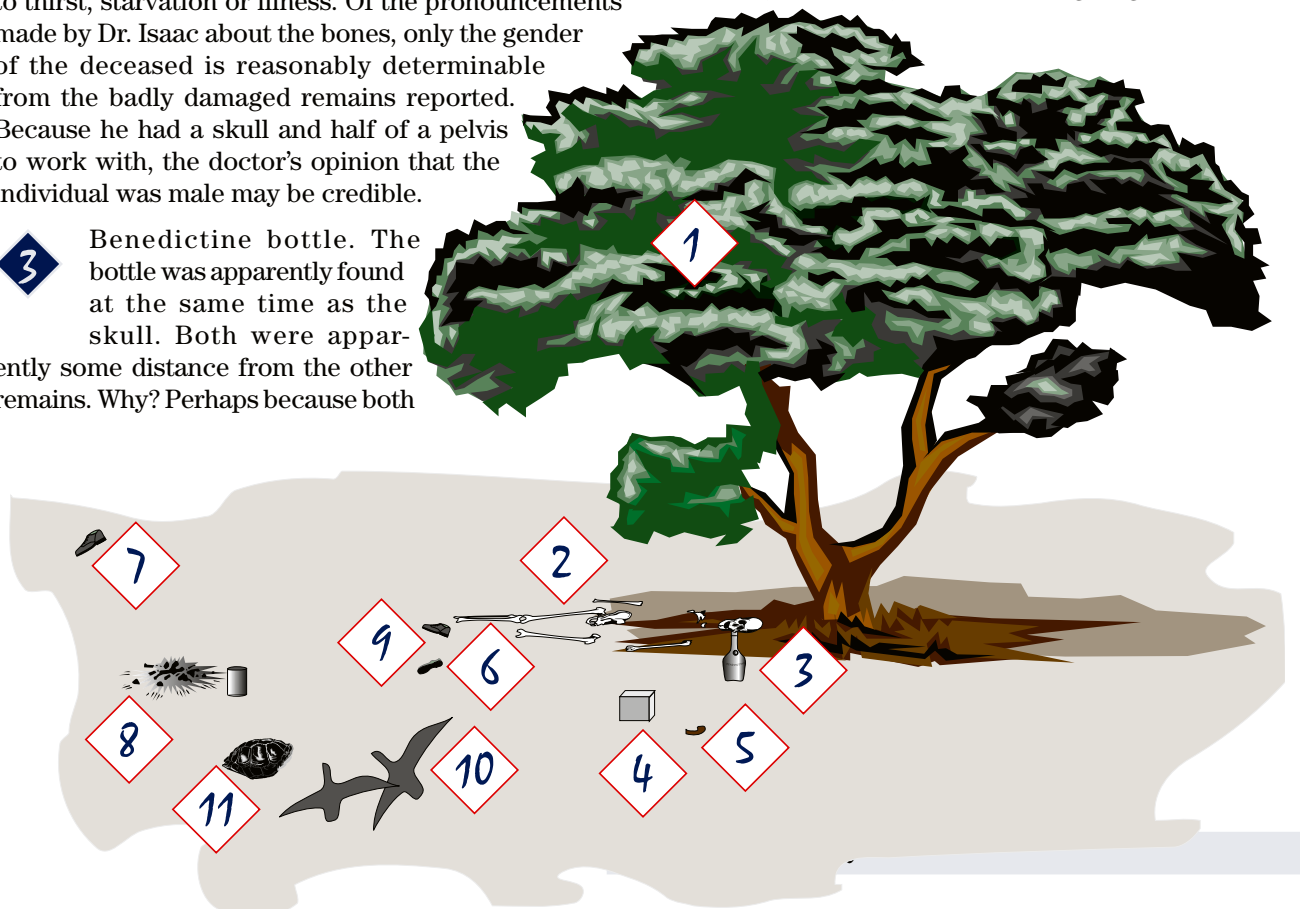
1 The "ren" tree. *Ren* is the Gilbertese name for *Tournefortia argenta*, a scrub tree still prevalent on Nikumaroro.

2 The bones. Although only a partial skeleton was still present when discovered, it would appear that the hapless individual expired in the shade of the ren tree. This suggests a lingering end due to thirst, starvation or illness. Of the pronouncements made by Dr. Isaac about the bones, only the gender of the deceased is reasonably determinable from the badly damaged remains reported. Because he had a skull and half of a pelvis to work with, the doctor's opinion that the individual was male may be credible.

3 Benedictine bottle. The bottle was apparently found at the same time as the skull. Both were apparently some distance from the other remains. Why? Perhaps because both

roll and each might be mistaken for a coconut by an industrious crab. Kilts' original anecdotal rendition of the story has the bottle containing "fresh water ... for drinking" but Gallagher says there was "no indication of contents." Kilts' informant seems to have been one of the discoverers, while Gallagher only saw the bottle several months later, so perhaps the bottle did contain water. It's an important point because a person with a bottle of water doesn't die from thirst. But how can a bottle roll and not spill the water? Of course, it can be stoppered, but a Benedictine bottle, because of its distinctive shape, can be almost half full and roll without spilling. (Try it. The liqueur is not bad either.)

4 Sextant box. Gallagher doesn't tell us why he thinks the sextant the box once contained was "old fashioned and probably painted over with black enamel" but if he is right, this is certainly not the Pioneer Bubble Octant Serial #12-36 that we think was aboard the Electra. Sextant expert Peter Ifland (TIGHAR #2058), who recently donated his large collection to the Mariner's Museum in Newport News, Virginia, has determined that the numbers reported as being on the box do not match the style used by any of the known manufacturers of aeronautical instruments. There is, however, another intriguing possibility.



Noonan was a famous aerial navigator before he signed on with Earhart. In a letter describing his techniques (reproduced in *Air Navigation*, a textbook by P.V.H. Weems) he says that he uses a Pioneer Bubble Octant as his primary instrument, but always carries a conventional nautical sextant as a “preventer.” Is Gallagher’s “old fashioned” sextant, in fact, Noonan’s preventer? The stencilled 3500 implies a large organization while the 1542 may be the serial number of the particular instrument. Noonan is said to have served in the British Merchant Marine during WWI. Could there be a connection? Research continues.

5 Inverting eyepiece. According to Peter Ifland, an inverting eyepiece is an attachment to a sextant that is often useful in taking sightings from an aircraft.

6 Woman’s shoes. We know much more about the shoes at the site than Gallagher did. We found more pieces and had access to better research information than he did. He says they’re about a size 10. Kilts said they were size nine narrow. Our measurement comes out to roughly 8½ or 9. We know that they were the same style and size worn by Earhart on her final flight, and that the replacement heel they featured was manufactured in the United States in the mid-1930s. If Irish had had that information he might not have been so quick to accept Isaac’s offhand dismissal of the bones.

7 The other shoes. We also found a heel from a different pair of shoes, slightly larger. We have no way of knowing whether it was a woman’s shoe or a man’s shoe. Several possibilities are apparent. Perhaps we have two pair of woman’s shoes and the bones are those of Imelda Marcos, or perhaps we have one pair of women’s shoes and one pair of men’s shoes, implying the presence of a man and a woman.

8 The campfire. This is a very important feature because, unlike everything else at the site, campfires can’t be moved around by crabs. It’s an excellent indicator that we have found the same site Gallagher found. An analysis of the charcoal from the fire shows that the wood that was burned was a dicot (like *ren*) and not a monocot (like coconut) which suggests that the fire predates the coconut planting that was done in that area in 1941. The presence of a fire also lends a character of residence to the site.

9 The can. We know there was a can because we found a fragment of its label at the edge of the fire. The label has legible writing which includes the words ...ROWER PRODUCE (Something Grower Produce?). The use of the

word “produce” as a noun to mean vegetables is an Americanism. There is also a representation of some kind of green, tropical-looking leaves at the top of the label. We presently have one expert opinion that the leaves are banana leaves. The inventory of the Earhart aircraft taken after the March 20, 1937 wreck in Hawaii contains this entry, “Item No. 54, 1 each, Waterproof zippered bag containing 4-1/2 lb Nestle chocolate bars, 1 pkg. sipping straws, 6 cans malted milk tablets, 3-1 lb. pkg. raisins, 1 pkg. dried apricots, 1 pkg. dried prunes, 2 cans ripe banana, 3 cans tomato juice, 3 dish towels.”

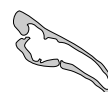
10 Dead birds. Birds, especially the Red-tailed Tropic Bird, are ridiculously easy to catch on Nikumaroro. Anyone trying to survive on the island should have no trouble catching birds to eat. Palatability is another issue.

11 Turtle. Gallagher doesn’t mention how big the turtle was. Turtles are not uncommon in the lagoon and periodically come ashore to lay eggs on the ocean beach. A 200 pound turtle is not a rarity. The biggest problem would be getting it home.

So what conclusions can be reasonably drawn about this rather amazing scene? If we accept Dr. Isaac’s judgement that this was an elderly Polynesian male who has been dead at least twenty years in 1940, we have to explain how it is that he has women’s shoes with a replacement heel that is less than ten years old.

If, on the other hand, we take the evidence at face value, we have two people (two pair of shoes), possibly a man and a woman (a woman’s shoe but probably a man’s bones), who arrived here just a few years before 1940 (heel dates from the mid-1930s). They are probably American (the shoe heel is certainly American and the can label appears to be) and they have very limited survival assets which seem to include an “old fashioned” nautical sextant with an inverting eyepiece (Fred’s “preventer?”), a liqueur bottle (are the rumors about Fred true?), and a can of banana (as inventoried on the Electra). Only one set of bones was found indicating that the remains of one of the people, probably the woman, are elsewhere. The presence of her shoes suggest that she didn’t just leave but may have died and been buried by the man.

A thousand questions remain and ten thousand guesses couldn’t answer them. Further archaeological work might. Let’s go back and see what more we can find.



Completing the Puzzle

The analogy of the Earhart riddle to a giant jigsaw puzzle is one that we've used many times—and with good reason. Each documentable fact is a puzzle piece that must be fit correctly into the overall picture. Trouble is, the box cover has been lost and we don't know what the picture is supposed to look like. To make matters worse, the pieces of our puzzle are mixed in with those of a hundred other puzzles and must be carefully sorted out before we try to fit them in. Where pieces are missing we have to guess, and we make mistakes. Meanwhile, onlookers jeer that we're merely constructing a fictional picture from random shapes.

But piece by piece, always more slowly than we would wish, the puzzle comes together. As more and more facts replace guesses and speculation, the gaps are filled in and connections are made. We still have to guess and we still make mistakes, but the picture grows more and more solid and the naysayers grow ever more nervous. And as anyone who has put together a jigsaw puzzle knows, the closer we get to the end, the faster it goes.

Let's look at our new puzzle pieces (printed in blue) and see how they fit with the ones we already had.



When the USS *Colorado's* Senior Aviator, Lt. John Lambrecht, flew over Nikumaroro on July 9, 1937 (one week after the disappearance) he reported that "signs of recent habitation were clearly visible" but saw no aircraft. The island had not been officially inhabited since 1892 but Lambrecht didn't know that. The search moved on. (U.S. Navy report dated 16 July 1937 "Aircraft Search For Earhart Plane.")

Three months later, British Colonial Service officers Henry E. Maude and Eric R. Bevington paid a three-day visit to Nikumaroro with a delegation of Gilbertese islanders to evaluate the atoll for future settlement. On a remote part of the island Bevington noted "signs of previous habitation" which he later described as looking like "someone had bivouacked for the night." (Eric R. Bevington, diary entry for October 14, 1937.)



On the same part of the island indicated by Bevington, and where local tradition held that bones had once been found, TIGHAR recovered the remains of an American woman's shoe dating from the mid-1930s which matched the size and style worn by Earhart. A second, different heel indicated the presence of another pair of shoes. Excavation of the site later revealed the ash and charcoal of a campfire which contained a partially burned can label. (TIGHAR archaeological investigations 1991 and 1997.)


Gallagher's documented discovery of human remains and artifacts on Nikumaroro in 1940 connects these pieces perfectly. Lambrecht's impression was correct. There was someone on the ground. Bevington was right. Someone had bivouacked there. The legends about bones being found are true. And TIGHAR's discoveries, it turns out, had been preceded over half a century earlier by those of Gallagher who had reached the same conclusion as to their origin.




These pieces show a very clear picture of at least one and probably two individuals marooned on the island sometime not earlier than about 1933 (mid-1930s shoe heel) and not later than July 9, 1937 (Lambrecht's "signs of recent habitation"). One of them is probably an American woman who wears the same style and size shoe as Amelia Earhart. They have very few assets with which to survive, but they do have a nautical sextant with an inverting eyepiece useful in taking sightings from an airplane.


They also have a liqueur bottle and some canned food. No yachts are known to have sunk or disappeared in the area in those years. No means for castaways to come ashore (raft, flotation device, etc.) was ever reported found. The only known missing persons of European decent in the region are Amelia Earhart and Fred Noonan.


The part of the puzzle that shows what happened to the airplane is less clear and more speculative, and yet a number of pieces seem to fit together.


 **B**adly damaged airplane components which appear to be from the Earhart aircraft have been found in the island's abandoned village and were clearly brought there from somewhere else. The section of aircraft skin (Artifact 2-2-V-1) is believed to be part of a patch known to have been installed on the belly of the Electra under the forward part of the cabin. For the sheet of aluminum to have been removed, the aircraft had to be either standing on its gear or lying on its back. (TIGHAR archaeological investigations 1989, 1991 and 1996.)

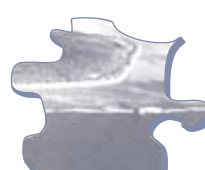
 **T**he most credible post-loss radio message with intelligible content includes the fragmentary phrases: 281 NORTH HOWLAND...CALL KHAQQ...BEYOND NORTH...WON'T HOLD WITH US MUCH LONGER ... ABOVE WATER...SHUT OFF. It seems reasonable to speculate that, if authentic, this message indicates that the aircraft is somehow threatened by rising water. (Message reported by U.S. Navy Radio, Wailupe, Hawaii, July 4, 1937.)


 **W**hen the USS *Colorado's* Senior Aviator, Lt. John Lambrecht, flew over Nikumaroro on July 9, 1937 (one week after the disappearance) he reported that "signs of recent habitation were clearly visible" but saw no aircraft. (U.S. Navy report dated 16 July 1937 "Aircraft Search For Earhart Plane.")

 **A** detailed survey of Nutiran district by New Zealand authorities in late 1938/early 1939 found no aircraft debris present at that time. (New Zealand Pacific Island Survey, Gardner Island, report dated 28 March 1939.)

 **T**he two anecdotal accounts of airplane wreckage seen by former residents of Nikumaroro in the late 1950s strongly suggest debris traveling from seaward toward the shore and, in some cases, through the lagoon passage. (Interviews on Funafuti, Tuvalu in March 1997.)

 **A**erial photos taken in 1953 and 1988 tend to corroborate the anecdotal accounts of aircraft wreckage on the reef flat and beach. (Aerial mapping photos, 1953. RNZAF photo, 1988.)

 **T**he recovery in 1971 of an R1340 engine from the reef flat off the western end of an atoll in the Phoenix Group may have taken place on Nikumaroro. (Anecdotal account, March 1997.)

 **A** photograph showing what may be a badly wrecked Lockheed 10E in a Pacific island setting may have been taken on Nikumaroro. The starboard engine missing in the photo may be the one recovered from the reef flat. (Photo of uncertain origin.)



The picture formed by these pieces seems to show an airplane that was landed successfully on the reef flat, sent radio distress calls for a short time, but was washed off the edge of the reef or into one of the many crevasses that penetrate the reef flat. The crew may have been forced to abandon the aircraft and make for the beach with what few essentials they could carry. The wreck seems to have lain undetected for years until storm activity broke it up and began washing pieces shoreward. The wreckage should still be there although now buried in the sand or hidden in the nearly impenetrable beachfront vegetation.

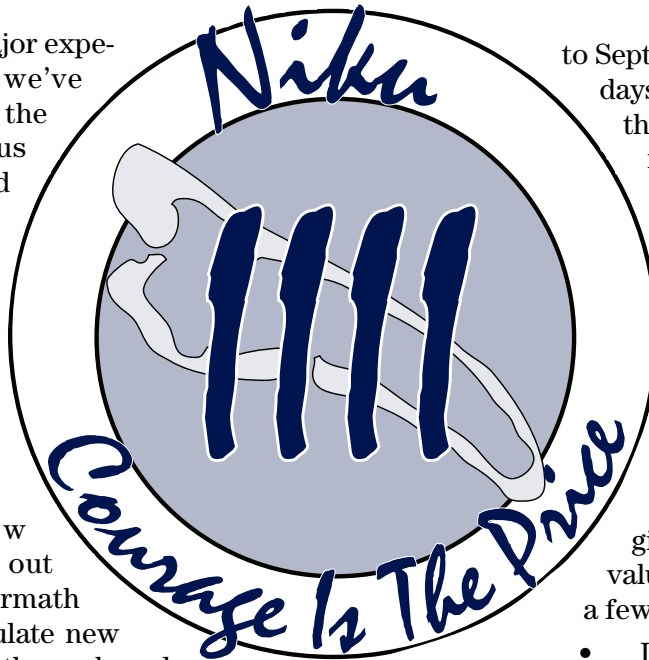
August 24 through September 29, 1998

FOR TIGHAR'S FOURTH major expedition to Nikumaroro we've adopted for our motto the title of Amelia's famous poem. We've also decided to use four slash marks (from a TIGHAR's claws?) rather than the Roman numeral IV as a mark of our determination to find the conclusive evidence it will take to end the Earhart mystery.

The wealth of new information that came out of Niku III and its aftermath has enabled us to formulate new hypotheses to test—hypotheses based to a far higher degree upon hard facts than has ever before been possible. Continuing research and analysis is sure to provide still more facts with which to further refine our theories about what happened and where to look.

We really want to get out to Canton Island as soon as possible to investigate the engine story (see "The Canton Engine," p. 16). While we're in the neighborhood we want to fly over Nikumaroro and get detailed aerial photos, including infrared, to see if we can learn more about whatever may be lurking in the bush along the Nutiran shore (see "Corroboration," p. 12).

For the Niku III Expedition we have once more engaged the services of the good ship *Nai'a*. She more than proved her worth bringing us safely through the storms of Niku III and the dangers we've faced together have built a relationship of mutual trust and camaraderie between the TIGHAR team and *Nai'a*'s officers and crew. We have her from August 24



to September 29 so, allowing five days transit time on each end, that gives us 26 days on the island. That's twice the time we had on Niku III.

The TIGHAR team for Niku III will be the survivors of Niku III (see "The Team," p. 6) plus a few additions.

Niku III, for all of its frustrations, provided a perfect testing ground for many new technologies and we learned many valuable lessons. To list just a few:

- Don't let anyone talk you into going in cyclone season (duh).
- Don't count on assembling the ultra-light airplane aboard the ship. Break it down into smaller components, pack it in secure containers, carry it ashore, and assemble it on the island.
- Underwater visibility in the lagoon is minimal but the sharks are not a problem.
- Pulse-laser technology works well for controlling and mapping archaeological sites.

At this time, it appears that an intensive eyeball and hand-held metal detector search of the Nutiran beachfront and the lagoon shore where Mr. Songivalu told of seeing airplane debris will be a major focus of Niku III. Considerable brush clearing will be necessary to do a thorough job. Searching the reef-flat where Ms. Taiki saw part of a wing should be relatively easy at low tide, but the chances of wreckage surviving in such a dynamic environment seem small. The lagoon floor just inside Tatiman Passage seems a logical place to look for wreckage that may have been washed through from seaward and we developed good techniques for this type of operation on Niku III. An underwater search of the reef edge and crevasses along the breaker line is more dangerous, but can be done safely with proper precautions.



Nai'a under sail. TIGHAR
photo by P. Thrasher.

THE NEW INFORMATION WE HAVE, AND ARE STILL getting, about the site in Aukaraime district (see “The Castaways of Gardner Island,” p. 32) will require careful review to determine the best course of action there. It’s quite apparent that the easy stuff was found by Gallagher in 1940 and the not-so-easy stuff was found by us in 1991 and 1997. Whatever remains is the not-at-all-easy stuff, but it may be the best stuff (i.e. an unmarked grave). We’ll probably want to expand the search area and deploy a number of different techniques and technologies to be sure we find what is there.

Funding an expedition of this magnitude is always a challenge but we’ve done it before and we’ll do it again. Public awareness of our work is at an all-time high as a result of two television documentaries about the Niku III expedition (ABC *Turning Point: What Happened To Amelia Earhart* which aired June 12, 1997 on the ABC network, and *Discovery Sunday: The Search For Amelia Earhart* which aired August 24, 1997 on the Discovery Channel). More important, the strength of our case is now such that we’re asking prospective sponsors to take a logical step, rather than a leap of faith. With the continued support of the TIGHAR membership, we’re confident that the necessary funding will be found.



*Lagoon shore, Aukaraime District. TIGHAR
photo by P. Thrasher.*



Courage

*Courage is the price that life exacts for
granting peace.*

*The soul that knows it not, know no release
From little things.*

*Knows not the livid loneliness of fear,
Nor mountain heights where bitter joy
can bear*

The sound of wings.

*How can life grant us boon of living,
compensate*

*For dull gray ugliness and pregnant hate
Unless we dare*

*The soul's dominion? Each time we make
a choice, we pay*

*With courage to behold the restless day,
And count it fair.*

—Amelia Earhart, 1927

As the Earhart Project begins its tenth year we salute the courage that you, the members of TIGHAR, have shown in making possible the discoveries set out in this issue of *TIGHAR Tracks*. In striving to unravel the truth about the fate of the remarkable woman who wrote this poem, we have all come to understand a little of what she was trying to say. Those of us who have been fortunate enough to serve on the expeditions have certainly known, at times, “the livid loneliness of fear” but everyone who has supported this work has known “bitter joy” and has heard “the sound of wings.” Writing a check is an act of courage just as surely as is shooting the channel at Niku in a ten-foot northwesterly swell, and those of us whose job it is to sometimes do the latter, thank all of you who consistently find the courage to do the former. Amelia said it best. “Each time we make a choice, we pay with courage to behold the restless day, and count it fair.”

Impressions

Amelia, by Donald M. Goldstein and Katherine V. Dillon. Washington, D.C.: Brassey's, Inc., 1997. 288 pp., \$24.95 (hardback). Notes, bibliography, index.

WE BEGAN THIS BOOK WITH HIGH HOPES. "AT LAST," we thought, "a biography of Amelia written by scholars." (The authors wrote, with Gordon Prange, such classics as *Miracle at Midway* and *At Dawn We Slept*.) So we were terribly disappointed as we read the sections dealing with the disappearance to find out that Goldstein and Dillon had used not primary sources, but secondary and tertiary ones, and had, as a consequence, made some fundamental errors of fact and interpretation. For example, on page 150 they state that "...Amelia's Electra, No. 14 R 16020, had a total tankage of 1,200 gallons, with fuel capacity of 1,170 gallons—not 1,150 or 1,151 as widely reported later." A footnote attributes this information as follows: Captain L.F. Safford, USN (Ret.), unpublished manuscript, *Flight Into Yesterday: The Tragedy of Amelia Earhart* pp. 121-126.

TIGHAR has a copy of Safford's manuscript which was revised 23 June 1971. In it, he has the airplane's fuel capacity correctly stated as 1,151 gallons. Perhaps Goldstein and Dillon had an older version of the manuscript, but the actual fuel capacity of the aircraft is established, not by a secondary source like Safford, but by primary source documentation. The Bureau of Air Commerce Inspection Report for the airplane dated May 19, 1937 (the last inspection before it departed on the second world flight attempt) establishes beyond doubt that its fuel capacity was 1,151 U.S. gallons. More disturbing than the error itself is Goldstein and Dillon's apparent willingness to accept outdated secondary sources rather than insist on primary source documentation. They should know better.

On page 169 they state that Noonan was a pilot and that he was an alcoholic. Noonan was

most definitely not a pilot and there has never been any real evidence that he had a drinking problem. The sources cited for this passage are, once more, secondary sources. Goldstein and Dillon are merely repeating rumors and representing them as facts. Throughout the book they treat anecdotal accounts told years after the event as truth when, in fact, such information is nothing more than folklore unless and until corroborated by contemporaneous sources.

The earlier sections of the biography, reaching far back into the genealogy of the Earhart and Otis families, are exhaustive, but necessarily suspect given the inaccuracies of the latter parts of the book.

TIGHAR's work is mentioned in the final chapter. At the time the book went to press, we were awaiting the results of the forensic testing Alcoa Aluminum was kind enough to do for us. They refer to TIGHAR's theory as "possible geographically although not very probable, because this location is a good 45 degrees off course"—thereby showing their lack of familiarity with Noonan's navigational techniques. They also assert that Noonan overindulged in alcohol in Lae (without any documentation to support this contention), and declare that the whole flight was pointless and "ill-advised."

So is this book.

Yet Another Biography of Amelia Earhart

East to the Dawn, The Life of Amelia Earhart, by Susan Butler. Reading, Massachusetts: Addison-Wesley, 1997. 528 pp., \$27.50 (hardcover). Notes, bibliography, index.

ONE BEGINS TO WONDER JUST HOW MANY BIOGRAPHIES of Amelia the market will bear. This one is long, exhaustive, and exhausting, with side trips into politics, sociology, genealogy, and most of the other categories of the Dewey Decimal system. Butler is an enthusiast of the Gene-Vidal-as.... what? Lover, friend, confidant- school of Ameliana, and takes Gore Vidal's pronouncements as gospel. Out of 528 pages, she devotes two to the disappearance, and several more to the recent research done in Japan which should finally and forever put any question of Japanese involvement to rest. But this is strictly and only a biography, with no attempt to deal with

the technical data or historical minutiae of the disappearance.

There are some interesting details concerning the closeness of AE's relationship with Eleanor Roosevelt, and some factoids possibly hitherto

unrevealed about various facets of AE's life. For the dedicated Earhart enthusiast, it's worth a read when it is published in October. For those interested in the disappearance, save your \$27.50.

A Most Unusual Woman

Whistled Like a Bird, by Sally Putnam Chapman. New York: Warner Books, Inc. 266 pp. \$22.00 (hardback). Bibliography.

THIS IS A MOST INTERESTING BOOK ABOUT A MOST unusual woman, who lived with interesting and unusual people and led a unique life for her time. It is the biography of Dorothy Binney Putnam, George Palmer Putnam's first wife. Written by her granddaughter, the daughter of David Putnam, elder son of George and Dorothy, this book draws a portrait of Dorothy which is a far cry from the woman scorned many assume her to have been.

Born in 1888, Dorothy Binney grew up in a home full of nature, art, and education. A graduate of Wellesley College, she was exposed to the new ideas of a new century, and took most of them up with enthusiasm, including suffrage and freedom for women. There was plenty of money (her father invented the Crayola crayon), and she was able to travel widely. She met George on a trip to the Rockies in 1908 with the Sierra Club, where they climbed Mount Whitney. They married in 1911, and settled in Bend, Oregon where George was the publisher and editor of the local newspaper, and a force for good (i.e., fewer prostitutes, more churches) in the frontier town.

At first they were happy, but once they migrated back east and George became immersed in the publishing and public relations work which led him to his associations with Amelia Earhart and other adventure-celebrities, Dorothy was less and less satisfied with keeping house, giving dinner parties, and keeping up with fashion. In 1927 her unhappiness came to a head when she met a college sophomore 19 years her junior, and they fell in love.

In the end, nothing permanent came of this relationship; but the die was cast. When Amelia came into George's life, Dorothy welcomed her with

open arms, went flying with her, entertained her, and ultimately considered her to be a good friend. Far from feeling that AE was a homewrecker, she saw in Amelia the future of women, and perhaps part of her own future as well. When the decision was made to end her marriage, it was her decision, not George's, and was based on her deep unhappiness with this driven, hungry man to whom she was so ill-suited. She remarried slightly less than one month after her divorce was final.

Neither that marriage, nor her next, worked out very well. As is so often the case, although she was intelligent, well-educated, passionate, artistic, and articulate, Dorothy was not a particularly good judge of men. Her fourth marriage, finally happy, ended prematurely with the death of her husband from a heart attack. She lived another thirty years, dying at 94.

This book was possible because Dorothy kept a daily journal her entire life, in which she recorded everything she felt, thought, and believed. With this rich resource to draw on, Sally Chapman was able to capture the spirit of her grandmother-free, a little wild, passionate, and born too soon. A late 20th century woman in attitudes and appetites, Dorothy Binney Putnam was never able to live the life expected of a woman in the years prior to World War II (or after, for that matter).

Neither was Amelia. It is an interesting irony that the same man who seemed a jailer to Dorothy was an instrument of freedom to Amelia. Perhaps if Dorothy had understood a little earlier just how unsuited she was to traditional domestic life, she could have been free, with George, too.

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