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Hamburgische wissenschaftliche stiftung.

RESULTS OF THE

SOUTH SEA EXPEDITION

1908-1910

Edited by

Dr. G. Thilenius

II. ETHNOGRAPHY: B. MICRONESIAN Volume 8 ISLANDS AROUND PONAPE Kapingamarangi Nukuoro

Pingelap

Ngatik Mokil

By

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Hamburg

Friederichsen, De Gruyter, and Co.

49-2360

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NOTE BY TRANSLATOR

This sign after a proper name indicates that the United States Navy Department Hydrographic Office name is used in the translation, but that the name used in the original German is different. The various names for the islands are in the tables on pages 9, 16, and 24.

۳ Names marked with this symbol have not been found on Hydrographic Office charts. In the detailed descriptions of minor geographic features, such names may not all be marked.

Both these signs are generally used only at the initial appearance of the name.

All comments by the translator not a part of the translation itself are enclosed in brackets.

References to page numbers are to pages in the translation. References to untranslated sections in the original have been deleted. Of the complicated phonetic system used by the author, only the umlaut and the macron have been retained. "s" is transcribed "sh" and "n" as "ng".

Hamburg Ethnological Museum South Sea Expedition (reports)

Volume II B8. Islands around Ponape

Research done on islands

Translator:

Publication date in Germany

Excerpts translated by District Intelligence Office.

Fourteenth Naval District

E. P. Boardman, 2nd Lt., USMCR.

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1908-1910

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March 1942

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KAPINGAMARANGI [Greenwich]

[Also written as two separate words]

[Section I., pp. 1-7, describes the history of its discovery.]

II. Geographical Circumstances

1. Name:

The Kapinga Marangi island group, was also named Pikiram and Constantine Island, as well as Pescadores and Greenwich Island. "Constantine" is mentioned only by Findlay and the French sailing manuals.

The group is called on the German charts "Pikiram" according to Lütke.¹ He learned it from the natives of Lukunor Island (Mortlock Group, Carolines) and writes it Pyghirap or Pyghiram. The name Kapinga Marangi appears in various places and with divergent spelling without the connection with its sources being evident. Whereas the spelling Kapinga Marangi is used in the supplement of 1890 to Findlay's Handbook, in 1908 it was changed to Kapinga Maringi. In the Godeffroy² catalog it is "Kabeneylon," a noteworthy example of the way in which different Europeans pick up the same word and reproduce it. According to Parkinson³ the native name Makarama denotes the Pikiram Island group.

Kapinga Marangi - also written in one word - has two types of accents: Kapinga Marángi, also there is the pronunciation Kapinga Márang. The a of the second word is prolonged and bears the principal accent, while the final i of the first word disappears. Since r and l frequently replace each other, Kapinga Malangi also occurs. The word changes on account of hasty pronunciation into Kapenmailang and so approximates the reproduction

¹Lütke, Voyage autour du monde 1826-29, vol. II, Paris 1835, p. 51.

²Schmeltz, J. D. E., and Krause, R., Katalog des Museums Godeffroy, 1881, p. 351.

³Parkinson, R., Nachträge zur Ethnographie von Ongtong Java, Internat. Archiv für Ethnogr., 1898, p. 194.

in Christian,¹ who writes Kapen Mailang.

A translation of the native name Kapinga Marangi is difficult. It is evidently a case of a compound name, perhaps with the following meaning: "kap" in Ponape is "new land, newly-formed island." So "Kapen ... Marangi" may signify "new island from heaven." Further, "ping" in Ponape is "fence, hedge, points." Yet, hitherto, this word could not be identified in the Kapinga Marangi language. "Maram" is "world." However, as it is quite improbable that m becomes ng, a meaning of that sort promises little. "Ti rangi" is "heaven;" "kapa," "kapi" designate something like staff, [or] beam; "nga" may be a particle. Similarly, no more can be made of the meaning of the name Pikiram. On Ponape "pik" denotes "sand, reef;" "lap" - may be equated with "ram" -[which] signifies on Ponape "large, far." The word appears in the language of Kapinga Marangi in only two meanings: "ti ram" = fly, "ti rama" = mat.

The natives themselves call their island group "tenūv." "<u>Ti nūva</u>" is the designation for land, earth, also in the sense of site, place. <u>Tenūv</u> consequently is, to be exact, land -- is their land. Hellwig declares that the population first accustomed itself to the name Kapinga Marangi in its dealings with the Europeans. Hambruch also mentions in his catalog of Nukuor the name Bakira-marang, the first half of which contains the well known Pikiram.

2. Position:

The information about the position of the island group has been from the beginning undependable. Even the positions given in the South Sea Handbook of the Imperial Office of Marine were corrected by the bearings of Captain Vahsel of the Expedition ship "Peiho;" he put the position about 11' further east than it then was estimated. When steering for the island, the "Peiho," at the time the midday observations were prepared, was, according to the chart, in the middle of the lagoon. Not until four hours later, however, did the group come into sight. According to that, Kapinga Marangi lies at 1° 5' N. lat. and 154° 53' E. long. from Greenwich.

¹Christian, F. W., "The Caroline Islands, Scottish Geographical Magazine, 1899, p. 174.

	у.					
	Positio	on			Observer	Remarks
N.	Lat.	E. Lo	ong.			
20	201	206 ⁰	15'		Lütke 1831	About 150 inhab-
[2	2 ⁰ 20', bra in origina	ackete al.]	eđ			
ı°	5*	154 ⁰	30 t		Notice in Nauti- cal Magazine 1851/52	
ı°	41	152 ⁰	17'	47"]	Mentmonel 1057	12 islands
0 ⁰	58' 51"	152 ⁰	27 1	31")	MOULTAVAL 1855	13 apparently un- inhabited islands ²
lo	4 †	154 ⁰	45 '	•	Symington 1864	26 uninhabited is- lands
10	31	1540	54'	50"	Berenguela 1865 ³	
0 ⁰	59'	154 ⁰	45 '		Rosser 1870	uninhabited
					Schmeltz and Krause 1881	more than 20 in- habited islands
					Cyprian Bridge 1883	inhabited group; gives no deter- mination of position
					Findlay 1886	28 islands, two of which are inhabited
					Meinicke 1888	26 islands
ı°	4'	154 ⁰	41'		Findlay 1890	28 islands, about 150 inhabitants ⁴
ı°	51	1540	531		Vahsel 1910	
ı°	51	154 ⁰	421		Imperial Office of Marine 1912	about 30 islands, approx. 150 inhabi- tants

Lütke calculated west of Greenwich.

4

 2 Montraval made measurements on 2 occasions. 0^o 58' 51" lat. and 152^o 27' 31" refer to the northernmost island of the atoll. Find-

3. The Atoll

The low island group consists of 31 islands covered with green and 3 sand islands. All are located on the east side of the atoll. Nothing was seen by the Expedition of the islets which the statements of the Imperial Ministry of Marine proclaimed were present on the west reef. None of the different people reporting speak of such islands to the west. It is probably a case of reef shallows exposed at ebb tide.

Two approaches from the south, which because of their limited depth, narrowness, and numerous rocks are very dangerous for larger ships, lead into the <u>lagoon</u> with [its] numerous shallows, coral banks, and sand banks. The easternmost <u>pass</u>, named <u>iaveitu</u>, is 5 miles long [sic.], 40 meters wide and 4 to 10 meters deep in its narrowest place (Lorenzen). This passage presents no difficulties to smaller vessels. The small freight and transport steamers of the North German Lloyd in the Bismarck Archipelago, "Langeroog" and "Sumatra," have used it.

The western passage is forked and leads with two arms into the lagoon. The eastern arm, <u>mangatito</u>, acts as the boat entrance. The western arm is 150 meters wide in the widest place, in the narrowest place 60 meters wide, at the entrance 10 meters deep.

Communication between the separate islands is possible by foot at low tide over the sand banks and [tidal] rills. At high tide the reef can easily be crossed with canoes.

lay 1870 cites Montraval's measurement: 1° 4' lat., 154° 47' 55" long. Rosser mentions here: highest point 0° 58' 51" lat., 154° 47' 50"; east side of lagoon island 0° 54' - 1° 2'.

⁵Cited in Rosser, W. H., North Pacific Pilot, Part II, the Islands, London 1870, p. 225.

¹In 1908 supplement Findlay mentions about 200 as the number of Inhabitants. [Findlay, Directory for the Navigation of the North Pacific Ocean and Japan. 2nd Ed., London 1870. 3rd Ed., London 1886. Supplements, 1890 and 1908.] 5

The names of the <u>islands</u> read beginning with the eastern entrance [as follows]:

[Only six of these island names or their equivalents appear on H. O. Chart 5425. They are noted here in brackets.]

	Hellwig	Lorenzen	
1.	Pumotehat	Pumatahat	
2.	Tilakaumhe	Tirakaume	
3.	Tokon	Tokang	
4.	Tiau	Tiaha	
5.	Tadig	Taria	
6.	Tilakau	Tilāgau	
7.	Helekalō	Tenueirot	
8.	Helingau	Heloniau	
9.	Ruav		
10.	Hale	· Hale	[Hare ^{u}]
11.	Tangavak	Tangāvak	
12.	Takailong	Tageilong	
13.	Nikufat	Nikuhat	
14	Tedau	Tetou	
15.	Dibā	Tibāe	
16.	Hebebā	Heleba	[Hepepa u]
17.	Hukuheno	Hikuheinua⊥	
18.	Matefe	Matafei	
19.	Takeng	Tikenge	
20.	Ramot	Lamot	
21.	Matumatuk	Metumatuk	
22.	Matirō	Matirō	
23.	Bungebung	Bungabung	
24.	Daling	Taringa	[Taarin ^u]
25.	Touhou	Touhou	
26.	Velu	Veilua	[Ueru ^u]
27.	Huguniu	Hukuniu	
28.	Palakai	Balaka	
29.	Nunakit	Nunakit	[Nunakitsu ^u]
30.	Tuluvaim	Durueim 2	
31.	Ligumān	Nukumana~	
32.	Lingutol	Lingutor	[Rugureoru ^u]
33.	Tolongahai	Torongahai	

With the exception of the sand islands the islands bear thick forest and brushwood.

¹Kalao, large boulder of reef coral.

²Double island.

A few of the islands are covered by the natives with extensive plantings of swamp taro. The growth of lofty, splendid coconut palms is richer here than on the Carolines.

The excellent humus soil makes possible a singular prosperity of flora, poor in [number of] species. Where the deposit, particularly in the neighborhood of the high-water line, is covered with the finest gravel, a soil sounding [when stepped on] results, which, extremely hard, seems like cement. Separate islands like Touhou and Velu [Ueru"] rise up to 4 meters above the high water line. Toward the outer reef and the reef openings the edges of the shores, for the most part, fall away steeply and suddenly. The walls of debris, raised on the edges of the islands, at their highest towards the outside reef, cause depressions in the middle of the islands which are swampy and are partly filled with brackish water, and therefore are excellently suited to the laying out of taro fields.

The islands are without exception longer than they are wide. To make the circuit of separate islands one needs for each according to size 1/4 - 3/4 of an hour.¹

The <u>currents</u> which pass near the group are very strong. The Expedition ship "Peiho" in 1910 drifted off 14 miles to the east. The current also may have been to blame for [the fact] that Captains Symington and Montraval had to abandon their visit; it bears its share in [the fact] that news about Kapinga Marangi for so long remained undependable and scanty.

4. Animals.

[The rat is the only native, the dog, the pig, and the chicken having been imported. The sea swallow and black and white heron are the best-known birds. They often are quite tame. Lizards and turtles are used for their meat, the latter for their shells also. Fish are present in great abundance and variety. Tridacna and pearl shell oysters are prized. Not to be forgotten is the presence of lice, fleas, flies, and gnats. The native names are given.]

5. Plants.

The islands bear the typical vegetation of coral islands

¹A. Cabeza Pereiro estimates the dry surface area of the atoll at one square kilometer (?) and the total surface area including the reef at 14 square kilometers. [A. Cabeza Pereira, La Isla de Ponape, Manila 1895.]

in palms, leafy trees, bushes, flowering plants, ferns, creepers, etc. But the [vegetal] covering is not of uniform type everywhere. Coconut and Pandanus palms with settlements or fields of taro prevail on the islands. Other islands like Pumatahat in the neighborhood of the entrance are distinguished by high leafy trees, Banyans, Calophyllum, etc. and possess impenetrable underwood, mostly of Hibiscus bushes. Only rarely do humans set foot on these islands, since they are dedicated to the spirits and spirits roam about on them. The thick brushwood recedes on the cultivated islands. Neat paths run here beneath trees and between bushes.

[The following is a list of the native plants; in the original a number of other native terms, references, and remarks are appended. The names are in a Polynesian language rather than in Micronesian.]

Native name

Trees:

1.	Cordia	am-	<u>ti lakamē</u>
2.	Calophyllum [balsam f		<u>ti tau</u> (telau?)
3.	Fagraea	- T Y J	ti <u>bu(va)</u>
4.	Barringtonia		ti <u>agaiha</u>
5.	Poplar		ti <u>puke</u>
6.	Premna Tahitiensis		ti vorovoro
7.	Breadfruit		ti kuru
Palms:			
8.	Coconut palm		<u>ti niu</u>
9.	Pandanus		ti pinu
Bushes:			
10.	Hibiscus		ti hau
11.	Calornis		ti mozo
12.	Small bushy plants		taka halo
13.	Morinda		ti nonu
14.	Creeper		ti hia
Ferns:			

15.	Crinum		taratara	
16.	Asplen.	nidus	ti lokoho	
17.	species	of fern	ti langataha	

[Flowers and grasses omitted.]

Cultivated plants:

21.

22.

23.

Taro	ti tara
Swamp taro	ti purah
Banana	tamo

[Pages 19 - 62 contain the sections on settlement and demography. The total population of the atoll at the time of the expedition amounted to 282 persons. Pages 63 - 125 are concerned with social organization and economic life. Methods of fishing are described in great detail. The section on Kapingamarangi is concluded with a discussion of the non-material culture and photographs illustrating principally the economic life.]

NUKUORO

I. History of its Discovery

[pp. 163 - 171. This contains among others a full account in English of several visits made to this group in 1830 by the "Antarctic," Captain Morrell, whose ship the natives attempted on two occasions to attack. Three paragraphs of this (p. 164) are guoted below.]

"This group is nearly circular, and contains about 30 islands, of different sizes, the largest being not more than 10 miles in circumference. They are all surrounded by a coral reef which has from three to seven feet of water on it, where the sea breaks very heavily all the year round. The islands all stand on the inner edge of the coral reef, with boat-passages between them, from one fourth of a mile to two miles in width, thus following the circle of the reef all round, leaving in the center a large lagoon about seven leagues in length [21 geographic or nautical miles] from northeast to southwest, and about five leagues [15 miles] from northwest to southeast.

"The bottom of this lagoon is literally covered with pearl oyster, in a depth of water from three to twenty fathoms; and the surrounding reef abounds with bêche-de-mer [sea-slug] of a very superior quality. The hawk's bill turtle also visits the shores of the islands at certain seasons of the year, for the purpose of laying their eggs and raising their young. Upon all these articles the natives set little or no value.

"These islands are all very low, the most elevated points of them not rising more than 100 feet above the level of the sea. The surface of each is literally covered with coconut trees, and breadfruit trees and palm trees; besides many other kinds of wood that is [are] highly useful to the islanders in the construction of their cances, houses, and war implements."

II. History of the Island in the Tradition of the Natives

[Pages 171 - 182, largely native legend.]

III. Name

The discoverer of the group, Don Juan Batista Monteverde, named the atoll "Dunkin Island." Krusenstern in his "Hydrography" appearing in 1819 changed the name to "Monteverde Island" to honor the discoverer. "Monteverdeson's Island" occurs from time to time with English authors for this designation. The native name "Nukuor" was first known through Lütke who learned it from Mortlock people. According to Kubaryl the natives themselves also call their island "Nukuoro," although this name originally was used only for the principal island of the atoll; it serves, nevertheless, at the same time as the designation for them all. The group is known by this name to the inhabitants of the Mortlock, Namoluk, Nama, Losap, and Truk Islands also, but these say it without the final o and in the middle with a voiced sound: Nuguor. According to Jeschke the inhabitants also use for their homeland the names "Matakema." Kubary attempts a translation of the word Nukuoro: Nuku oro, viz. land of oro. He assumes a Polyneslan origin for the word.

IV. Geographical Position

Statements about the geographical position of the atoll vary. Even though the more recent investigations are the authoritative ones, the older ones are also given in the table. They show at the same time the dependence of the reports and statements upon each other. The figure for the year when the investigator's iname is present] is the year of the survey, with the other authors the year of publication of the report in question.

[17 separate sources are listed, the first 15 of which, dated on or before 1870, it has not seemed useful to list. The wo modern observations follow.]

, Long	N. Lat.	Author	Year
155 ⁰	30 51'	German Chart	1912
155 ⁰	3 ⁰ 52'	Jeschke	1910 to 1913

The Atoll.

As was certainly understood at the [time of] discovery, he Nukuoro group is a coral formation. But the statements conerning circumference and the number of islands vary considerably.

Kubary, J., Beitrag zur Kenntnis der Nukuoro oder Monteverde Ineln, Mitteilungen der Geog. Gesellschaft, vol. XVI, Hamburg 1900, 3.

Jeschke.

To begin with, the number [of islands] was very much underestimated. Monteverde mentions 29, Morrell about 30 islands. The same picture is also presented later to the cursory observer. For example, Morrell estimates the number of the islands at 33. More exact enumerations were undertaken by Kubary, Jeschke, and Hambruch. The variations among these are slight: Kubary counts 48, Jeschke 46, and Hambruch 44[,] islands.

According to Jeschke's account, the center of the atoll is situated at exactly 3° 53' N. Lat. and 155° E. Long. Its shape is characterized by Rosser, Morrell and the German Imperial Office of Marine as elliptical, by Jeschke as almost round. The diameter of the atoll amounts to only 5 kilometers. The circumference of the reef zone is estimated by Monteverde at 18.52 km., by Doane at 12-15 miles (22.224-27.78 km.),¹ and Miguel at 23 km.

The reef wall, which possesses an entrance at the southeast, is otherwise completely closed and projects from the water at ebb tide. When the flood tide is higher, it is covered with water² to the height of about 1 meter. The width of the wall **amounts** to from 300 to 600 meters. The Spanish authors (Miguel and Pereira) assume about 40 square kilometers for the total area.

This reef wall now bears on its bend that stretches from northwest to southeast a great number of islands, all of which are situated on the inner side [of the lagoon]. Pereira estimates their total area at only 7 square kilometers. When the water is highest, the islands themselves rise to no more than 1/2 - 1 meter above the surface of the water.³ Here and there the height is still less. On the other, there are in several spots alluvial deposits 3 - 4 meters high. Severe seas and storms resembling hurricanes have piled them up here. The number, order of succession, and names of the islands are to be seen in the following table.⁴

¹If one takes the Eng. Statute Mile as a basis, then the result is 19.31--24.14 km.

²".....three to seven feet water on it." See Morrell, Benjamin, Jr., A narrative of four voyages to the South Sea, North and South Pacific Ocean, Chinese Sea, Ethiopic and Southern Atlantic Ocean, Indian and Antarctic Ocean, from the year 1822-31, New York, 1832.

³Morrell: "---the most elevated of them not rising more than 100 ft. above the level of the sea."

⁴The designations under the chart in figure 91 are the entries of the Imperial Office of Marine.

The numbering begins with the first islands east of the

ass.

LIST OF THE ISLANDS1

[The numbers of these islands which bear names on H. O. thart 5425 are underlined. If the name is different from that apbearing under "Chart of the 'Orion'," it appears in that column marked with a " and is set in brackets. The names are in the Polylesian language rather than in the Micronesian.]

<u>lo</u> .		Jeschke	Chart of the "Orion"	Hambruch
1	Se nuku itāi	Schenakud ei	Schenukdei	Sinugudai [†]
23	Mohili niatua Masaku mani	Mohili	Masops ² Masakomani	Masabu Mashagumani Nukuan
4	Nukuoro	Nukuoro or Matakema	Nukuoro	Nukuor
5	Otaha manga	Takamanga	Takonrau [Takonran ^u]	*
67890	Ratii Te motu Oahu sisi Pakhau Sungau orohu	Demotu	Lati Timotu Heisisi Bakau Schugnauroho [Shugnaurohu#]	Haizisi Bakauu [†] Shohungau horo [†]
123456789	Tuila Ohatu kanae Pala i iasi Motu oweka Paonga Oahu roroa Motu uo otura Oahu e tolu Motu o wae	Baonga Kotuowei	Tuila Tuila Hatu kanei Paleyasi Motuowega Boumga Ahu roroa Motuotura Ahuwetoru Motuwei [Motu Wei]	Tuida Hatu kanai Baraies [#] Moto ouega Baungua Ahau roroa Moto otura Ahu edoro Moto uuai
0123456	Teahu Teahu Teahu Teahu Tehu Sapinimatoho Motupotai		Deahu hatinga Deahu wihinger Deahu Sapini matok Mot bodei	Tehau ongea Tehau uininga Tehau te hana Tehau utua Tehau udei [*] Shapini Modu bōdei

The islands provided with a * are inhabited, according to Hambruch.

Corrected by Jeschke to Masaps.

No.	Kubary	Jeschke	Chart of the "Orion"	Hambruch
27	Motuitua		Motuitua	Motitua
28 29	Oahuiloto Tahangaroa	Tahanga roroa	[Motu Ituo] Ahuiroto Tahanga roo [Tahangaroro #]	Ahuirot [¶] Tehanga hāinu
<u>30</u> 31 32	Tahangatapu Oahu rekareka Masaku mani	Ahu lega lega Masakomani ilalo	Tahanga tabu Ahuregatik Masako mani tara	Tehanga tabu [‡] Ahaurikarit Masa kumani
33	Niurekita	Ahuranui	Arakanui [Amukanui#]	Nurikilt [∓]
$ \begin{array}{r} 34 \\ 35 \\ 36 \\ 37 \\ 38 \\ 39 \\ 40 \\ 41 \\ 42 \\ 43 \\ 44 \\ 44 \end{array} $	Oahu eranui Tolu na hale Tala kei wao Motu iia Motu nui Nami i lotoa Oahu osika Kapini wele Talai namo Te ungaakelekele Mokelekele itaha	Kapini vere Hauua obo e De unga keri-k a	Tarung hari Taraki wahu Motu ia Motonui Namui rotoa Ahuosi kat Kapini vere Tarei namu Tonga kerikeri	Ahuranūi [†] Tohunge hare Daregeuau [†] Motuiia [†] Modenui Namoi rodau Hau ushiki [†] Kapini ueri [†] Tarai name To unga gereger Mogiregire idoto
<u>45</u>	Oromo anga		[Oromange u]	Oromanga
46	Teahua		[Deahua [#]]	Te haua
<u>47</u>	Mokelekele i lot	to	[Motu Iloto"]	
<u>48</u>	Kausema		[Kaujema ^u]	Gausēma [¥]

In general the island designations of Kubary are identical with those given by Jeschke and Hambruch. Jeschke's names are only noted insofar as they depart from the entries on the chart of the "Orion," which he used on his own survey and reported.

The number of island names, as the natives have preserved them in their tradition, differs from the present number of islands. Thus [the list of native names] does not have the two islands Tonga keri-keri [No. 43] and Deahua" [No. 46]. These 2 islands are said to have been sand banks originally and were artifically made islands. Nevertheless, the [native] enumeration exceeds the actual number of islands by two: during a severe storm islands of the south reef were destroyed. On the other hand, great masses of deposited sand have joined the island of Motupua to Nukuoro so that now they form a whole. The principal island Nukuoro is thus composed of Hiti and Motupua on the north and Ahua on the south.¹ Oromo anga Island is broken up today into 2 small islands, but the natives still call it by the old joint name.

The native enumeration reads:

Keri	Ooro	Keri	Kau
Nuku	Hiri	Sako	Ahu
Mata	kena	Hiti	Pua
Tau	Tin	Motu	Nini
Hei	Baka	Liki	Sunga
Horu	Tui	Hatu	Para
Vega	Pau	Roa	Ture
Ahu	Vei	Ahu	Ahu
Ahu	Ahu	Piu	Tei
Tua	Roto	Hanga	Tang ^z
Leg	Man	Niu	Nui
Toru	Tara [.]	Ja [Ya]	Nui
Namu	Sika	Vere	Hau

This enumeration begins with the southwesternmost island Motuilaro or Mokeri keri i taha [No. 44] and goes on to the east.

According to Morrell's estimate the lagoon within the atoll occupies an area of 5-7 miles (9.26 by 12.964 km). According to the information of the Imperial Minister of Marine [German] the area in reality is less and has a diameter of only 6.482 km.

There is a roundish coral reef³ almost in the middle of the lagoon. It rises at an angle of about 45° to a height of 80 meters [so high?] above the surface of the water and has a diameter of approximately 300 meters. The natives call it "<u>Manu i te</u> <u>roto</u>," that is "Reef in the middle of the lagoon." Between this reef and the village is the deepest place of the lagoon (more than 90 meters deep), so [deep] that the natives who touch the bottom everywhere else with their fishing lines cannot reach [it] here.

White mud to which a sounding lead, [when] cast down; fastens itself very firmly, covers the bottom of the lagoon. In

¹The settlement charts of Kubary and Jeschke also show these changes,

²Jeschke writes <u>Hang</u> and corrects this later to Tang. His manuscript is not quite clear here.

³Morrell believes that the bottom of this lagoon is entirely covered with pearl oysters and estimates its depth at 3-20 fathoms. Since the sea not only penetrates into the lagoon through the entrance, but also washes² over the reef wall between the separate islands, a not inconsiderable mass of water is driven by the surf into the lagoon, carrying with it a great deal of sand from the reef outside. On especially stormy days, in consequence, a light coloring of the water as far as several hundred meters into the lagoon may be seen. In the quiet water of the lagoon the sand sinks to the bottom and so in the course of time fills up the depth, still considerable today.

The entrance into the lagoon is situated at the southeast between the islands of Kaujema and Shenukdei³. It is only 30 -40 meters wide⁴ and 9 meters deep in its shallowest place which lies toward the sea. As a result of this, only schooners and smaller steamers are capable of navigating the entrance, the latter only when they make use of the south wind and the incoming current. The shores of the entrance fall away very steeply, except at the place where the outlet is. The north end of Kaujema Island reaches right out to the passage. The current washes stones and sand into the entrance and thus brings about a gradual flattening.

The current naturally depends upon the winds. Due to the fact that the group of islands is situated at the southern boundary of the [area of the] northeast trades, east winds from December to April, shifting winds of prevailing calm from May to August, and [from then on] to the end of the year west winds prevail here. On account of the flood-tide, during the first two periods, water from the sea runs through the passage into the lagoon. On the days of the new and full moon it reaches the highest point about 2:40 p.m. (harbor time). At the time of flood tide the water runs through the entrance with [a speed of] 1-1/2-

¹The following statements come from Captain Jeschke. He mistakenly placed the position [of the atoll] somewhat farther to the north.

²According to Morrell boats can sail that way.

³According to the Imperial Office of Marine, it has here a width of about 27 meters.

⁴According to Krämer it has a width of 20-30 meters and a length of about 463 meters. Findlay, 3rd Ed., 988, gives a width of 20 yards.

2 miles [per hour] and at ebb tide with doubled speed.¹ This phenomenon is explained by the fact that the sea breaking all around the atoll is continually driving great masses of water over the reef into the lagoon. This superabundance seeks its outlet through the passage, with the result that the flood tide runs through the entrance at the one speed for about 5 hours, while the ebb tide passes through at the other [speed] for approximately 7 hours. On the other hand, if the west wind predominates, then so much sea water is driven over the open west reef, not closed off by islands, that at such times a higher water level remaining in the lagoon is observed. At the same time the water runs out of the lagoon into the open sea constantly and often reaches a speed of 6 and more miles an hour. At such times entrance into the lagoon is impossible.

The sea-current in the neighborhood of the Nukuoro Group is very strong, as may be gathered also from the older reports. Then it proceeds mostly from the west, it varies frequently. In the year 1911 the westerly winds, some of which were of considerble strength, were almost the only [ones] to blow in the Caroline and Marshall Islands from April to November. At this time the curent near Nukuoro moved east at the rate of 3 miles an hour. At the same time the flood tide in the months June-August was almost intirely absent; the water even fell to about 30 centimeters below the lowest point of the ebb and hardly came up at all at the ime of the flood. This phenomenon kept up for approximately 2 onths and was also noticed in all the Carolines and in part, even, in the Marshall Islands. As the Imperial Office of Marine says, he current runs northwest between the Nukuor group and the Namoi slands at about [the speed of] one mile.

Numerous canoes and other objects of unknown origin drift Ith these currents coming from the west to Nukuoro. Thus, a rocodile 3-4 meters long, whose home was perhaps the Moluccas or he Philippines, was once carried here on a large tree.

The soil of the islands is formed of washed-up sand and boris from shell-fish and is covered with only a thin layer of umus. It is composed of rotted foliage, tree trunks, the deosits of sea birds, etc.

As

According to the Imperial Ministry of Marine, the ebb tide runs

Plants1

As Morrell has already established, the Nukuoro Group is very well wooded. The coconut palm is especially abundant on the eastern islands of the atoll. Further, breadfruit trees exist in great quantity. They all belong to the large seed variety and occur as huge specimens. Besides the useful plants that grow wild, such as Pandanus, Hibiscus populneus, Barringtonia Speciosa and Thespesia tiliaceae, there have been cultivated arum and musa [genus to which the banana and plantain belong]. The known types of arum, according to Hellwig's lists, read: ha, ha udi udi, apangige, taro dautonu, taro hedui, bulaka. In contrast to all the other coral islands even true curcuma root [turmeric] and sugar cane are cultivated here. [Here follow two lists of plants in German and in the native language, one by Christian, Nuku-Oro Vocabulary, Journal of the Polynesian Society, volume VI, 1898, 224 ff., and the other by Captain Jeschke. The yam, banana, and arrowroot are mentioned.]

Animals

As on all coral islands, there are [only a] few kinds of animals. The only native mammal is the rat (<u>kimo Krämer, tiki moa</u> Kubary). The dog, cat, and pig have been imported. Probably the natives had no pigs prior to 1840, for Captain Hunter stated at that time that they were very much astonished at the sight of these animals on board.

[There are present 3 types of land birds and 13 types of sea birds. Chickens have been imported. Several species of turtles and lizards are mentioned. The natives have names for as many as 170 fish, only the tonu of which is said to be poisonous. Shellfish abound in types as well as in number. Insects to be remarked are the mosquito, louse, centipede, and scorpion.

Pages 197-213 describe the conditions of settlement and 213-219 the people themselves, part of whom are believed to have come from Samoa a number of generations back. The population seems to have decreased markedly in the last 100 years. Morrell had es-

¹Kubary, 5.

timated the number of warriors alone at about 500. The short paragraphs on population figures that follow are translated from pages 214 and 215.]

According to Kubary's name census, in 1878 the number of the population amounted to no more than 124. Forty-six of these were still living in 1910, thus 59 per cent [?].¹

-----The Imperial Ministry of Marine gives 128 for the year 1903. Hambruch counted in his not quite complete survey of settlement, 1910, only 120 persons.²

[The remaining pages of the report, on Nukuoro Islands 220-318, cover social organization, domestic economy, spiritual culture, and the ethnography. The 7 plates that conclude the section show physical types and house types and specimens of weaving.]

¹The persons mentioned here occur in part again in Hambruch's list. [Hambruch, Paul, Nauru, Ergebnisse der Südsee-Expedition, II, vol. I.]

²Not including everyone.

NGATIK

[Pages 321-331 cover the history of discovery of the atoll and contain several full narratives of 19 century dealings of ship captains with castaways as well as with natives there.]

The <u>name</u> of the Ngatik Group has been changed frequently. Tompson named it "Islas de la Passion." The name "Los Valientes" also used perhaps comes from him too, [but] possibly goes back to Lafita. Musgrave christened the atoll "Seven Islands," after the number of islands he counted. The name "Raven Islands" came in vogue through the ship "Britannia." Lütke was the first to ascertain the native name. He heard and wrote "Ngaryk." Unluckily it did not make its way into the literature. Doane is the first to employ it again, but he still continues to present the foreign names, supposing that the latter are the more current.

The <u>geographical position</u> of the atoll is shown by the table.

N.	Lat.	Longitude	Author	Year
50	361	201 ⁰ 40' (E. Greenwich)	Tompson, cited by Lütke	1793
5 ⁰	40'	158° 31' "	Same, cited by Krusenstern	1819
5 ⁰	401	1570 40'	Musgrave, in the same place	1793
		158 ⁰ 4'	Lafita, in the same place	1802
50	481	1 57° 31' 5"	Lütke according to "Seeadler"	
5 ⁰	481	163 ⁰ 43' (Madrid)	Lütke according to "Miguel"	1828
5 ⁰		1560 531	Godby	1841
50	45'	1570 30'	H.M.S. "Vestal"	1844
50	40'	1570 14'	Cheyne	1846
50	47' 30"	1570 321	Doane	1874
20	481	TDAA 351 30.	Kosser	1870
C	40'	T21. T21. 20.	"Secadier"	T300

According to the information of the Imperial Office of Marine, the <u>atoll</u> is situated 75 miles away from Ponape.¹ The reef,

¹Südsee Handbuch des Deutschen Reichsmarine - Amtes. Karolinen, vol. VI-VI, p. 20. something like a triangle, bears a number of very small islands for the most part, which rise only a little above the surface of the sea. The number of the islands is disputed. The last survey of the "Seeadler" from the year 1901 was probably authoritative.¹ The count and description of Lieutenant Commander Schack deviate a bit from the entries on the "German Chart."

[Names of the islands, from the north clock-wise.]

"Seeadler"	German Chart	Krämer
Paina	Peina	Baina
Piken Karregar	Bigen Karakar	Pikenkarkar
Jerup	Jirup	Sirop
Piken Gallan	Bigen kelang	Pikenkalan
Piken Mategan	0	Pikapa
Uat	Wat	Oat -
Uataluk		Votaluk
Ngatik	· Ngatik	Ngatik and the small island
		Tekenmen = 15-
		let with birds

[The names on H. O. chart 5425 are the same as those on the German chart except that the latter does not list Uataluk, as do the two other references. Note that the H. O. chart does not name an island between Bigen Kelang and Wat which both the "Seeadler" and Krämer give as Piken Mategan and Pikapa respectively.]

As the name "Seven Islands" reveals, several observers counted only 7 islands, as Musgrave, Tompson and Cheyne, H.M.S. "Vestal," and Godby. As many as 11 islands were given in the "Pacific Islands,"² of 1890 and Miguel names 9.³ By far most of the islands are on the eastern side of the reef, the shortest side of the triangle. Only the largest island Ngatik lies on the west tip. Uataluk is the smallest but the highest of the islands. Lütke calculated the circumference of the reef as 22 Italian miles [22.44

LKorvetten-Kapitän Schack über die Fahrt des "Seeadlers," Annalen der Hydrographie, Berlin 1901, p. 3.

²Pacific Islands, vol. I, Western group, 2nd edition, London 1890, p. 450.

³Miguel, Gregorio, Estudio sobre las Islas Carolinas, Madrid 1887, p. 144.

nautical miles].

According to the H.M.S. "Vestal," the reef extends 10 miles and is 5 feet wide; according to Godby the east-west dimension amounts to only about 2 miles. Findlay gives about 10-1/2 miles for this and for the greatest width 4-1/2 miles, making use of the "Seeadler's" survey. Miguel estimates the extent from east to west as 18 km and judges the area as 659 square kilometers.¹ The reef between the separate islands is inundated at high water. Within the atoll is situated the lagoon, abounding in rocks and shal-There is a good anchorage near the west end. At this place lows. the depth comes to 9-18 meters. Outside the reef, which according to the information in the "Pacific Islands" affords no suitable anchorage, there are likewise troublesome rocks, 2 which increase the danger from the strong surf. With regard to the sea current, H.M.S. "Condor" identified a speed of 19 miles in an easterly direction on October 23, 1912, at 12 m. "A 35 mile current in an easterly direction was computed the next day at Etmal between Ngatik and Nomoi"."3

The reef has an opening in the south side, near the small island Uataluk. It is passable for schooners, but in the narrowest places measures only 20 yards in a depth of 5 fathoms.⁴ Consequently, the passage is recommended only at low water. This entrance is at present very much at variance in the reports. Lütke particularly discusses this question. Tompson mentions the pass and inserts it at about the same place where the modern chart shows it. Lütke looked for it and could not find it. Curiously, several travellers speak of boat passages in other places, probably an illusion evoked by [the fact] that the reef between the islands is inundated at high water. The entrance at the east named by the others is perhaps identical with that mentioned by Tompson at the south, since this southern opening is situated quite close to the east side of the reef triangle, only 2 miles away from the east island Wat.

14. the Spanish chart of Coello, Atlas de Españay sus Posesiones de Ultramar, Madrid 1852.

"One of them was named "Fable Rock." A palm fan was attached to the tip of it.

Südseehandbuch, 20.

Pacific Islands, 450.

The land surface of the group, according to the survey of the "Seeadler," includes 150 hectares [a hectare is 2.47 acres]; Ngatik Island accounts for 72 hectares of this.

The low, fruitful islands produce a very luxuriant growth of trees and are rich in coconut palms and breadfruit trees. In Lütke's time there was a whole forest of coconut palms on the south side of Peina Island. A great tidal wave in the year 1898 and the typhoon of 1905 are said to have destroyed all palms, yet the Expedition came upon a considerable growth again. The people have set out well-kept plantings of sugar cane, bananas, etc. (fig. 212).

[Here a paragraph on settlement.]

The population consisted in 1900 of 240, in 1903 of 230, at the time of the Expedition in 1910 of about 250 persons. [This is] a very great upswing, however, contrasted with the numbers [given by] the first reporters: Around the middle of the last century they counted at the most 30; Lütke also saw no more and had the impression of an extremely scanty population. The natives who live today on Ngatik look like immigrants from Ponape and also feel themselves [to be] entirely such. This fact coincides throughout with the intelligence which Cheyne and Godby perhaps received from the same source, from a sailor or a robber [pirate] chief of Ngatik. This man, a John Macviel from Scotland, is famed for having caused a massacre of the natives of this island out of revenge for the death of two captains murdered on Ngatik. He took away the people of the island, killed the men, and left alive only about 40 women and several children. This event may have taken place about the end of the thirties. In 1846 Cheyne met about 20 Ponape people and 4 Englishmen on the island. It is not clear who besides that black ship's cook mentioned by Macvie were the accomplices of the "punitive expedition," [but it is] very probable that Ponape people were among them. [The writer goes on to say that only a handful of the present population is descended from the few original inhabitants whom Macvie left alive; the rest are of Ponape ancestry. At any rate the population has increased

¹According to Krämer the natives told of a massacre around 1820-1830, brought on by a ship Vailevi. Probably the name of the sailor rather than of the ship is hidden in this name.

considerably since the 1840's.

Pages 336-358 contain the remaining particulars about the people and their culture, most of whom apparently live on Ngatik Island itself. Several illustrations conclude this section.]

MOKIL

[Pages 363-370 contain information about the discovery of the atoll, and a number of accounts of early French, Spanish, Swedish, and American visitors.]

The group received the name "Duperrey Island" from its discoverer. About the middle of the 19th century this appellation was replaced by another "Wellington Island" with no mention of how it came into favor. Very much later the native name "Mokil" came into its own, although Duperrey certainly knew it then.

The <u>geographical</u> <u>position</u> is given by the various visitors and in the sailing directions as follows:

	E.	Long.	N.	. Lat	•	Author	Year
157 ⁰ 159 ⁰ 159 ⁰ 159 ⁰	201 491 501 501	loft on Dunon	60 60 60 60	39' 39' 41' 40'	40" 45"	Lesson Cheyne Hammet Moore	1824 1852 1853 1857
1590	49†	(after Duper- rey) (after Cheyne)	6 ⁰	42. 401	(point in the	Magazine	1999
159 ⁰	47'	(Spanish chart)	6 ⁰	40'	(Spanish Chart)	Nautical Magazine	1868
1590 1590 1660	49' 53' 5'		6 ⁰ 6 ⁰ 6 ⁰	391 391 391		Rosser Findlay Miguel	1870 18861 1887

The <u>geographical details</u> of the group present nothing out of the ordinary. Both Cheyne and Agassiz refer in describing Mokil to their prior statements on Pingelap, which it resembles very much. The distance between the two groups, [proceeding] in a northwest direction, amounts to about 60 miles.² The coral reef,

¹Findlay, A. G., A directory for the navigation of the North Pacific Ocean, London 1908, p. 214. According to astronomical measurement of 1907, the group is situated about 6 miles further west than specified in the charts.

²Südseehandbuch, 16.

in the form of a trapezoid, extends 3 miles from N.E.-N. to S. W.-S. and has a width of 1 to 1-1/2 miles.¹ Hammet estimates the distance at hardly 10 miles. Moore mentions about 15 miles for the circumference. According to the information of the Spanish,² the reef has a circumference of 13 km and an area of 100 square Moya³ estimates a width of 200 meters. Numerous rocks make km. navigation in the vicinity of the atoll dangerous. The reef (berau) extends on an average of 1/4 - 1/2 mile beyond the islands; only on the northeast does it reach a width of almost 3/4 mile, according to Rosser as much as 7/8 mile.⁴ The enclosed lagoon (laun) is said to have an entrance at the northwest; 5 according to Findley this is a pass for boats only, which the Imperial Office of Marine also confirms.⁶ Rosser⁷ disputes [its] existence, perhaps because Hammet searched in vain for the entrance. According to Krämer this pass lies between the island of Manton and Urak, thus at the west of the atoll and is called Dauo by the natives. The island affords no anchorages. Now and then small ships lie on the sea side at a warping anchor which is brought out from the wing [a side extension or overhang of the ship]. Moya gives a very clear description of a landing. According to him the narrowest place of the reef opposite Urak is passable for a boat when there is a light breeze. When the winds are light, one can go over the rocks opposite Manton to the principal island Kalap" [Mokil]. The lagoon between the reef and the rocks has a depth of 10-15 fathoms. The reef bears three islands. The largest is Mokil (Mogul^{*}) or Kalap (1). It is elongated, narrow,

Rosser, W. H., North Pacific Pilot, The Islands, II, London 1870, p. 220.

²Miguel, 144.

³Lorenzo Moya: Viaje del Canonero, "Quiros," Revista General de Marina, Madrid 1896, p. 79. ⁴Findlay, 1890, 490. ⁵Cheyne, A., A description of the islands in the Western Pacific Ocean north and south of the equator, with sailing directions, together with their productions, manners, and customs, of the natives and vocabularies of their languages, London 1852, p. 93.

⁵Südseehandbuch, 13. According to Syring, A., Mokil, Südsee -Erinnerungen, Liebenzell 1930, p. 7, steamers go into the lagoon.

Rosser, 220.

and bent in the shape of a hook. The two arms of land form an acute angle which points to the northeast. Opposite, on the west, lies the smallest island <u>Ugay</u>^{*} (Urek^{*}) [Manton^u or Ugai] (2), on the south Manton [either the text or H. O. chart 5425 has used this name erroneously], or <u>Aura</u> [Urak^u] (3). Mokil is the only one of these islands that is thickly settled. The village is on the lagoon side in the angle of the land arm. Ugai bears only about 6 houses whereas Aura is completely uninhabited.1

[Pages 372-8 contain a detailed census of settlement.]

Until the typhoon of 1905 the islands were rich in coconut palms and had a superabundance of all other food with the result that profitable trade by the whites with passing ships was possible. Turtles, chickens, pigs and taro tubers were present in abundance. Only water was scarce, for people were dependent on collected rain water only.

The <u>number</u> of the population has gone up since the middle of the last century. According to the Spaniards, the chief made statements and these are identical throughout with the numbers that the captains report at various times. The white resident in about 1853, Huntington, gives 87 persons; Moore several years later mentions about 100; in 1903 the German government counts 214. Unfortunately Lesson gives no figures and in the Nautical Magazine of 1848 there is no more exact information than mention only of "dense population." As Andersson [early Swedish caller at the island] says, civil wars were one reason for the great decline of the population before the middle of the century; [the population] would doubtless have been very fruitful without such strong encroachments upon the stock of people. Under the powerful influence of the Caucasians, the disturbances of war were stopped for their [the Caucasians'] own good, and the people then recovered apparently rapidly.

Lesson describes the people of Mokil as "very handsome 2 people" of well-shaped figure and limbs, not at all dark-skinned, 2 with broad, flat features, but a frank and benevolent expression, and long, black hair. The presence of beards is worthy of note. The skin of many [of them] is blighted by ringworm. This imposing appearance and the good condition of [their] health otherwise are confirmed by Captain Moore.

Südseehandbuch, 13. On Manton and Urak are establishments of the Jaluit Company.

Cheyne, 93, calls the color of the skin "light copper."

Only good things have ever been reported at any time about the <u>character</u> of the people.¹ They are described as friendly, harmless, industrious, and cheerful. The men are skillful sailors and good swimmers,² and their houses are clean. The missionaries regard these favorable qualities as the work of pious residents. Captain James of the "Morning Star" calls the island "a model colony of natives" (1864).³ However, the utter lack of weapons among the people observed by Hammet may perhaps be ascribed to the pressure of the Caucasians. The people are of good perceptive faculty, facile of speech, very musical, and fond of singing.⁴

[Descriptions of social and material cultures and the language follow.]

¹Cheyne, 93, is an exception and warns against trusting them too much. Years ago the people are said to have seized a whaler and got it almost to land.

²Syring, 12, tells of a man who kept himself and a child above water for 3 days and nights.

³Nautical Magazine 1864, 433.

4Syring, 10.

PINGELAP

[Pages 409-420 contain the account of the discovery and the records of several visitors since. Alexander Agassiz's account, pp. 415-6, in English, seems worthy of inclusion here.]

The most valuable information about the geography of the atoll--to this day it has not been amplified--we owe to Alexander Agassiz¹ who made his observations on the expedition "to the Tropical Pacific, August 1899 to March 1900."

"Pingelap.....is an irregularly rectangular atoll, with sides of about 2-1/2 miles in length. Pingelap is undoubtedly an atoll built upon a volcanic platform, the lagoon of which is enclosed on the east by Pingelap Island, and on the northern horn by Tugulu and Takai Islands, two low islands well covered with coconut trees. On the sea face the islands are flanked by heavy single beaches; on the southernmost part of Pingelap, the lagoon face is flanked by a steep coral sand beach; this gradually passes into the wide reef which connects all the islands. The reef flat encloses a shallow lagoon; in the gap between the two larger islands a shingle beach separates the lagoon from the outer sea The western reef flat itself is even at low tide covered face. with sufficient water to be navigable for canoes and small boats. It is covered with large boulders and manes of smaller coral blocks. The deepest part of the lagoon, said to be 15 fathoms, seems to be in the northeastern part, towards the gap which separates Pingelap from Tugulu Island. The islands as far as we could see, were formed by high beaches thrown up on the two faces, forming a central sink, running parallel with the shore lines. High breakers are seen directly across the eastern gap, as the sea during the season of the trades runs high on the windward side. No island in the Carolines has probably so large a population in proportion to the extent of land as this atoll. No less than a thousand inhabitants are said to live on the southern island (Pingelap) and certainly, as we approached it, the number of natives crowding the beach, with the many canoes drawn up near highwater mark, would indicate a large population, depending for its food on the products of the sea, and on the supply of coconuts growing upon the islands. The intercourse of the natives of Pingelap with the outside is most limited, when we passed the na-

¹Agassiz, Alexander, reports on the scientific results of the expedition to the Tropical Pacific in charge of Alexander Agassiz, Memoirs of the Museum of Comparative Zoology, vol. XXVIII, Harvard College, Cambridge 1903, p. 340. tives had not seen a ship by whites for more than eight months.

"We did not observe the base underlying the loose material of the atoll; judging from the structures of the adjoining islands, this base probably consists of volcanic rocks. The low atolls in the Carolines hold to the volcanic islands of the group the same relation which the atoll of Tetiaroa hold to the adjoining islands in the Society Group, although in the region adjoining both the Carolines and the Society Islands atolls exist which are undoubtedly built upon platforms of a limestone origin, and some of the Carolines are composed of elevated coralliferous limestones

Name:

The two names which the Europeans have attached to the group of islands, Musgrave or Mac Askill Island, have been explained by the statement of discovery. People came to learn the native names also comparatively early: Duperrey mentions "Pelelep," Lesson "Pelelap," and Lütke "Pingoulap." The names of the separate islands of the atoll were likewise learned: besides Pingelap "Takai" and "Tugulu." The pronunciation or writing of the last name has until recently created difficulties, Findlay writes "Chikuru" and the German Imperial Office of Marine gives "Sukuru." The translation of this name is somewhat doubtful: "Takai" in the language of Ponape is called "stone." The constituents of the word "Pingelap" are also in the same language: "ping" means fish-pond and "lap" large.

The <u>geographical position</u> of the atoll is to be seen from the [following] table. The differences in the measurements of the two captains Musgrave and Mac Askill are the basis for the long circulated opinion that there were two groups of islands.

The later measurements are more exact; they characterize either the north or south end or a point in the center of the island. However, the newest information in the sailing directions of Findlay 1908 and Rosser 1870 continues to show differences.

N. Lat.	E. Long.	Author	Remarks	
60 15'	159 ⁰ 15'	Krusenstern 1819 1793 Musgrave in Arrowsmith	in Findlay 3rd Ed., mistaken for another	
6 ⁰ 12' 6 ⁰ 14' 30"	160 ⁰ 53' 160 ⁰ 52'	1809 Mac Askill Duperrey 1824	in Findlay 3rd	
6 ⁰ 13'	1600 471	North Island	in Nautical Mag. 1868	
60 12' 60 36' 60 12'	160° 47' 30" 158° 27' 160° 53'	South Island A. P. Lesson 1824 Horsburgh 1826,	(Mc.Askill)	
6 ⁰ 13' 30"	160 ⁰ 48'	Nautical Magazine 1848	same information Nautical Mag. 1868	
6° 15' 6° 12'	159° 15' 159° 15'	Cheyne 1852 H.M.S. Serpent, Capt Hammet	(Musgrave) (cit. Musgrave)	
6 ⁰ 12' 50" 6 ⁰ 12'	160° 41' 20" 160° 53'	Gulick in Nautical	(middle point)	
6 ⁰ 13'	160° 50'	Nautical Mag. 1868, Cites Spanish chart		
6° 14' 6° 14' 25" 6° 12' 40" 6° 14'	167° 4' 160° 47' 50" 160° 48' 160° 45'	Miguel 1887 Rosser Tugulu Pingelap Findlay 1908	middle point	
		TuguLu		

The <u>atoll</u> has almost the form of a trapezoid. The reef¹ -----according to Agassiz a coral formation upon a volcanic foundation-----bears 3 islands and contains a lagoon inside. The chart published of it corresponds throughout to Duperrey's survey. On the German chart the island and reef are shown with a different shape.

In the first place, the disputed entrance into the lagoon is lacking here. The elevation of the atoll is apparently more considerable than that of formations of a similar kind. Doane² mentions 30-100 feet. There are also several statements about the size.

Krämer gives as the name of the reef at the northeast "Likinefang," and the reef between Pingelap and Tugulu" as "Segeil palap."

²Doane, Missionary Herald 1856, cited in Biernatzki, Micronesien, Leitschrift für allgemeine Erdkunde, 1859, p. 365. ammet estimates the circumference as 15 miles. Agassiz gives a ateral length of 2-1/2 miles. From 2 to 3 miles is usually esimated as the diameter.

The number of the islands, known correctly by Duperrey from the first, is given falsely in Horsburgh and later even in liguel and Findlay: they mention only two. Apparently they have classed Tugulu and Takai, which lie close together, as one island.

The statements about the entrance into the lagoon are very contradictory and have to this day not been completely clarified.¹ The diversity of interpretation certainly shows itself in the representation on the charts. It fails to provide [a means of] finding out where the report comes from that Pingelap has a good entrance. There exist only the explanations, according to which an entrance in the proper sense of the word is altogether lacking. Accordingly, people have searched [for one] repeatedly. In the last analysis the following seems to be the case: The reef on the west side is so shallow that when there is favorable weather, that

¹Pacific Islands, vol. I, Western Group, Second Edition, London 1890, p. 489. ".....two low islands and an islet, situated on a coral reef....the whole enclosing a lagoon, into which there is no passage, but boats may get anywhere over the reef at high water if there are no breakers...... Through the shore reef, off the principal village, there is a small channel 3 to 6 feet wide, and about 18 inches deep, its outer extremity being just in the breakers. On entering this channel, boats are seized by the natives and quickly hauled through.

Rosser, 220,..the group consists of 2 low coral islands and a small islet....the whole enclosing a lagoon into which are several boat passages at high water.... The reef does not extend more than 1/4 of a mile outside the islands, except at the N.S. [?], E.N.E., and W.S.W. angles of the reef, where the extension is about 1/2 mile

Moore, Nautical Magazine 1858..... I sounded off the village, close in, with no bottom at 100 fathoms.....

Moya, 69.....in order to land, one must bisect the stretch of the west coast. Here the settlement is located. One can get there with an ordinary boat. Here there is a place in the reef where the boat can be shoved in for about 20 meters. It is free of submerged reefs. One must go on the reef for about 100 meters and then can cross about 200 meters with the boat -- so long is the stretch between reef and coast. Its depth comes to 1 meter.

The report of the "Seeadler" in the Annals of Hydrography, 1901, 1, likewise disputes [the existence] of the entrance. is, when there is no surf, and at high tide, boats can cross over. According to Agassiz, passage is even possible at ebb tide. As a rule, apparently, [one] must wade through the stretch in question. According to the most recent information (Findlay 1908 and the Imperial Office of Marine 1913) a suitable anchorage in front of the group of islands is also lacking.

d.

The current setting 1 mile [an hour?] northeast was observed near Pingelap Island on two occasions when steering for [the island]. The first time there was a southeast wind, strength 4, the second time a north wind, strength 3.1

The fruitfulness of the island impressed the missionaries during their first visit in 1857. Agassiz considers it the most populated group for its size of the Carolines. There is a rich growth in familiar fruit trees such as coconut palms, Pandanus, and breadfruit. The abundance of the first-mentioned provides important yields in copra. The natives cultivate taro and bananas. They already were keeping chickens and pigs before the arrival of the missionaries. At that time people caught a great many turtles. Trepang, on the other hand, played a lesser role. The principal sources of food for the inhabitants were fishing and coconut palms.

[Here follow, pp. 423-4, some remarks about settlement and a census of houses and inhabitants.]

The <u>number of the population</u> was first unequivocally established recently. According to the statements of the Imperial Office of Marine 870 people were living on Pingelap prior to the devastating typhoon of April 20, 1905.² Moya estimated approximately 1,000 in 1896 and with that arrives at the same number as Agassiz. As against that, the number of men whom Hammet saw on the shore impresses [us] as surprisingly small. On account of the severe typhoon mentioned, there was a great shortage of food, with the result that part of the people (67) found themselves forced to emigrate to Saipan and other islands of the Carolines. An additional 70 persons were taken off by a malady similar to beriberi.

[Here follow several paragraphs on anthropology. Missionaries of the Boston Mission have been on Pingelap since 1857. Pages 426-464 include particulars of their material culture and language. Plate 2 of the concluding six plates has been reproduced.]

Südseehandbuch loc. cit., 12.

Findlay, 1908 edition, mentions about 900 persons.



II. DIE GEOGRAPHISCHEN VERHÄLTNISSE

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Abb. 7.





MÖKĬL INSELN

[Islands around Ponape. E6] Figure 254. German Sea-chart no. 97, title XI, no. 407.



Abb. 212. Siedlung auf Ngatik nach A. Krämer.¹

[Note appended to Figure 212:] Krämer learned [the following] about it: Underground passages led from the old house site of Mrs. Legekrong (24) through the island to two caves which are said to have been 5-10 meters wide and 2 meters high. People with coconut torches passed through the passages so [that] the smoke penetrated [upward] out of the earth in several places. Now they are blocked up by the natives. A reef mound 1 - 2 feet high, which looks like an upheaval, is situated near the house site mentioned, but presumably has only been washed up by the typhoon. It is likely that these caves, in case they really exist, are connected with the mysterious activity of the white sailors that Godby describes.

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BEVÖLKERUNG UND BESIEDELUNG



Abb. 212. Siculuing auf figacia mach fi. familer.

17 Peiasáp I Likinkalengatól 9 Sapaterök 2 Likinhebin 10 Pikentú 18 Velēp 19 Kabinam 3 Likinláoan (König) 11 Saboenlang 20 Liksaulík 4 Steindenkmal 12 Běténtiam 5 Kirche 21 Bulinsókon 13 Bonpar 6 Likinbánsong 14 Lebénpe 22 Neör (Häuptlingssohn) 7 Liksaróvei (Steine) 15 Auranetí (Olifat-Tempel) 23 Likinhebin 8 Likinpoek 16 Versammlungshaus 24 Legekrong

T7: 1 - - - - - - TT-1- - -----





Abb. 211. Deutsche Seekarte. Nr. 97, Tit. XI, Nr. 407.

Wie der Name »Seven Islands« verrät, zählten einige Besucher nur sieben Inseln, so Musgrave, Tompson und Cheyne, H. M. S. »Vestal« und Godby. In den »Pacific













Plate 2. [Islands around Ponape. E7]
1. Cemetery.
2. Group of houses in village
3. Boat.
4. Village on shore, in foreground large sailing cance.









- 1. Grabstätte.
- 2. Häusergruppe im Dorf.
- 3. Boot.
- 4. Dorf mit Strand, im Vordergrund großes Segelkanu.

photo Krämer photo Krämer photo Hambruch



Landschaft

Krämer phot.



11 : .

[Islands around Ponape, E9] Plate 3. Mokil 1. Landscape 2. Sailboat



Landschaft

Krämer phot.



Segelboot

Hambruch phot.

Figure Island s 5 Kapingamarangi around Ponape. でして passes.

d.



KAPENMAILANG I?

Ungf. 1: 150 000



[Islands around Ponape. El] Figure 5. German sea-chart no. 97, title XI, no. 407.



Abb. 5. Deutsche Seekarte Nr. 97, Tit. XI, Nr. 407.

en). Kleineren Fahrzugen bietet diese Durchfahrt keine kleinen Fracht- und Verkehrsdampfer des Norddeuts