THE TRADITIONAL ROTUMAN MEDICINAL SYSTEM AND ETHNOPHARMACOPOEA.

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Acknowledgments

If all of the knowledge of traditional Rotuma could be condensed into a single term, it would be **hanisi**. If all that I have been taught by the Rotumans about how to be a Rotuman could be summarized, it could be expressed in the word **hanisi**. **Hanisi** is a deep thought, with a myriad of expressions and meanings. **Hanisi** means to feel sympathy, sorrow, love and compassion towards another, but it is much more than this, it is the heart of Rotuma. In a practical sense, **hanisi** is concern for others, love, caring and giving openly. Socially, **hanisi** is the laminate which binds Rotumans together into a culture. Without **hanisi** there would be no Rotumans.

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Introduction

Geography, Geology and Climate

The tropical island of Rotuma is found at the junction of Polynesia, Melanesia, and Micronesia. At 12 degrees 30 minutes south latitude and 177 degrees 5 minutes east longitude, Rotuma is isolated, physically, botanically, culturally and politically. Presently Rotuma is part of the Republic of Fiji, but was previously a British Crown Colony ceded seperately but administered with Fiji.

Rotuma is only 15 kilometers long by 4 kilometers wide.

> "The ... island consists of two parts, joined together by a narrow neck of land, which tradition states to have been formed by the islanders on an intervening reef. It (the intervening isthmus) consists entirely of sand; the mountain bounding it to the west shows at its base signs of wave-action; there are no large trees on it, and in the reef a pool, 8 to 12 fathoms deep, lies in a direct line between the two largest passages on the northern and southern sides." (Gardiner 1898)

Rotuma consists of two joined islands, together roughly shaped like an asymmetrical hour-glass.

Rotuma is volcanic in origin with numerous extinct cones rising to heights of 200 meters or more above sea level. The volcanic peaks provide very rich soils and a variety of ecological niches for botanical diversity. Volcanic activity no longer occurs, but on the western end of the island the more recent lava flows can clearly be seen. These lava flows presently support the last uncultivated tracts of forest left on Rotuma.

Non-volcanic soils (sand/coral) arise from the breakup of the reefs. Almost the entire island is surrounded by a reef system which extends from 50 to 300 meters out from the beach. The beaches are composed of white sand mixed with crushed coral and shells. This sandy soil can be found up to 100 meters or more inland and makes up large portions of the interior soils of the low lying eastern end of the island (Noatau and Oinafa districts.)

The climate varies only slightly throughout the year, temperatures ranging from 25 to 40 degrees celsius. Rainy seasons occur in October and February and a slightly drier season in July. Annual rainfall is usually at least 355 but may be up to 640 centimeters. Prior to 1972, when hurricane Bebe struck the island, there where regular hurricanes and tropical storms approximately every three years. From 1972 to 1992 there have been no hurricanes nor large tropical storms.

Botany

The Flora of Rotuma has never been documented beyond the ferns (St.John 1954), a brief description of some of the common tree species (Bennett 1832a), and a selection of mosses (Bartram 1945), and is specifically excluded from the Flora of Fiji (Smith 1979:1:76). St.John documented 31 species of ferns. Twenty-five of these species are broadly distributed in Oceania. Three occur to the east of Rotuma, while two species occur to the west and one species is endemic. Additionally St.John in his 1930's field work on Rotuma, collected many botanical specimens which may be found in the Bishop Museum, Honolulu, Hawai`i.

Arthur Whistler (personal communication) estimates the number of angiosperms on Rotuma to be between 300 to 400 species with a large number of these being introduced either by the early Rotumans or by Europeans. My additional work on the flora has to date provided documentation of over 250 species. The flora of this volcanic island is derived in part from the unique flora of Fiji and probably, as indicated by such species as Metroxylon warburgii (Heim) Beccari, (McClatchey and Cox 1992), from the Solomon islands and Vanuatu. The littoral flora resembles in many ways the other close equatorial Polynesian islands to the east of Rotuma. The flora, like the culture is Indomalaysian in origin.

The island flora can be viewed as consisting of at least three main resource areas: forests of non-domesticated trees, agricultural lands including forests of domesticated trees, and the marine reef system which includes both botanical and non-botanical resources (fish, marine invertebrates, etc.) Each of these resource areas has been modified to some extent since the island was originally colonized by the Rotumans.

The early settlers of the island and subsequent waves of immigrants introduced animals, crops and weeds would have changed the botanical environment. Murdock (1963:150) stated in reference to Polynesian plant and animal introductions during settlement of the Pacific islands: " transplanted to islands where their respective ecological niches were either unfilled or filled by weaker indigenous forms, and where the forms on which they preyed were unprotected and vulnerable, the introduced species must repeatedly have wrought havoc on the native fauna and flora, extinguishing many species and greatly restricting the distribution of others. The resulting changes in island ecosystems must often have been substantial and not infrequently spectacular."

St.John (1938:165) could only identify two areas of the island covered with dense forest comprising about five percent of the entire area. These areas were not converted to agriculture because they were on very rocky terrain with no soil for crops. These two areas are still relatively untouched, although pigs are allowed to inhabit one section of forest which is surrounded by a large stone fence.

Most of the island is covered by trees, either as forests or groves of coconuts and breadfruit. The forested areas are highly valued by the Rotumans as sources of timber for house construction, canoes, drums, and other wooden cultural implements. The forests are also sources of many of the medicinal plants. Surrounding and entering each village is an area of forest/agricultural land which contains a mixture of encroaching wild plants, weeds, small garden plots, feral agricultural plants and cultivated tree crops such as coconuts, breadfruit and sago.

Rotuman crops are a mixture of Polynesian staples, Colocasia esculenta (L.) Schott (**papula**), Alocasia macrorrhiza (L.) Schott (`**Apea**), C. chamissonis (**papoi**), Cocos nucifera L. (**nui**), Musa acuminata Colla (**pari**), Artocarpus altilis (Parkinson ex Z) Fosb. (`**ulu**), etc. and European introductions Manihot esculenta Crantz (**tapiko**), Psidium guajava L. (**koao**), Mangifera indica L. (**mago**), etc. Most of the island has been cultivated, so it is likely that some endemic species have been driven to extinction by the early inhabitants.

Apparently traditional agriculture employed little or no terracing and only limited swamp cultivation of aroids, although no archaeological surveys have been made to date. Most of the land under cultivation is planted in taro, **papula (Colocasia esculenta** (L.) Schott), and cassava, **tapiko** (Manihot esculenta Crantz), on gentle to extreme slopes in soil often more than a meter deep. Irrigation is not currently practiced and I could not verify that it had been used previously.

From the nearby Polynesian outlier, Anuta, Kirch (1984:177-8) describes his study site as one of the last intensive dry field cultivation sites still in existence today. His descriptions of Anutan dry field cultivation reflect quite well the crop production techniques which I observed on Rotuma, and thus may be used as models for understanding the Rotuman agricultural system. An important exception to this comparison is the apparent lack of pit fermentation in the Rotuman system whereas the Anutans did ferment breadfruit. Rotumans of today are unaware of the process of pit fermentation (Cox 1980:81-93), but since no archaeological work related to this question has been conducted on Rotuma, it is unclear whether the process has never been used or is merely a forgotten tradition.

With the exception of the Cyrtosperma swamp lands (see below), I observed no agricultural intensification such as planting of aroid crops in wetland/irrigated/raised bed or terraced hydroponic systems. None of the Rotumans I questioned seemed to be aware of these types of practices. Rotuma has no rivers, lakes or other sources of surface water to divert into wetlands. Numerous shallow wells, small springs and collected rainfall provide water for the human population while the regular abundance of rain provides sufficient water for dry field cultivation even on quite severe volcanic slopes such as on Sol Roroa.

Areas in which I observed Cyrtosperma chamissonis (Schott) Merr. in swamp cultivation are near Fapufa, Lau, Noatau, and Oinafa villages and at Sam ta'aro in Itu'muta and in a feral state, near the unoccupied village on the island of Uea. C. chamissonis, **papoi**, is the only species which I noted as presently cultivated in the swampy areas and its popularity as a food source is on the decline.

The Rotumans have made extensive use of the large surrounding reef system, utilizing the fish, invertebrates and seaweeds for food, and the coral for lime. Currently the use of marine resources has dropped due to imported tinned fish and other sources of food used to supplement the local diet. In spite of the their former extensive use, and nomenclature (Churchward 1940) that they developed for the life in the sea, they do not presently use the marine plants medicinally as other Polynesians occasionally have (Abbott 1991.)

Culture

Rotuma is highly isolated, lying outside of the main area of Polynesia yet not far enough out to be classified with the Polynesian outliers in Melanesia(Bayard 1966). Rotuma is between 350 to 400 miles away from Anuta and Tikopia to the west, Samoa, `Uvea (Wallis) and Futuna to the east and Fiji to the south. In addition, Rotuma lies approximately 600 miles from Tonga which is to the Southeast and played a prominent role in the late pre-European history. In spite of this isolation, Rotumans regularly visited the mentioned island groups, exchanging goods and cultural ideas.

Many different aspects of the Rotuman culture have been described by a wide range of scholars, both native and non-native. Very few of these works provide a great deal of depth. Topics which have been addressed include linguistics and traditional/linguistic origins, general cultural descriptions, physical anthropology, descriptions of various cultural activities/traditions, and the traditional medicinal system. Only one author (Gardiner 1897) has attempted an overall documentation on the Rotuman culture. Since the late 1950's Rotumans (Fatiaki, A. 1966,1991, Fatiaki, D. 1976,1991, Irava 1991, Itautoka 1991, Kaurasi, L. 1976,1991, Kaurasi, M. 1991, Langi 1971, Malo 1991, Mangreve 1958, Marseu 1986, Tanu 1991, Taukave et al 1981, Tausie-Hereniko 1991 and Vilsoni 1991) have begun to write about their own culture.

The culture of this isolated island has been sporadically studied. Generally speaking, the unique language has attracted the better part of the work conducted on Rotuman culture. Those who have studied the language include: Biggs 1959,1965, Capell 1962, Churchward 1928,1929,1930,1937,1938a,1938-9,1940, Codrington 1885, Grace 1959, 1961, Hale 1846, Haudricourt 1957-8, Hocart 1915,1919, Parke 1971, Ray 1922, Vitte 1914.

The unique linguistic aspects of the Rotuman language have been used to support some unusual cultural origin possibilities. Biggs (1965:383-445) uses the unique aspects of the language to sensibly point to links with distant islands in the Solomons, Banks islands and Vanuatu but in the final analysis he considers Rotuman to be a composite of Polynesian, Solomon islands, and New Guinea coastal languages.

The Rotuman culture is a rich mixture of Melanesian and Polynesian influences which are usually identified through the language. Melanesian influence has come from Fiji, Vanuatu and the Polynesian outliers in the Solomon Islands. Rotuman oral tradition recalls visits with and visitors from each of these Melanesian areas. Probably the more substantial cultural and genetic influences have come from the Polynesian island groups of Samoa, Tonga and `Uvea and Futuna. Rotuman origin legends hold that the first Rotumans arrived from Samoa (Churchward 1937:109-116) or from `Uvea (Wallis) island. Although not usually indicated as an ethnic origin point, it is known that shortly prior to the historical era, various Tongans came to the island and for an extended period, politically dominated the Rotumans (Churchward 1937:255-260.) The legend of the Tongan invasion ends with the Rotumans killing the Tongans and establishing their own leadership shortly before the first encounters with European explorers. Potentially other cultures from surrounding islands may have, in peace or in war added to the uniqueness of the Rotuman way of life, genetically, socially and medicinally.

The Rotumans resemble Polynesians in material culture, legends, physical appearance and many aspects of their language (Churchward 1938, 1940.) In addition to these similarities with Polynesia, Rotumans have many Melanesian cultural aspects. The closest potential Melanesian influence is Fiji, which has probably been in the past, as in the present, the

most important Melanesian influence on Rotuman culture. Mixed cultural influences and traits from both Polynesian and Melanesian cultures characterize Rotuman society today.

Clark (1979:257) considers that the homeland of the Rotuman language must be Fiji due to its similarities with other Central Polynesian languages derived from Proto-Central Polynesian having an origin in Fiji. Churchward, in spite of his assertions of their basic Polynesian characteristics pointed out repeated tendencies, linguistically toward Melanesia as well as unique aspects which he characterized as being uniquely Rotuman and of aboriginal origin. In our research (McClatchey and Cox 1992), we disseminate the finding of Rotumans producing sago starch as a food source. This activity is clearly Melanesian in origin. But in the final analysis, Churchward, the researcher who spent the greatest period of time living and learning from the Rotumans (ten years), believed that overwhelmingly their greatest cultural affiliations are with Polynesia. For the purposes of my thesis, I will consider the Rotumans to be Polynesians, but it should be kept in mind that the traditional medicinal system, the language, and ethnobotany may also spring from other influences.

Many general descriptions and diagnosis of Rotuman traditional activities have been written. The most complete is that of Gardiner (1897), but others include: Allardyce 1885-6, Allen 1895, Bennett 1831,1832b, Boddam-Whetham 1876, Birgham 1881, Churchward 1938,1939a, Eason 1947,1953, Hassell 1825, Hodge 1937, Lesson 1825,1838-9, Lindner 1814, Lucatt 1851, McDonald 1917,1918a,1918b 1918c,1918d, MacGregor 1932, 1932-3, Parke 1964, Parkinson 1907, Plant 1977, Roget 1939, Rosser 1881, Russell 1942, and Westcott-Jones 1951.

Physical anthropology of the Rotumans has only briefly been discussed as minor aspects of the works listed in the previous paragraph. Works which have been devoted to Rotuman physical anthropology include: Duckworth 1900, Duckworth and Taylor 1902, and MacGregor 1932.

Archaeological work has only just begun. In 1992 while I was conducting field work, an archaeological survey was being conducted by Thane Ladefoged of the University of Hawai'i. His research has yet to be published. Previous work has consisted only of examination of cultural artifacts and speculations based on traditional legends (Shutler 1991.)

The ultimate origins of the first settlers to arrive on Rotuma may never be determined. No significant archaeological studies of the prehistory of Rotuma have been conducted to date. Green (1979:31-48) discusses the early settlers of Polynesia and eastern Melanesia, known as the Lapita. The Lapita are largely traced archaeologically by the pottery shards they left behind. Lapita pottery has been identified from island to the west, south and east of Rotuma. Green states that the Lapita must have been regularly making ocean voyages of up to 400 miles (1016 kilometers) or more. This voyaging distance places Rotuma within range of many known Lapita occupied islands.

Ladefoged (personal communications) has dated a shell midden associated with an ancient human occupation site in the Itu'muta district at 2040 +/- 80 years before present. The Lapita sites from surrounding islands date to between 2200 and 3200 years before present. Rotuma has been occupied for at least 2000 years and if formerly occupied by the Lapita could have been occupied for as long as 3000 years.

Specific cultural activities, traditions and the movements of the Rotumans outside of Rotuma have been examined in the following works: Bryant 1974, Churchward 1939b,1939c, Hocart 1914,1915, Howard and Howard 1964, Howard 1970,1985,1990, Kaurasi 1976, MacGregor 1933, Managreve 1958, Marseu 1987, Romilly 1882, and Wood 1877. Additionally Howard has devoted extensive effort to documenting aspects of the Rotuman land tenure system and related social organization: Howard 1961,1962, 1963a,1963b,1964,1965, and 1966.

Gardiner (1897) and Howard (1979) have written about aspects of the traditional medicinal system. Neither author devoted more than a short statement to the cultural use of medicinal herbs. Both authors have presented a European view of the traditional Rotuman medicinal system. It is my desire to augment these earlier works by presenting the herbal tradition as well as a Rotuman perspective of traditional healing practices.

The historical setting

The first well documented visit to Rotuma by Europeans, was that of the H.M.S. Pandora in 1791. The island was initially named Grenville island by Captain Edward Edwards, but this was soon changed to the native name of Rotuma. Following initial European discovery, the island was repeatedly visited by European whaling ships (Haley 1948) and explorers seeking to resupply and recruit sailors. Many of these early ships left behind deserters who found life on Rotuma to be better than life at sea.

The following represents the early European contact record with Rotuma prior to cession to Great Britian in 1881:

- On August 11th, 1791, the frigate H.M.S. Pandora arrived at Rotuma and stayed for less than one day before sailing on without even taking on supplies. This appears to have been very uneventful for both parties but does represent the first recorded European contact.(Thomson 1915:17-18, 64-66, 138-139)
- During September, 1797, the missionary ship "Duff" visited Rotuma. (Wilson 1799:292-4)
- In 1820 the English whaling ship "Rochester" stopped at Rotuma, leaving behind several deserters.
- In May, 1825, the French corvette "Coquille" visited Rotuma and removed some of the deserters from the "Rochester." Two new deserters remained behind from the "Coquille." (Duperry 1826)(Lesson 1839)
- In 1827 a visit was made by the ship "Research" as recorded by Captain Peter Dillon (1829.)
- In 1828 M. de Tremlin reached Rotuma, this marking one of the last French visits. (Tromelin 1829)
- In February and March of 1830, Rotuma was explored by Dr. George Bennett who was the first to provide botanical and cultural information about Rotuman society. (Bennett 1831, 1832a, 1832b)
- In November 1839, the brig "Camden" arrived at Rotuma and left two Samoan teachers representing the London Missionary Society who began to teach

the Rotumans about Christianity.

- In 1842, the Wesleyan Methodist Missionary Society brought Tongan teachers to the island to conduct missionary work.
- In April, 1845, the London Missionary Society arrived and removed the Samoan teachers placed there in 1839 (Williams 1838:259-60.) The teachers were returned to Samoa because of an agreement reached between the London Missionary Society and the Wesleyan Methodists which granted all interrests of the former, in Rotuma, to the later. (Turner 1861) Also in 1845 Thomas West visited Rotuma. He reported on the uniqueness of the language and the extreme beauty of the island. (West 1845:425-8)
- In 1846 the first Catholic priest landed on Rotuma where he stayed until 1853.
- In 1847 the island was visited by a British vessel.(Lawry 1850)
- In 1852 Thomas Williams visited Rotuma.(Henderson 1931)
- In 1860 the H.M.S. "Brisk" visited Rotuma. (Eason 1951)
- About 1862, two Roman Catholic priests arrived and began missionary activity. (Churchward 1938a)
- The "Star of Eve" arrived at Rotuma from New Zealand in 1863. The ship subsequantly wrecked on the reef off Maftoa. (Taukave et al 1981)
- In July, 1864, the first European Methodist missionary, Reverend William Fletcher, arrived at Rotuma. (Churchward 1938a) Fletcher remained on Rotuma until 1870.
- In 1872 at least two European ships stopped at Rotuma. One ship brought Dr. Litton Forbes from Fiji, while the other ship, the "Basilick", came to investigate reports of kidnappings by blackbirders. (Forbes 1875)(Moresby 1876)
- In 1874 commodore Goodenough visited Rotuma. (Goodenough 1876)

Throughout this period of European expansion missionaries worked to convert the Rotumans to Christianity. Catholic Missionaries arrived from France. Methodist missionaries arrived from Great Britain and its colonies. The two missionary movements worked vigorously to gain support of the Rotumans. The Methodists succeeded in gaining the support of the majority of the population, with the French Catholics only securing two of the seven districts of Rotuma. Two wars between the competing Methodist and Catholic factions occurred in 1871 and 1878. These, which were both won by the Methodist factions, led to the chiefs of the island ceding Rotuma to Great Britain in 1881 in order to establish peace.

In addition to historical European visits, Rotuma was also visited by Ellice islanders, Gilbertese, `Uveans, Futunans, Tongans, and Hawaiians. (Gardiner 1898, Russell 1849:402, Taukave et al 1981, Russell 1942:253) The Rotumans eagerly learned about the outside world and readily joined crews of both European and other Polynesian expeditions. The Rotumans also took their own canoes to "Tikopia, Malekula, Santo, Nanumea (Ellis Is.), Tonga, and Fiji." (Russell 1942:253)

These encounters did not simply provide for exchange of ideas and goods, but also of pathogenic organisms. Unfortunately the introduction of pathogens was largely a one-way exchange, Rotumans enduring a century of death from introduced measles, whooping cough, and possibly even yaws (Howard 1979, Gardiner 1897.) That the traditional Rotuman healing system was unprepared for these events is a major understatement, but worse yet, the European medicinal system was also not able to effectively treat the illnesses which they themselves introduced.

European impact on Rotuman medicine

Although the early Europeans visiting the island referred to the local medicinal system as crude and ineffective, their own system of medicine was actually less developed to deal with the tropical diseases that they were to encounter than the system of those whom they looked down upon. Howard (1979) analyzed the Rotuman system from the perspectives of the Europeans who worked on Rotuma throughout the colonial period. The perspective portrayed is one of contempt for the traditional system of medicine, on the part of the colonial administrators and physicians. This was countered by an ever eroding resistance by indigenous Rotumans to avoid western medicine, cling to their traditional ways and yet still please the western leadership. Howard divided the time period between 1791 and 1960 into five periods based on the actions of the British colonialists. Throughout this period traditional medicine was scorned by the British commissioners and was publicly decreed to be a source of morbidity and mortality, whereas the chiefs who stood between the people and the commissioners defended tradition and indicated that the abandonment of traditional practices and the adoption of different (European) customs, was the causative activity in the increased state of disease (Howard 1979:251.)

An interesting aspect of the conflict is the certain lack and primitive state of the colonial tropical medicine which had relatively few effective treatments for not only the island afflictions but their own introduced pathogens, this being mostly prior to the modern era of antibiotics, vaccinations, etc. The Rotuman healers on the contrary had spent possibly thousands of years learning about effective treatments. Such a long period of practice potentially allows for weeding out non-effective or lethal attempts at treatment and only favors truly advantageous or at least mentally pleasing treatments. With this assumption it is reasonable to conclude that some, if not many of the traditional treatments were bioactive and possibly effective.

Howard (1979:253) points to one of the major conflicts between the colonialists and the Rotumans being the choice of where to place their medicinal faith (financially.) The Rotumans preferred to place their finances in the prevention of problems by following correct social form in respect to their ancestors and each other. Correct social form was maintained by providing resources for birth, marriage and death ceremonies as well as more common provision of

resources for the chiefs and the clan. Financing the production of a hospital for individual needs did not meet the needs of the clan or the ancestors.

Early records from Rotuma emphasize the importance of skin diseases and their treatment as being the primary sources of illness in the eyes of the resident commissioners. Despite the pressure from the colonial government to use western medicines for treatment of skin diseases, the Rotumans continued to use traditional therapy. This persistence in using traditional therapy while being pressured into observing the effectiveness of European treatments is a strong indicator that at the time, the Rotumans believed their medicine to be more effective than that of the colonial physicians.

The faith of the Rotumans in their own topical medicines may have been well placed. It is likely that over time, the Rotumans, had developed effective treatments for many external conditions since ineffective treatments could have been easily ruled out and effective ones selected for visually. Combinations and changes could, even if made randomly, improve treatment through selection over time. The European medicine which had evolved under the same selection pressures but in a non-tropical environment, was not as well developed for Rotuma as was the traditional Rotuman medicine.

The position of Child Welfare Nurse was established in 1930 in an effort to curb infant mortality. The authority of the Child Welfare Nurse eventually led to requirements that each child and in particular the first child, be born in the government hospital. It is doubtful that the European nurses would have allowed a traditional midwife into the hospital. No Rotumans today remember allowances for the presence of midwives. Thus, this once highly culturally significant profession, midwife, was rapidly stripped away. Today, only one active Rotuman midwife could be located on the island and she is also trained as a western nurse. The fact that births of first children would be allowed by the Rotumans, in the hospital without a traditional midwife, is a strong indicator of the extent to which the loss of traditional spiritual concepts had deteriorated.

This is in contradiction to Howard's (1979) assertions that in 1960 "They were also willing to go to the hospital for first births, despite costs - births did not involve the **`atua** (spirits)." Rather, the birth of a child and in particular a first male child required the dedication of the child to the family spirit (an example is **Tagroa**) by the midwife tossing the newborn into the air. Subsequently the family of the father would gather with the newborn and mother for a ceremony involving the application of **mena**, Curcuma longa L., to the mother and child. This ceremony for a first male child is called the **oj eki**.

Howard (1979:264) refers to the current (then 1960) medicinal system as completely integrated into western medicine with the traditional pushed farther to the margins of their now amalgamated medical system. This may appear to have been the case from the hospital and government records, but what was taking place at that time was rather a segregation and strengthening of the mental concepts which separated Rotuman traditional medicine from the rapidly advancing western medicine. Each area began to be seen as holding power over certain types of ailments. The European medicine which could produce dramatic treatments with antibiotics became the primary focus of treatment for diseases susceptible to antibiotics, with the Rotuman treatments falling into disfavor and disuse. The Rotuman treatments of non-western diseases and especially those of a spiritual nature, were continued and those traditions respected since western medicine offered no acceptable therapies for these ailments. Rather than the Rotuman system adapting to the "superior" European system of health care, the western system was being incorporated into the Rotuman.

If Howard's (1962:70) assertions on cultural adoption can be extrapolated to include health care, the current state of traditional medicine may be seen as acceptance of modern (European) medicine as supplemental to traditional, with the modern being laid into the framework of the traditional. Areas in which modern concepts mesh well with traditional are accepted, but points where modern and traditional ideas do not intermesh are either accepted at the cost of the traditional or are rejected.

An alternative to rejection or acceptance of western medicine is a form of covert dualism. In a dual system of this type, the traditional appears to fade away while the subject people openly accept the new medicinal system and voice their favor of it. Although vocally acknowledging the new medicinal system, the people are secretly practicing the traditional. This probably does not describe the bulk of the interactions between the modern European and traditional Rotuman systems, but in at least one area of Rotuman traditional medicine, it does.

The traditional practice of abortion surely came under fire from the early Methodist and Catholic missionaries. Women who practiced this form of traditional medicine (see below in the discussion of healing specialties) must have immediately been isolated and condemned by both the colonial physicians and the missionaries. In a society with no other (I have not documented any) forms of population control, the sudden loss of this tradition would have immediately changed the size and structure of the Rotuman families of the time. The women who were seeking these treatments as well as those providing them were forced to continue their practices in secret.

This practice was so important to the Rotumans that it has survived for over one-hundred and fifty years in spite of the European efforts to eliminate it. Abortionists whom I interviewed on Rotuma felt that it was important for me to know about their role in the traditional system although they requested that I not reveal their names. This may indicate the extent to which cultures and in particular the Rotumans are able to cling to social practices seen as necessary. The Rotuman women in the mid nineteenth century were faced with a dilemma, either accept the new religious, social and medicinal authorities and dramatically increase their birth rates or, as happened, continue and hide the tradition from the authorities.

The European system of medicine which is currently provided to the Rotumans by the government of Fiji, offers family planning and birth control alternatives to traditional

medicine. Now that this alternative has arrived, and the introduced medicinal system altered to be closer to the traditional Rotuman, the trajectory of the Rotuman medicinal system may change to include this.

Research Methodology

> "All indigenous medicinal traditions share three components: a cosmological foundation, a repertoire of medicinal plants or other pharmacologically active substances, and a health care delivery system. An appreciation of all three components is necessary for rigorous ethnobotanical studies."(Cox 1990b:44)

The research methodology as well as the selection of the research site for this thesis are both based on the above stated premise. The methodology employed has been used to identify each of the three aspects of the system studied. The cosmological foundations and health care delivery system are presented under discussions of the traditional medicinal system and traditional healers. The medicinal plants are focused on in the discussions of the treatments and ethnopharmacopoeia. These three aspects, although discussed independently, are inseparable when considering the medicinal system.

The island of Rotuma was selected as a site to study Polynesian traditional medicine because it is a high island which had not previously been studied by ethnobotanists. Rotuma has also had very little ethnographic work conducted by anthropologists studying traditional medicine, with the existing work consisting of preliminary studies and limited interviews with Rotumans living in Fiji and the United States (Howard 1979.) High islands are characterized by having diverse floras which are desirable for a culture to have a broad medicinal base. Since the flora of Rotuma has yet to be documented, this aspect became part of this exploration of the island. The combination of a potentially diverse flora and a culture about which very little has been recorded provided an opportunity to not only learn about a unique culture, but to potentially identify previously unknown medicinal plants and their usages.

A preliminary field trip to the island was conducted in May 1991 on which I was accompanied by Dr. Paul Cox. This first contact allowed us to determine the presence of an active healing tradition, arrange housing and other logistic matters, prepare a preliminary plant list in the Rotuman language and give an initial presentation of the proposed field study to the Rotumans and the council of chiefs. The proposal was deemed to be worthy by several traditional healers and approval to study on Rotuma was granted by the council of chiefs.

The second and primary field expedition occurred between August and December of 1991. During this phase, the Rotuman language was studied with a focus on the terminology of the botanical and medicinal systems. The terminology and language were focused on in order to obtain through interviews, the actual Rotuman healing system rather than an interpreters viewpoint. Biggs (1985:110-111) has discussed the importance of understanding the culture directly from those who are participating in it.

Residence was established with the family of an apprentice healer living in the village of Feavai. I learned from each healer and from many non-healers when possible, through the use of a participant observation methodology (Spradley 1980)(Biggs 1985.) This approach was much more time consuming since I did not simply record observations, but worked with the informants and actually learned how to perform and prepare many of the procedures and preparations discussed in this thesis. Studies were largely conducted in the villages of Feavai, Saulei, Lau, Tuakai, Motusa and Juju, but through a survey of the healers of the island and subsequent work in a third trip in June of 1992, elements of the entire island were studied.

The survey of healers was conducted in the following sequence. Beginning at one side of a village, each adult encountered was asked to identify any healers whom they were aware of, and particularly any in their district. The name of each healer identified was recorded. As many people as were encountered, were asked and as soon as a potential healer was identified by two separate informants, the healers name was added to a list of verified healers. From the list of verified healers, each would be sought out and questioned as to their age and diseases treated. In addition, the healer's sex and location on the island were recorded. This survey not only documented the present spectrum of traditional medicine, but also provided leads with healers who were interested in providing additional information. Village by village, district by district, the island was surveyed. Healers who lived in Fiji or abroad were occasionally identified and even verified. These healers were excluded since their disease treatment information could only be obtained as hearsay information.

The objective of the third trip to Rotuma was to complete the survey of healers and verify the compiled data with the healers interviewed previously. As it happened, considerable interest in my research project had been generated during my absence between December 1991 and June 1992, thus many additional interviews of previously undocumented healers were conducted. Sadly, during this lapse of time, one of the healers who had partially shared her knowledge with me, passed away, leaving no family members trained to carry on her tradition.

Each session with a healer is a unique time of sharing and learning, but in general the following process was followed: For each set of disease treatments volunteered by the healer, the disease treated and the way(s) in which it is treated was recorded. The treatments which involved preparation of plant remedies were usually prepared as demonstrations, with each step in preparation and the indicated administration also documented. Within this process the healers would identify the plants used, and from these, herbarium specimen vouchers and alcohol preserved specimens were prepared.

The herbarium vouchers have been placed in the University of the South Pacific Regional Herbarium, Suva, Fiji (SUV) and the Bean Museum Herbarium, Brigham Young University, Provo, Utah (BRY.) The vouchers were initially identified using the Flora Vitiensis Nova: A New Flora of Fiji (Smith 1979-1988) and The Ferns of Rotuma, a Descriptive Manual (St.John 1954). The specimen identifications were subsequently verified and/or modified by Saula Vodonaivalu of the University of the South Pacific Herbarium and Dr. Paul Cox of Brigham Young University, Department of Botany and Range Science. Finally, species which were difficult to identify were compared with unpublished information and specimens provided by the Bishop Museum Herbarium, Honolulu, Hawaii (BISH) of the Rotuman collections of Drs. Harold St.John and Arthur Whistler. Classification of the

species Gardenia vitiensis Seem. was provided by Dr. Arthur Whistler.

The preserved specimens have since been chemically extracted and prepared for insertion into medicinal bioassays. This aspect will continue beyond the scope of this thesis.

The interviews with healers were conducted in or around their homes, or due to the scarcity of some required plants, in the forest while retrieving samples. Most interviews were conducted in a mixture of English and Rotuman, most Rotumans being fluent in English. Since many of the healers are older and not well versed in English and due to the specificity of their knowledge, the most valuable information was communicated in Rotuman. For the greater part, the interviews with healers were conducted in a one on one situation with no translators. The survey though, was carried out with the assistance of a translator largely due to the awkward situations which could be easily diffused by his presence and ability to clarify questions in Rotuman. Rotumans at first are very guarded, but after time and familiarity, are very open and warm individuals.

An interpreter was chosen who was familiar to most of the population. Since the survey did not allow time for me to become known to each person questioned, the interpreter was able to rapidly bridge the gap and retrieve the desired information through the populations familiarity with him. Prior to conducting the survey, terminology was reviewed with several healers in order for me to be able to follow conversations and record the information which was presented in Rotuman.

In addition to the traditional healers, interviews were also conducted with the island physician and three nurses stationed at the Ahau clinic.

The Traditional Rotuman Medicinal System

Introduction

The Rotuman system of medicine is a complex integration of traditional cosmological thought, physical experiences with the tropical island environment, integration of information gleaned from pre-European contacts with other island cultures, and cultural values established to deal with their physical and social environment of limited resources and technologies. Rotuman thought processes and rational have not developed in a vacuum or without reason but rather as responses to the adversities of life found on an isolated tropical island.

The traditional medicinal system of Rotuma, just as European medicinal systems, is composed of interlinking elements of traditional beliefs about disease causation, disease classifications as seen within the framework of the culture, a cognitive framework in which the diseases are seen as being reversible or treatable, the treatments, and a system of passing on treatments which prove to be efficacious. The actual mechanisms of treatment and the categorical divisions of diseases between different cultures may vary widely but the recognition of many different disease states will undeniably be present in all cultures with successful medicinal systems. This commonality of diseases (but not necessarily their classification and diagnosis) and the need for effective treatments allows us to compare the traditional Rotuman medicines with European medicinals, in spite of the cognitive recognitions of causation being quite different between the systems of thought.

The discussion of the traditional Rotuman medicinal system begins with the aspects which have the least in common with current European medicinal thought (causation and classification of disease) and ends with discussion of the area in which the two systems are found to overlap and have the common goal of health. Between these two poles are aspects of health care delivery and community expectations which at times overlap with European thought and at times seem to be at odds with it.

Traditional cosmology and disease causation

The traditional Rotuman belief in unseen spirits is integral in understanding disease causation. The Rotuman spiritual world consisted of at least three groups of spirits or **`atua**, along with their influences on mankind. Very great and powerful god-like spirits or **`atua** were considered as having established the known world and set in motion all that was known to occur. These **`atua** subsequently had little to do with their creation and although revered were usually not involved in the lives of men. A second type of **`atua** was of much lesser power and of either unknown origin or possibly originated from very distant ancestor spirits. These spirits were considered to be highly active in the lives of men both for good and ill purposes. These spirits often are looked to as the source of diseases and occasionally for the power to heal diseases. Their actions are usually mischievous but not lethal, although if the spirits are particularly vile, they may kill individuals or cause great suffering.

The third and most referenced group of **`atua** are those of the recently dead or ancestors who were prominent individuals, or particular ancestors after whom the individual has been named. Churchward (1939:469-472) recorded that one group of these ancestor spirits was known as the **sa`aitu**, who belonged to the **La' Ti' ta** or "Big Company". The **sa`aitu** were the spirits of un-circumcised men who would aid various armies in military conquests.

The **sa`aitu** are considered to have been called on to aid in battle as recently as World War II when a contingent of Rotumans, under the British, fought in Malaysia. Prior to leaving Rotuma, the soldiers ceremonially requested the assistance of the **sa`aitu** for their protection, success in battle and safe return. The story relates that the soldiers, upon their safe return to Rotuma, did not offer thanks to the **sa`aitu**. This failure to follow up with their commitment from and to the spirits lead to the death of the soldiers children by a Japanese mine which floated ashore some years later. This illustrates the potential power and effect which members of the spirit world can have on the living.

The **`atua** are usually considered to be the spirits of recent ancestors or those of distant ancestors through which two individuals are related. These **`atua** and their actions with the present population are primary causes of disease processes as well as potential sources of power to reverse illnesses. Within this structure, diseases are manifestations of the will

and unseen actions of the **`atua**. The **`atua** may choose to cause disease due to displeasure with the activities of their decedents. Individuals who are not meeting their social obligations to the community, following custom, or are involved in open disputes with other Rotumans are potentially at risk of upsetting the **`atua**.

Howard (1962:190-1) discussed aspects of land disputes as being sources of bad luck and illness. The land being traditionally linked with the ancestors who lived on it, represents an active juncture between the living and the dead and is thus a point of potential union or conflict with the ancestors, **`atua**, as well as with the living population. Diseases are often considered to be caused by the spirits disfavor with the present population. Thus treatment of diseases involves pacification of these spirits as well as correction of the errant social situation. Formerly, a class of priests called **ape`aitu** were consulted in times of illness to determine the cause of the illness (Allen 1895:578)(Gardiner 1897:467-8.) These priests could identify causative spirits and/or errant social situations.

Secondarily, the clan leaders and chiefs are considered as having a special relationship and certain control over the **`atua** of their ancestors. Leaders were often looked to for rulings in land disputes and criminal cases such as theft or damage to property. In exacting social justice and maintaining harmony in the clan, the leaders had the power to call on their ancestors to exact punishments or cause disease. An example of this was given in a recent event said to have occurred on Rotuma: A cow owned by a chief was found one day with a large cut in its side. The cut was determined to have been man made and probably due to a machete. The cow died due to infection after a few days. The chief called together a village meeting and the matter was discussed. The chief asked for the one who caused the death to come forward. When no one came forward, the chief declared that the guilty partly would suffer the same fate as the cow. A few days later, one of the sons of the chief was throwing a machete into a tree to knock down some fruit. The machete glanced off of the tree and plunged into the boy, killing him. Following this, collaborative evidence was uncovered to indicate that this boy had been the one who had harmed the chiefs cow.

Power to call on ancestral spirits is not restricted to chiefs and may be used by any individual. This ability is rarely stated as being powerful but is often used as a general threat in disputes. The typical statement between disputing parties is a threat that the ancestors of one individual or clan will be called on to cause trouble or harm to the other individual or clan.

The actual effect of spiritual power directed in a negative way toward an individual can occur in an infinite number of possible ways including disease. The ability of certain individuals to deliberately cause disease and suffering is much more of a Melanesian trait (Spencer 1941:34-45) than a Polynesian trait which again points to the mixture of ideology present in Rotuman culture.

Other potential sources of disease are more closely related to European considerations of health. Although simple accidents may be blamed on spiritual activity, they usually are simply considered as accidents. Currently many healers use a western pathogenic construction to explain diseases such as topical infections. They refer to the disease and its symptoms using Rotuman classification, but consider the causation to be an infectious organism. This intermeshing of European and traditional Rotuman concepts has made more difficult the process of separating out and understand the traditional Rotuman medicinal system. In spite of this, it is likely that in Rotuma the **`atua** and social actions (or lack of correct social actions) were largely considered as responsible for disease causation in the past.

An improper diet is considered as causative of disease in parts of Polynesia such as Samoa (Cox 1991:151), but I have been unable to clearly draw a bond between Rotuman disease states and dietary causation. The Rotumans like other Polynesians apply dietary restrictions to some treatments, but these restrictions are not implied as being related to causation nor are they recommended practices beyond the period of treatment.

Hygiene is often linked to disease causation, especially among children. The disease **mamosa**, characterized by lack of appetite, lack of energy, a dry throat, and white cracked tongue, is often considered to afflict children who eat too many dirty wild foods, or lack adequate bathing. Adults, who are usually very clean in their practices are unlikely to be told that their disease state is due to a lack of personal health care.

Disease causation and an understanding of the associated belief system is essential in understanding Rotuman rationales for treatment. The present Rotuman healing system is an aggregation of Polynesian, Melanesian and European ideologies. The impact of the European struggle for the power to heal in Rotuma (Howard 1979), has resulted in a modified traditional system which has incorporated many European concepts and given up many Rotuman concepts which directly conflicted with European ideology of disease.

Disease classification

Rotuman disease classification reflects a mixture of cultural expectations of the results of errant behavior, interpretations of natural events and the ways in which the environment uniquely affects their island. Diseases are natural events but their classification into like and unlike groups involves a heavy dose of cultural consideration.

Cox (1991:151-153) discusses the common Polynesian approach of classifying diseases in a binomial system. On Rotuma this system is occasionally seen such as with the terms **ru** (pain, painful event or ache) and **mase** (a swelling sickness), which are followed by specifiers either indicating a site of pain/swelling or a cause of pain/swelling. Examples are **ru ef** (stomach ache), **ru huag** (asthma or painful breathing), **ru al** (toothache), **ru kia** (a sore throat), **mase huhual** (entire body swollen and red but without fever), **mase mi`a** (thighs and hip joints swollen, red and inflamed and a fever is present), and **mase af** (swelling or boils on the abdomen.) The term **tui** is used as a prefix to describe any disease which is recurrent or was thought to have been treated but has reoccurred. Most diseases though, are simply described with single terms such as **uaua** (stiff muscles) and **filo`u** (headaches) or are assigned names which describe their

causation such as **`atua mur** (lit. a spirit has entered the lower torso) or **ra' la loga** (lit. cuts on the inside.)

Disease definitions which were recorded by Churchward (1940) were verified and the definitions modified through interviews with modern healers. These are summarized in appendix II. Other terms related to disease classification and the treatment of diseases are summarized in appendix III. The Rotumans refer to each healer as being a specialist at treating a set of diseases. The healers and their specialties are recorded in appendix IV and the definitions of their specialties are found in appendix V. Quite often the specialty name is also the name of the disease which is treated.

Expectations and requirements of treatments

Rotumans who seek treatment for their ailments have preconceived expectations of what constitutes an effective treatment. Effective traditional remedies are usually expected to be rapid, involve the senses such as touch (massage), smell and taste (for herbal remedies), include psychological discussions of the cause of the ailment, and often are accompanied by restrictions on the patient's and/or healer's diet or movement. Treatments may also involve social aspects beyond the restrictions placed on the patient or healer. The role of the individual being treated may be modified to a special position relieving them of ceremonial and other cultural duties. The focus of Rotuman traditional medicine is on following the proper process of restoration of health. Herbal medicine and non-medicinal treatments are aspects of this, but the real treatment for Rotumans is found in the way they are treated and returned to spiritual and social harmony.

Effective treatments in the traditional Rotuman view are expected to take effect usually in five days or less. This rapid expectation was and is a constant problem for those who treat the Rotumans with western medicines which may require a longer period of time or possibly even a lifetime of treatment (example: diabetes.) Rotuman treatments treat patients, not diseases. Diseases which have physical or mental symptoms are traditionally treated to relieve these symptoms but the treatment may be more involved in social reintegration of the individual and recognition of larger problems than simply curing a pathological ailment. Treating attitudes and spiritual matters may be a more rapid process than treating the secondary physical illnesses.

Rotumans who present themselves to western physicians expect rapid treatments. The treatments which are offered are not always expected (by the physician) to be rapid. Since only the "disease" is treated with western medicine, and no social or mental aspects are treated, the patient may see no effect after a few days and reject western medicine as ineffective. For the needs of these traditional patients, the western treatments are indeed ineffective. Rotumans do not appear to have had treatments for diseases which in their early stages have subtle or no sympomatology (example: high blood pressure.)

The traditional therapies almost always involve massage and usually conversation or discussion of the problem being treated. Massage (as discussed below under non-medicinal therapies) involves more than physical rubbing of the patients body. Massage from the Rotuman perspective also includes the conversation and discussion of the problem being treated. Rotuman healers function on a very personal level. Conversation with the traditional Rotuman healer is quite relaxed and if pertinent, will involve discussions of spiritual aspects and familial responsibilities.

Through the aspect of massage, the healer and the patient are brought together by their physical contact. This intimacy appears to me to be an important element in the healing process from the perspective of treating the mind and letting the sick individual know that they are cared for. Massage is expected to be firm, much the same as western physical therapy often is. Since healers are often in some way related to the patient, the healing situation is a time for renewal of relations, friendships and with healers and patients of different generations, a time for developing good relations between the young and old. This reintegrating and melding socially, may have played a large roll in previous Rotuman society, where the healer who has no true social rank was able to work with chiefs as well as commoners and gently unite the society by performing healing on a social scale.

The senses of taste and smell may also be important in traditional treatments. Ingested herbal concoctions which taste bad are considered to be very strong, much as "strong", bitter or harsh western medicinals are. Some medicinal treatments contain herbs which taste good and may promote their usage. Coconut oils used in massage and some herbal treatments have scents from plants such as **pup reag lolo**, Polygala paniculata L., **kapui Rotuam**, Alpinia sp., or **pipi**, Atuna racemosa Raf. added with the expressed intent of creating a desirable smell. It could be then, that treatments involving pleasant aromas have an additional therapeutic effect. This is not unique to Rotuman medicine. Scents such as menthol, eucalyptus, mint, and etc are used to increase the desirability of western medications and some manufactures such as Abbott Pharmaceuticals, have gone so far as to scent their tablet dosage formulations increasing the palatability of the product and increasing patient compliance.

Rotuman treatments often have dietary and/or mobility restrictions. Dietary restrictions usually involve avoiding fatty, salty or sweet foods. Movement restrictions may require abstinence from lifting heavy objects, walking great distances, swimming, cooking or entering certain buildings such as cook houses. A unique set of restrictions involve the color red. For certain illnesses and almost always those involving conditions caused by spirits, red clothing or ornaments are prohibited and red colored foods must be avoided. Rotuman healers whom I interviewed did not know why these prohibitions existed, they merely knew that they had been taught that the restrictions were inportant in the healing process. From a western perspective, limiting certain foods and avoiding certain activities may aid in a quicker recovery. The restrictions may also help the patient to feel that she is taking an active roll in her therapy and be a constant reminder that while under treatment, the individual is in a special position, socially, and is being acted upon by spiritual power through the healer.

The traditional healing process is not complete once a cure has been achieved. Following (and often during) the

treatments, gifts of food or mats may be required to complete the process of healing. (This aspect is discussed further under the section on the traditional healers.) The patient and/or the healer may also have to perform certain duties such as discarding used herbal remedies into the ocean.

This complex mixture of psychological, physical and social aspects which are integrated into an effective treatment, are expected by Rotumans when receiving help from a western or Rotuman healer. The early Europeans when presenting the Rotumans with treatments did not always offer what the Rotumans felt was needed, so the offer was graciously accepted and then cast aside as valueless, as can be seen in the account of Dr. Bennett (1832:475-6):

> "I was requested one morning to visit a chief of high rank, for the purpose of rendering him my professional assistance, as he had been long suffering from illness. I readily acceded to the request, and after a sultry walk arrived at his residence at a village named Shoar. This chief, who was named Moeta, had been long suffering from rheumatic affections of the joints; he pointed out to me the scars where the native remedy of burning had been resorted to, but no benefit had resulted from it. I prescribed for him, and he inquired of me what diet he should use and etc."

then later in the account:

> "The lotions which I frequently gave them for this purpose (ophthalmia) were seldom or never used, but all internal remedies they took readily and with confidence."

The account in addition to indicating that the Rotumans did not want self treatment, indicates that they were amiable to internal treatments which of course can only be consumed by oneself. I believe, had the doctor offered to massage the lotions on the individuals, they would most likely have accepted the offer. Western medicine simply did not meet very many of the expected criteria of an effective treatment. And from the perspective of the Europeans, the Rotuman treatments were too rapid and difficult to understand to be considered as effective.

Even in my own research, I found myself doubting the effectiveness of the Rotuman therapies. My mind was changed through the following experience: In September 1991, shortly after arriving on Rotuma with my wife and two small children, my daughter, then two years old, started to develop a ring worm infection on her lower leg. Having brought a broad selection of pharmaceutical agents with me, I proceeded to aggressively treat the infection with nystatin and miconazole. Normally these treatments will stop the expansion of the fungus and over the course of one to four weeks cure the problem. After a weeks worth of steady application, the fungus had continued to enlarge so, I switched to econazole and clotrimazole. After another two weeks, the fungus had at best slowed its rate of expansion. I then turned to the apprentice healer with whom we were staying, who gladly offered to treat the problem. The treatment using **`ai ne tane**, Cassia alata L., leaves was rapid, with the cure being exacted in under three days. Treatment required movement restrictions (no playing in the ocean) and massage of the leg each day, followed by application of the leaves. My daughter who is quite afraid of western physicians in their formal attire and sterile environments, was quite at ease, sitting on a mat while Ana, the healer, massaged her leg and briskly scrubbed the infection with the leaves. Ana, spoke softly with my daughter and involved everyone present in conversation, which allowed my daughter to be at ease and accept the treatments.

This particular incident, although valuable in showing the healing aspects of treatments, is also valuable in illustrating the potential worth of traditional medicine, especially where western medicine has not proven to be effective.

The Traditional Healers

Introduction

The Rotumans, like other Polynesian cultures (Cox 1991, 1993) had developed specialized healing practices prior to European contact. Early European visitors to Rotuma described healers as "singularly ignorant of even the most elementary medicine and surgery" (Gardiner 1897:491), and "Nature, among these people, is the chief physician." (Bennett 1831:475) Each physician to visit the island was eagerly asked to stay to treat the people, but by their own accounts, the people who eagerly accepted their treatments usually discarded them in short order. This may indicate that the desire for the physicians to stay was a complement to the guests rather than a genuine desire for non-Rotuman medicinal aid.

Unlike European medicinal practitioners, the Rotuman healers play a dual role in society, filling their roles as farmers, fishermen, craftsmen, mothers, or statesmen and functioning as healers in a secondary specialty. Healers are common on Rotuma (my survey identifying 69) which has a relatively low population (under 2500 individuals.) Within the healers lies some of the only remaining knowledge of the flora and past uses of the flora. The healers with whom I worked were all kind, gentle and highly knowledgeable. All the healers with whom I worked were open with their knowledge once they understood the true concern and interest I had in their disappearing art.

Rotuman healers must spend many years learning the intricacies of their traditions. Each healer is chosen to learn the family traditions partially on the basis of their social character qualities and partially on the basis of their lineage. The familial power to heal may be associated with ancestral spirits or other supernatural activities. Supernatural origins or introductions from other island cultures are often credited as sources of the different healing traditions. A survey of the healers presently active on Rotuma has identified many different types of healers and healing traditions. The future of the traditional Rotuman healer is inseparably linked to the continued training of a new generation of young healers.

A survey of traditional healers

A survey of the healers, found on Rotuma, was conducted in December 1991 and June 1992. The healers, their treatments, their age, sex and whether they had passed on to a younger generation, their knowledge, was recorded. The

purpose of the survey was to establish at a point in time (approximately June 25th, 1992) the number of healers in existence on the island of Rotuma. A point in time was needed because the Rotuman island population is in constant flux. Many Rotumans regularly travel between Fiji and Rotuma, living part of the year on each island. Healers who travel to Fiji effectively are outside of the traditional population and thus not participating in the cultural continuity of Rotuma. It was assumed that the flux is constant no net flow of healers in either direction.

With the number of healers established, their relative number compared with the general population can be determined. This also may allow the traditional system to be examined in a limited quantitative way. The survey provides an estimation based on the rest of the field work I have conducted, of the number of healers whom have yet to be interviewed and the approximate percentage of the total knowledge resource yet to be examined. (see table 2)

Prior to conducting the survey, criteria were established for determining who could be included as a healer and how to determine if a given individual was a healer. The following is a list of criteria used for inclusion or exclusion of potential healers from the final list of healers:

1. Self proclaimed healers were excluded unless identified independently by at least two other informants. (It was assumed that healers who are known by the population are obviously practicing and having an impact on health, whereas those who would only be self proclaimed healers were not practicing and thus were having no impact on the culture.

2. Healers who were identified by two independent informants were considered as healers if: 1)they were in residence on Rotuma during the study, and 2) they were willing to discuss their specialties with myself and my interpreter. Many people surveyed, recalled recent ancestors who had practiced healing arts but whom had not passed the knowledge on in a formal manner. These individuals were not considered as healers although occasionally the relatives of the deceased healers could offer information regarding treatments which verified the cultural continuity of treatments demonstrated by actual healers.

Two healers who were interviewed with their treatments placed in the pharmacopoeia, are not listed in the survey. One was a bone setter, while the other treated stone fish poisoning and several other minor treatments. The former, left the island prior to the end of the June 1992 survey and thus was effectively out of the culture. The later healer was the last to be interviewed before leaving in December 1991. Due to travel constraints the interviews with her were not completed. Prior to my return to Rotuma in June of 1992, she passed away. She had not passed on her knowledge so I could not record the remainder of her treatments. Both of these healers, although participating in this study, were not present on Rotuma through the end of the study and thus are not listed here as part of the record of healers present in June 1992.

3. Healers in the category of **majau la`ak lelea'** (abortionists), were excluded from the survey of healers. This group was not recorded because of the present social environment on Rotuma which denigrates their position and thus causes their practices to be performed in secret. Interviews were conducted with these healers but only with the assurances that they would remain anonymous. Only three of these healers where identified and it is difficult to determine how many, if any more, there are.

The following is the procedure used to identify the population of healers:

1. Beginning at one village, the island was slowly circled (the population only living on the extreme coastal fringe.) At each village, the first individual encountered was asked if they knew of any healers in their village or in their district. After this individual had given all the information that they could, we moved on. The next individual encountered was asked the same questions.

2. Each person identified by a single informant was placed on a list of identified healers. If an identified healer was identified by a second informant then the healer was placed on a list of verified healers.

3. Verified healers were sought out and questioned about their treatment specialties, age, and etc. Many of these healers offered further information about their treatments and offered to become involved in interviews.

4. Village by village, the island was slowly covered until every village in each district had been surveyed. This survey may have missed a few healers but it is not very likely that many were overlooked. Surely the healers who are the most active, have the largest influence on the traditional culture, and are the most highly regarded as healers are represented in this survey.

The results of the survey are found in appendix IV with a summary of the healing specialties in appendix V. Tables 1 contains brief summary of the results of the survey. 69 healers are recorded in the survey, 22 men and 47 women. The average age of the healers was 54 years old. Presently the Rotuman population is approximately 2500 individuals so about 1 in 36 individuals is a recognized healer.

This survey can be loosely compared with the limited survey conducted by Howard in 1960. Howard (1979:265) recorded finding 24 traditional healers (10 men and 14 women), in his 1960 field work. Of these he determined that two of them were generalists; the rest specializing in treating "either particular ailments or parts of the body."

Table 1. Healers present on Rotuma in June 1992

District	# of healers	female	male	average age
Itu'muta	11	6	5	53years
Itu'ti'u	24	18	6	55years
Juju	5	4	1	59years
Malhaha	11	7	4	52years
Noatau	7	5	2	55years
Oinafa	8	6	2	52years
Pepjei	3	1	2	46years
Rotuma	69	47	22	54years

Rotuma is divided into seven administrative districts which represent former politically separate chiefdoms. The distribution of the healers is approximately proportional to

each district's population with the exception of the Juju and Noatau districts which are under represented.

Each healing specialty may have one or more treatments associated with it, but most only have one treatment. Most Rotuman healers only treat one disease (have one healing specialty.) Exceptions to this low number of treatment specialties are Ketisoana Managreve of Juju, Ana

Table 2. Rotuman Treatment Specialties

The survey of Rotuman healers in 1991-1992, identified the following healing specialties as still represented on Rotuma.

Practitioners		Specialty	Ailments treated/specialty
(1)		Majau a'su te:	Midwife.
(6)		Majau haina la`ek lelea':	One who promotes pregnancy.
(A)		Majau la'ak lelea':	Abortionist/ pregnancy prevention.
(2)		Mase ha':	One who treats spiritual diseases with a red rash on the extremities which moves inward.
(2)		Mase susu:	One who treats lumps in the breast tissue.
(2)		Mase 'uf:	One who treats a disease with a red rash on the arms/legs which moves towards the extremities (hands/feet.)
(2)		Sarao afaf ne fatmaneva:	One who treats dropsy or other related heart difficulties.
(13)		Sarao `atua mur:	One who treats spiritual diseases.
	(3)	-tui huhual:	Disease only on the lower body, with swelling, fever, and no external blistering.
	(3)	-`atua mur sol:	As in tui huhual except affecting the entire body.
(4)		Sarao faliga:	One who treats ear ailments.
	(2)	-ru faliag:	Ear pain.
(2)		Sarao filo'u:	One who treats headaches and flu-like symptoms.
(1)		Sarao fu ia he:	One who treats pain in the heal which has no outward signs.
(1)		Sarao fuar la:	One who treats boils on the bottom of the feet.
(4)		Sarao fu mu:	One who treats boils on the patella.
(1)		Sarao haniahos:	One who treats "thick injuries" which have pus.
(1)		Sarao he hual:	Spiritual disease the entire body swollen and erythremic, but no fever present.
(14)		Sarao hiaj ne to'	One who sets bones, sprains, dislocations and fractures.
(4)		Sarao hununuak:	One who treats breathlessness (asthma?)
(2)		Sarao jiajia:	One who treats "boils on the eye", styes.
(3)		Sarao koho:	One who treats coughs.
(2)		Sarao koi mosran:	One who treats stone fish spine poisoning/wounds.
(2)		Sarao kur mog:	One who treats scalp irritations such as kapkapa.
(1)		Sarao la' riri:	One who treats fever in children which is due to excessive playing.
(3)		Sarao lao 'e sui:	One who removes fish bones which are lodged in the throat.
(1)		Sarao li ne uaf:	One who treats badly infected cuts.
(8)		Sarao mafa:	One who treats eye ailments.
	(1)	-maf jiol:	Crossed eyes.
	(2)	-maf pirpir:	Lit. "yellow eyes", jaundice.
	(3)	-pa mafa:	Eye injuries.
(6)		Sarao mamosa:	One who treats illness characterized by lethargy, dry cracked lips and tongue, lack of appetite, sometimes with white film forming on the tongue.
(1)		Sarao mamosa tamor	One who treats a disease characterized by chest pain, fever, sweating, and the victim expectorates scaly material.
(2)		Sarao mea ta koi:	One who treats a skin disease which causes reddish spots which expand, spread over the entire body and may be fatal.
(3)		Sarao mou huag:	One who treats constipation.
(3)		Sarao nuj:	One who treats mouth ailments.
	(2)	-nuj ko'	Sores around the mouth.
(1)		Sarao piaj mul:	One who treats sore shoulders/stiff neck.
(2)		Sarao puag roro:	One who treats boils which occur under the genitalia.
(2)		Sarao ru al:	One who treats toothaches.
(1)		Sarao ru ef:	One who treats stomach aches/disorders.

(3)	Sarao siki:	One who treats any kind of boil.
(1)	Sarao soa:	One who treats illness (usually boils) from a distance.
(1)	Sarao susun:	One who treats topical burns.
(1)	Sarao tau ek ga kau vili:	One who treats hernias.
(1)	Sarao te hual:	One who treats recurrent boils.
(1)	Sarao ti hu:	One who treats breast infections.
(1)	Sarao tokofut:	One who treats deep bruises/wounds on the bottom of the foot which exude pus but have few external signs.
(7)	Sarao tu':	One who treats spine and joint ailments, "bubbles between the vertebrae."
(2)	Sarao tu kiog:	One who promotes menstruation when it is difficult to maintain a menstrual cycle.
(1)	Sarao uaua:	One who treats stiff muscles.

Stevens of Mumu and Gagaj Kono of Saulei. These three healers and one other healer who passed away prior to the end of the study, represent a composite tradition of healing said to have arrived via distant ancestors from the island of ``Uvea. This healing tradition resembles the typical Polynesian generalist who has many remedies. About one-half of the information presented in this thesis was derived from interviews with the healers representing the `Uvean tradition. If these three healers are excluded, then the traditional Rotuman ethnopharmacopoeia and the level of knowledge still available drops dramatically. In spite of their assertions that their traditions arrived from ``Uvea, they can still be seen as Rotuman healers. Their treatment specialties are widely recognized on Rotuma and Ketisoana was the most frequently identified healer, with the district of Juju most commonly indicated as a place to seek treatments.

Table 3. Number of treatment specialties per healer

# of treatment specialties	# of healers
1	50
2	14
3	2
8	1
11	1
18	1

The healing specialties which were identified through the survey are listed in table 3 (and repeated in appendix V.) The most commonly identified specialties are the bone setters (**sarao hiaj ne to'**) and those who treat spiritual illnesses (**sarao `atua mur**, **mase ha'**, **mase `uf**, and **sarao soa**.) Bone setters represent several different family traditions. These families are still actively passing on their traditional knowledge with little breakdown in transition between generations. Healers who treat spiritual illnesses are well recognized and frequently named when an informant is asked to name any healers she may know. In addition to the specialties listed above, many other specialties deal with diseases which may at times be spiritually caused. For example **Sarao puag roro** (one who treats boils which occur under the genitalia, usually male) indicate that the illness they treat may be caused by spiritual activity. Other specialties though, such as **sarao susun** (one who treats topical burns), **sarao hununuak** (one who treats breathlessness, possibly asthma) or **sarao uaua** (one who treats stiff muscles), were never discussed as being related to spiritual activity.

Many of the remaining specialties treat ophthalmic/otic or various topical ailments, verifying the importance of these remedies as reported by Bennett (1831), Gardiner (1897), and Howard (1979.)

Majau a'su te (Midwives) may be seen as in their last stand on Rotuma. Only one midwife could be identified and she is presently 76 years old. This is a profession which I do not think will endure in the traditional fashion into the next century.

Healers were additionally questioned about whether or not they had transmitted their traditional practices on to the next generation. This question was not consistently asked and the responses often made mention of individuals not living on Rotuma. Both of these aspects complicated the issue such that I have not recorded the responses in the results of the survey. In spite of this problem, the answers given provide a view of the potential future of Rotuman health care system.

The results of questions regarding continuance of the tradition into younger generations are startling. Although some healers have passed their information on to several children and/or relatives, most have not passed on their knowledge to anyone in spite of their advancing years. The reasons for this trend are stated to be; lack of interest in the young regarding traditional practices, former discouragement of traditional medicine by the government of Fiji, western medical services provided by the government of Fiji which decrease demand, and from the perspective of the elderly healers a lack of suitable candidates who will be willing to properly carry out the practices initiated by their ancestors. This last aspect will be elaborated on, later in the discussion of the origin of each healers treatment knowledge.

The healers who have not passed on their information are largely in the elderly age groups above 59 years of age. This group of healers which represent 28 percent of the healers on the island are likely to pass away before they will have time to pass on their traditions to a younger generation.
In addition to their traditional healing knowledge, I also found this elderly group to have the greatest level of traditional botanical and cultural knowledge. With the deaths of these healers, much more than 30 percent of the knowledge base will be lost.

Table 4. Age Distribution of Healers

Age range	# of healers	%of healers
20-29years	3	4.3
30-39	8	11.6
40-49	14	20.3
50-59	16	23.2

60-69	22	31.9
70+	6	8.6

The survey allows for quantitative estimates of the percentage of Rotuman treatments which have as yet to be studied in addition to estimates of the number of healers yet to be interviewed. The treatment specialties which have been observed using a participant observation methodology account for 65 percent of those identified in the survey. Since this information was largely obtained from healers who had the largest number of treatment specialties the percentage of healers interviewed is much lower at only 20 percent of those identified. I estimate that one field trip of approximately one month will be needed to complete the interviews with the remaining healers. This short time frame is only possible if the researcher is fluent in Rotuman medical terminology and is acceptable and familiar to the Rotuman healers.

Table 5. Research to date

Research area	%Completed
Healers surveyed:	100%
Healers interviewed intensively (14 of 69):	20%
Healing specialties documented by observation (28 of 43 identified):	65%

In summary: The results of the survey indicate that presently most Rotuman healers are female, and from an aged population (50 percent over age 54.) Unlike other Polynesian healers, the Rotumans tend to treat only a few ailments as specialists rather than treating many ailments as generalists. In the long term, this may have been a saving factor for the knowledge base with information spread more evenly across the society and thus more difficult to loose, whereas single individuals with large volumes of information could lead to rapid loss of information if not passed on efficiently. In spite of this aspect, the older healers tend to have many more treatments than their younger counterparts which probably indicates attrition through time and recent cultural change.

Becoming a healer

Becoming a Rotuman healer requires a commitment to work with and learn from a healer for many years. Young apprentices are usually children or close relatives of the healer. Children on Rotuma are allowed to observe and participate on a limited basis depending upon their interests. Inquisitive children may ask about what the adults are doing and how to do what they are doing. Young children are often sent to gather various plant parts near to the healers homes and will often be present, watching the preparation and application of medications and massage. Apprentices usually begin training as teenagers after showing signs of interest when younger.

The apprentice typically trains for several years and may still be training to a limited extent even when older and practicing on their own. The elderly are revered for their knowledge and thus may always be learned from. After learning how to use a given treatment and assisting in its usage, the apprentice will reach a level of understanding and compassion at which time the experienced healer will officially pass on the power to perform that specific treatment. This process of passing on the power to heal is known as "**soro**". At this time, the healer will place her hands on the initiate and state that the healing ability given by their ancestors to heal is now given to the initiate. Howard (1979:270) described this process: "The ritual employed to transmit healing powers consisted of the transmitter washing the hands of the receiver with a coconut oil concoction."

Much of the traditional healing knowledge is passed from generation to generation through the female lines. The male healers (with the exception of the bone setters and fish bone extractors) indicated that they had learned their knowledge from their mothers. Most women also had learned their practices from their mothers or close female relatives. This practice is understandable since the male children will often travel with the men of the village to the plantations and spend a large proportion of their time with the men tending the crops. Young boys are expected to learn how to care for the food crops and fish on the reef or in deeper waters, with much of this activity spent only in the company of other men.

Young girls on the other hand, spend much of their time learning traditional activities such as weaving or net fishing with the women of the village who also happen to be the healers. This greater exposure and difference in expected sex roles may account for some of the skew toward female healers.

Traditionally, most treatments and the spiritual power to properly use them are clan/family possessed. Thus a treatment could be taught to a non-clan member but would not be effective since the power to heal, associated with a given treatment could not be passed to non-clan members. Much of this knowledge of healing was maintained as family secrets with the techniques and the herbs used, only held by the healers.

This situation of secrecy may explain the interesting account given by Gardiner (1897:492-3) regarding the plants used medicinally on Rotuma. Gardiner was told by his informant that taro Colocasia esculenta (L.) Schott and hibiscus Hibiscus rosa-sinensis L. leaves were used as medicinal herbal poultices along with the Tahitian chestnut Inocarpus fagifer (Parkinson) Fosb. and dried arrowroot Tacca lentopetaloides (L.) Kuntze. The taro and arrowroot are presently not considered as medicinal on Rotuma, while the hibiscus and Tahitian chestnut are only moderately used in medicinal ways and not in the ways described above. Rotumans whom I questioned, considered this to be a misleading trick played by the informant on Dr. Gardiner. It is likely then, that the Rotumans of the day misled the Europeans in order to maintain their family secrets. Present day Rotumans still believe that the treatments should remain within their clans, but the healing knowledge is more loosely held since it is understood that the power to heal may only be held by family members. Thus in teaching this researcher about the techniques, herbs and processes, the healers understood that I would only be able to write about this knowledge and would not be able to use it without the families spiritual power. In spite of this, some healers are guarded with their knowledge since it is felt that other Rotumans who attempt to use their treatments without success may cause a calamity to befall the

family of the healer who gave away the information.

In some families the power to heal is a general spiritual devise which may be held and used by many different clan members at the same time. In other families the power to heal is reckoned to be the presence of an ancestor or other spirit. In the latter families, the power may only reside in one individual, such that passing it on to the initiate is also an act of retiring from the healing process. The former generalized form of power is the more commonly related form. Traditions in which only one family member may hold the power to heal may be more susceptible to tragedy and subsequent loss of the tradition than those in which the knowledge is shared by more than one family member.

Some healers feel that their power to heal is associated with a certain house foundation, clan land or district and thus will only perform treatments in that location. Others have no feeling of restriction and regularly will travel to distant homes of patients. If a particular site is associated with the power to heal, this may affect either the ownership of that site (it passing on to the appropriate healer) or the site may affect the individual chosen to learn the treatments.

Healing power, knowledge and specific treatments are considered to come from a variety of sources. Treatments are most commonly considered as being passed down from ancestors with their ultimate origin lost in the past. Many treatments and entire traditions are recognized as being learned from other islands such as Samoa, Fiji and `Uvea (Wallis island). These treatments borrowed from other island cultures are traced to pre-European contacts and are most often the source given by healers who are generalists treating a variety of illnesses.

Dreams are commonly reported as possible sources of healing knowledge, and several healers indicated that their ancestors had learned about certain treatments through dreams. In these dreams, ancestors or other helpful spirits, indicated the way in which a treatment should be conducted and the herbs which should be used. In spite of the constant reference to dreams as sources of information, no healers where identified who claimed to have themselves learned from dreams. An additional source of new treatments was described by several healers as a possibility but also was not identified as the way in which they had learned. This last option is simply experimentation. The Rotuman word for the experimentation process is **as`aki**. This process involves consideration of the disease being treated with comparisons to other diseases with known treatments and a decision to prepare a new type of treatment based on experience with other disease types. This process is said to have been used extensively when the first Europeans arrived, bringing whooping cough, influenza, measles, cholera, and possibly yaws (Gardiner 1897:497-8.)

Elderly healers who do not feel their relatives are as committed to healing as they are, are resistant to pass on the power to heal and thus lose their healing abilities. In some cases this may reach the extreme of the knowledge never being passed on. Elderly healers are willing to die without passing on their knowledge. The healer will usually only choose to not pass on their knowledge if they do not feel that any of their relatives are committed to learning their arts or are incompetent to learn them. It is considered to be worse to pass the information on to the wrong individual (thus upsetting the ancestral spirits) than to not pass the tradition on at all. This is accepted because of the belief that at a future date when a treatment is needed, a decedent who is qualified can be taught the treatment through a dream.

The characteristics of a healer

Traditional Rotuman society tended to be highly egalitarian even by Polynesian standards. The individual could trace their lineage and claims to resources through each parent (peripatetic.) Women and men equally could hold clan leadership positions and chiefs titles. Village life was organized around the clan or extended family group rather than the individual or nuclear family, with cooperation being stressed rather than competition. Individuals had responsibilities to larger organizations of clans, villages and districts which held greater sway than their own needs or those of their immediate family. This highly socialized, interdependent community developed strong social links and genuine care and concern for each member of the group. The present day Rotuman healers are the last bastions of traditional Rotuma and thus display in themselves the unselfishness and concern for the members of their community.

Healers tend to have a greater depth of knowledge concerning traditional cultural concepts. Part of this knowledge is maintained through their continued usage of non-cultivated plants. Concerns with spiritual matters and love for people also compel them to maintain traditional approaches. The healers interviewed had deep spiritual lives with several being lay leaders in the Methodist and Catholic churches. Healers are chosen to learn about traditional therapy because of their existing interest in the traditional knowledge and concern for their fellow Rotumans. These basic aspects may explain why the healers are currently the last reservoirs of much of the traditional Rotuman cultural knowledge.

Healers are found in any social position: chiefs, commoners, farmers, fishermen, shop keepers, government employees, clan leaders, home makers, wealthy and poor all have healers represented amongst their categories. Healers are not sought out based on their social standing but rather on their standing as a successful healer. Healers and healing traditions which are well recognized throughout the island may see patients from all parts of the island with the healer or the patient taking several hours each day to travel to meet the other.

In addition to performing their standard roles in society and performing the actual function of healing, a healer will spend time locating medicinal herbs and in some cases preparing medications for later usage. Healers must know the exact location of each desired herb since patients may arrive even at night for immediate treatment, requiring a search in the dark for the desired plant.

None of the healers questioned, claimed to actively cultivate the wild medicinal herbs, but the relative abundance and diversity of these plants was always greatest in and around villages with active healers (for example Juju village.) Despite these assertions, the semi-domesticated rhizomatous herbs, Zingiber zerumbet (L.) Sm., **rag`apua** and Curcuma longa L., **raga**, were actively planted by healers and freed of competing

weeds. If selective cultivation does occur, it may lie in the aspect that while practicing agriculture, the recognized medicinal herbs may be left alone, while less useful and weedy species are removed.

The overall love and concern for the people of Rotuma which is shown by healers is traditionally repaid with gifts of food. Presently many healers will not accept gifts or will only accept traditional gifts of food. Money is considered by many healers to have caused their fellows to loose their healing power. Healers will often indicate what kind of payment if any is expected for their services, only because it is felt that some treatments will reversibly fail if the traditional cycle of healing is not followed. In a traditional healing cycle, the healer will treat the patient in a specific way for a specific time period. The patient and the healer may have to observe certain dietary and/or activity restrictions throughout the treatment phase. Following the treatment, after a designated number of days (usually 5 or 10) from the initiation of treatment, certain gifts of food must be presented to the healer or for life threatening diseases, a feast is held in honor of the healer and the patient, along with the presentation of a high quality pandanus fiber mat to the healer.

The standard gift consists of an **ape** (plain pandanus mat) or for very serious illnesses a **te hapa** (fine pandanus mat) and an **afa**. An **afa** is a ceremonial meal cooked in a traditional earthen oven called a **koua**. The meal must include at least 1 **moa** (chicken), 2 **eiko** (fish or other meat cooked in coconut milk and wrapped in a banana leaf), 3 **a'ana** (taro rhizomes), and 4 husked and cleaned **niu** (coconuts.)

This presentation (the **afa**) also commonly includes a leg of cooked pork. Howard (1979:265) identifies this last ingredient of the **afa** as a "sacrificial pig". Rotumans whom I questioned, considered the **afa** or sacrifice to be a gift of love and thanks given to the healer. It is felt that failure to follow the standard format may cause a relapse of the disease, **tui**, or for the disease to strike the healer or her family. Bennett (1831:475) recorded after providing treatment for a Rotuman: "he afterwards presented me with a fine mat of the island, and on my refusing the proffered gift, he seemed displeased, and said, `that it was the custom of the country;' I consequently took it: this was the only instance during my visit to any of the Polynesian Islands, that a gift was ever tendered to me for professional services." Outside of the gifts associated with a therapy, the healers receive no special social recognition.

Types of healers

Rotuman healers are categorized on the basis of the diseases they treat. Healers may roughly be divided into those who use massage and those who use herbal treatments. Many healers use both massage and herbal treatments, but there are many healers who only use massage. Healers may treat one or many different ailments. Healers whom are recognized as treating distinct categories of diseases include those who treat spiritual illness, remove fish bones or are bone setters.

The majority of treatments involve some form of massage (**sarao**.) **Sarao** is not a generalized rubbing of sore muscles but is a set of specific massaging movements associated with the proper treatment of a specific disease state. The masseur is quite analogous to a western trained physical therapist, who uses massage of muscle groups, stretching, etc. to promote healing. Some healers may only use massage. Massage treatments are considered to require the same type of training and power associated with herbal treatments. Healers who use massage often become very strong since each massage session will often last for more than one hour. During massage sessions, family members of the healer (if in her home) or of the patient (if in their home) will talk with the patient and healer. Conversation varies from general gossip to discussion of the problem being treated and ways to avoid it recurring. If the problem is of a spiritual nature the massage may be as western massage is performed, hands on the patient, while the healer mentally and conversationally attempts to overcome the spiritual ailment, or the "massage" may involve the use of herbal treatments which never contact the patient (see Euodia hortensis Forst.f. in the ethnopharmacopoeia.)

Regardless of how it is performed, the concept of massage as being essential to therapy is central to the Rotuman process of healing. Treatments without massage are rare and usually not associated with healers or are treatments requiring special spiritual powers with "massage" performed as a mental aspect from a distance.

Healers on Rotuma may be considered as generalists (treating many different ailments) or specialists (treating one or a few specific illnesses). The generalists, though, are actually specialists with many specialties since they will break down their knowledge into specialty treatment types. For each ailment treated, a given healer will know from one to many different treatments which may involve herbal internal or external applications, massage, spiritual treatments (see below under treatments), dietary and or other restrictions or a combination of these aspects.

Spiritual illness, although often an aspect of many Rotuman diseases, at times is treated as a distinct illness state. Spiritual illnesses are accompanied by physical manifestations (see **`atua mur**, Appendix II.) Healers who treat spiritual illnesses are relatively common on Rotuma (Table 3, Appendix IV) possibly due to the inability or perceived inability of western medicine to provide adequate treatment regimes. These healers may use massage and/or herbal treatments and may be referred to as **sarao** or **majau**. The spiritual healers, although easily separable in the eyes of western classification are highly integrated into Rotuman medicinal classifications which although recognizing spiritual ailments as somewhat different causally, tend to divide the healers by their massage (**sarao**) or healing/building (**majau**) aspects. Most traditional Rotuman healers will indicate that an element of a spiritual nature is involved in traditional disease causation, their power to heal and the self healing actions taken by the patient.

Rotuman healers who extract fish bones lodged in the throat represent a unique island specialty. These healers use spiritual insight to aid in their ability to heal. This specialty is particularly important since the traditional diet contained large quantities of small reef fish. Small sharp bones are nearly impossible to remove from the flesh of the fish eaten and thus some inevitably are swallowed. Bones lodged in the throat may cause a great deal of pain and tissue damage if not removed. These healers probably represent an extreme

specialty brought about by necessity.

Bone setters are in the only class of healers which is dominated by men. This may be due to the strength required to set a broken bone against the strain of large muscles. Bone setters are still widely used in spite of the presence of a modern clinic facility. In addition to physical manipulation, these healers will use massage and herbal remedies. Bone setters represent an exception to the largely matrilineal system of knowledge descent. These men pass their knowledge from father to son, with the few women who have been identified as bone setters or apprentice bone setters having learned from their fathers.

One type of "healing" is not recognized as being a specialty nor is it practiced by specialists, yet it is important even today in Rotuman society. This healing tradition is veterinary medicine. The Rotumans are dependent upon having a considerable population of pigs in order to meet social obligations which involve feasting, etc. The health of these pigs is very important with much of a families status being determined by their ability to produce pigs upon demand. Each man who cares for his herd of pigs will provide treatment for them as needed. Commonly this includes treatments of minor wounds, infections and internal illnesses such as diarrhea. These treatments which are not carried out by official healers, are still conducted in consistent ways. The treatments are usually passed as common knowledge from generation to generation. Examples of

species used in the treatment of animals are **puak vai** Pisonia grandis R.Br. and **saurag** Centosteca lappacea (L.) Desv.

The future of Rotuman healers

The future of the Rotuman healer is unclear. The average age of healers is so high and the number who have passed on the knowledge so low that it is likely that much of this understanding and experience will be lost in the near future, with the death of the older generation of healers. The aspects which I feel are likely to survive are those which are primarily not in conflict with western medicine and secondarily those which complement western medicine by treating diseases and conditions which are recognized by traditional Rotumans and not western medicine. Spiritual illnesses and topical treatments which have fairly rapid effects are likely to survive because they do not directly conflict with western practices. Treatments for stonefish poisoning are likely to continue because of the continuing usage of the reef system which allows individuals to be injured and the glaring lack of effective treatments in western medicine for this condition.

Healers have made successful transitions to Viti Levu, Fiji, where they find the same plants or import from Rotuma what is needed, but it is unclear whether this tradition is capable of passing to future, non-traditionally raised, "Fiji born" Rotumans who look to western medicine for health care. Other Polynesians such as Tongans (Lafranca 1992) have been able to continue their healing practices even at great distances from their homelands through the importation of the needed herbs, but without maintaining the associated culture it is doubtful that the tradition will continue beyond the pioneer generation who stand with one foot in each culture while their children live only in the newfound culture.

The healers who remain on Rotuma, certainly will be the strongest determinant of their own future survival. For many years the young of Rotuma have looked to the outside world and spurned their heritage, but there is a new awareness which is growing, of the value of their own culture. After the military coup of the Fiji government, many Rotumans returned to Rotuma and have since chosen to remain. As contact and accessability of outside goods has risen, the Rotumans have come to see that their island has much to offer those who choose to stay. If this increasing cultural awareness continues, and the young begin to develop a sense of cultural pride, then I feel certain that the valuable role of the healer will survive.

The Traditional Treatments

Introduction

Traditional treatments given by healers comprise a wide array of approaches and techniques, but in general can be grouped into non-medicinal therapies and medicinal therapies. Medicinal therapies are often referred to as **vai** (often internal herbal remedies) or as **turu** (externally applied or rubbed on remedies.) Non-medicinal therapies can be further divided into massage which is usually called **sarao**, setting of bones, midwifery, fish bone extraction, and a mental form of treatment which is also called **sarao**. Medicinal treatments involve the usage of herbs but are also likely to involve massage or mental massage. These divisions are artificial in respect to exclusivity since a given healer may employ any mix of medicinal and non-medicinal therapies, but the Rotumans do recognize each division as potentially important aspects in an acceptable and effective treatment.

Types of healing specialties and their related treatments are disease/illness specific rather than organ of function specific as with western medicine. A summary of specialties/diseases treated is found in appendix II. Additional diseases may be found in appendix IV, which includes many diseases which are recognized by Rotumans but for which there is no knowledge of treatments, the knowledge has been lost or which are introduced European diseases.

Non-medicinal therapies

Healing by non-medicinal, i.e. non-herbal treatments is almost as common as treatment with herbal remedies. Non-medicinal treatments can include, massage, setting of bones, midwifery, and extraction of fish bones lodged in the throat. These treatments are conducted both by healers called **sarao** and **majau**.

Massage therapies vary from massage of a particular area such as the two areas below the lower ribs on the back which are called **is kapu** and **is muri**, to massage of an entire side or half of the torso to massage of the entire body. Massage may be conducted with or without coconut oil, **lol**, and may be in conjunction with herbal treatments or used alone. Many diseases may have either a massage treatment or a medicinal treatment or some combination.

Massage can be divided into three general types by my observations, although these divisions are artificial and not recognized by the Rotumans. The first and most common type

is similar to western thoughts of massage; the hands of the healer working with the skin and body of the patient. The second type of massage, involves the healer applying massage with an object, such as a cloth, cork, or strip of Pandanus odoratissimusn Seem., **sa`aga**, Euodia hortensis Forst.f., **usi**, or Cerbera manghas L., **giagia**, leaf. This type of massage is usually very gentle and may or may not be conducted with coconut oil.

The last type of massage is more unusual in that it does not involve physical contact between the healer and the patient. This massage is better classified as a mental massage. The healers who use this type of treatment will conduct their sessions as follows: The first treatment will take place in a face to face meeting and the healer may perform a standard hands on massage. Subsequent "massage" sessions occur with potentially a great distance between the healer and the patient. At a prearranged time, the healer will sit in front of her home, facing in the direction of the patient. The "massage" is conducted as the healer moves a section of stem from a **soro**, Amorphophallus campanulatus (Roxb.) Bl. ex Dune, in the air, in front of herself. The patient at the same time can be found seated in front of his home, facing in the direction of the healer. This massage is considered to have the same efficacy as massage by physical contact. Contrary to my data on this matter is Howard's (1979): "In one instance an informant prescribed **sarao** as a cure but specified that physical contact was not involved, that the healer and patient sat facing each other while the healer made the proper motions. She even claimed that this cure could work at a distance if the patient faced the healer's house at the time the healer performed the act. This was an isolated case, however; most Rotumans seemed to regard the physical contact as an essential aspect of **sarao**."

Healers who set broken bones and fractures, **sarao hiaj**, are customarily men although women were identified as bone setters. Bone setting is by its very nature an emergency based profession, but **sarao hiaj** may also treat back problems by physical manipulation. A unique type of fever in children is treated by bone setters, since it is felt that the cause is a misaligned spinal column. The healer will massage the child's back, then lift the child by the shoulders to realign the spine and subsequently end the fever. Bone setters do not simply manipulate and set bones, but they also perform many of the same functions as the healer who performs massage such as providing physical comfort to the injured, helping determine the cause of the trauma (although this is usually obvious, the problem may rarely have spiritual implications and/or involve some social action that should not have occurred.) The bone setters will often use herbal treatments in cleaning wounds and bone punctures and may provide follow up treatments for infections associated with the trauma.

Majau a`su te (midwives) were at one time quite common and important to the people of Rotuma. The midwives served in a spiritually and socially important role. The midwives prescribed prenatal dietary instructions as well as providing predictive information in regard to the sex of the child or other characteristics which may have been important to the new mother. Prior to parturition, the midwife would prepare the mother by massaging her body and anointing her with oil and **mena** Curcuma longa L. Post-parturition, the midwife would massage the mother, help with the delivery of the placenta and provide treatments for excessive bleeding or cold feelings. The midwife would then dedicate the new child to the ancestral and clan spirits. More information on the role of midwives is available below in the section on medicinal treatments.

Extraction of fish bones lodged in the throat is a unique specialty on Rotuma, where the traditional diet contains a large percentage of small bony reef fish. The fishbone extractors are called, **sarao lao`e sui**. The treatment process is highly ritualized with the healers requiring exact observance of the procedures to guarantee the removal of the bone. The process will vary between different experts. The following procedure is the technique used by one **sarao lao`e sui**:

Upon presentation of an individual with a fishbone caught in their throat, the healer will seat the patient in his home (this particular healer indicated that his ability is associated with the house foundation of his ancestors where his home is currently constructed.) The healer then proceeds to a **niu `uta**, coconut tree variety, where he will retrieve two green coconuts. Great care is taken to ensure that the coconuts are not dropped to the ground but are brought down with the healer. Upon returning to his home, he opens the top of one coconut, drinks a sip of the juice and places the coconut on an **`umef** (a traditional small table used by individuals when eating.) With the coconut on the table, the healer will turn the **`umef** three times in a circular fashion. The patient is then given the coconut and instructed to drink the rest of the contents. If the patient is a child then the healer may drink a larger percentage of the juice. It is very important that the patient finish the contents. While the patient is drinking, the healer will hold the **`umef** in the air between himself and the patient, slowly turning the **`umef** in a clockwise rotation. When the first coconut has been emptied, the process will be repeated with the second. If during the drinking process, a spirit indicates to the healer that the bone has been dislodged, then the healer will have the patient stop drinking and will himself finish the rest of the juice. But, if after the second coconut has been finished, the healer has not been informed that the bone has dislodged, then the healer will send the patient home with instructions to return the following day for a repeat session. After the healer has declared a successful treatment, the patient will feel that the bone is gone and may find the bone in their mouth. The act of receiving spiritual insight while performing this type of healing act is called **sarao lau**. The treatment is said to almost always be effective with the first treatment and never requires more than five days. There are no prohibitions or dietary restrictions placed on the patient, but the treatments must occur in the healers home.

Additionally, some non-medicinal treatments appear to have disappeared from usage. Bennett (1932:475-6) reported: "Nature, among these people, is the chief physician. Burning and cutting are the remedies principally used for all their diseases." Later, Gardiner (1897:492) stated: "The great cure, though, for all wounds and sores is to roast them for several hours in front of a slow fire; I found the skin of one man with acute sciatica absolutely shriveled up and burnt along the left side from this, massage having been tried first

and failed." Of these traditions, I noted no contemporary usage.

Medicinal therapies

Treatments which involve taking an internal preparation of herbs are common to many specialties. The medications produced from herbs are called **vai**. **Vai** may refer to any herbal mixture or may be specific for internal treatments. The term **turu** may be used to specify **vai** which are applied externally. The herbal treatments are commonly water extractions or suspensions of plant parts. Healers who use these types of treatments may be referred to as a **sarao** or as a **majau**.

Sarao, means to massage or refers to one who performs massage, but it is also used to describe most healing specialties which are not called **majau** whether or not that healer/specialty employs massage. **Majau**, literally means to build, with the same word used to describe a carpenter. Healing specialties which are referred to as **majau** rather than **sarao** include, **majau a`su te** (midwives), **majau haina la`es lelea'** (those who promote pregnancy) and **majau la`ak lelea'** (those who prevent or abort pregnancy.) **Majau** may or may not use massage and usually will use **vai** in their treatment processes.

Plants used as sources of healing potential represent the largest aspect of the Rotuman healing system. Healers easily recognize most of the species found on Rotuma and are in general far more knowledgeable regarding the locations of various species, their usage and botanical terminology. This understanding has come about because of the responsibility the healers have to select and treat patients with the proper plants. Many species on Rotuma are poisonous, irritating, etc. so it is important that the healers consistently select the proper plants and plant parts.

Plants are usually chosen which are thriving and the healers never use all of the available resource, but rather will select some leafs from here and some from there much as a gentle browsing animal might. The parts chosen are usually specific; leaves, inner bark, roots, young shoots, flowers, etc. although in one case, **usogo** Laportea interupta (L.) Chew, the usage involves the entire plant. Plant parts are generally collected fresh when needed, although plants added to **lol**, coconut oil, may be used in a dehydrated form or may be added and left in the oil for long periods prior to use. Of the species recorded in this study (Table 6); Most are used medicinally on other islands, at least nine species have been introduced since European contact of which two are weedy species with no other reported uses and the rest are foods , eleven are common food sources (although not usually the same part which is used medicinally), seven species are used as famine foods, twenty-eight are used for a multitude of purposes, and forty are used only medicinally. Thus the majority of species identified as medicinal have their entire cultural value only as medicinal with very few non-healers passing on information about their potential usage.

Table 6. Alternate uses of Rotuman Medicinal Plants

C= Common Food, F= Famine Food, I= European Introduction, M= Medicinal only, V= Variety of Uses, W= Weedy

Species	Uses
Acalypha grandis Benth	F
Aglaia samoensis A.C.Smith	M
Aleurites moluccana (L) Willd	V
Aloe vera (L) Burm.f	M, I
Alpinia sp.	M
Amorphophallus campanulatus (Roxb)Bl ex Dune	F
Artocarpus altilis Parkinson ex Z	C, V
Atuna racemosa Raf	M
Barringtonia asiatica (L) Kurz	V
Calophyllum inophyllum L	V
Cananga odorata (Lam) Hook.f & Thouars	V
Capsicum fruitenscens L	C, I
Carica papaya L	C, I
Cassia alata L	M
Casurina equisetifolia L	V
Centella asiatica (L) Urban	M
Centosteca lappacea (L) Desv	M
Cerbera manghas L	M
Chamaesyce atoto	M
Citrus aurantium L	C, I
Citrus limona Osbeck	C, I
Clerodendrom inerme (L) Gaertner	M
Clidemia hirtia (L) D.Don	M, I, W
Cocos nucifera L	C, V
Cordyline terminalis (L) Kunth	F, V
Cucurma longa L	F, V
Cyclosorus unitus (L) Ching	V
Dioscorea bulbifera L	F
Eleusine indica (L) Gaertn	M, W
Epipremnum pinnatum (L) Engler	V
Erythrina variegata Stickm	M
Euodia hortensis Forst.f	M
Exocaria agallocha L	M
Ficus tinctoria Forst.f	M
Gardenia vitiensis Seem	V
Geophila repens (L) I.M.Johnst	M
Guettardia speciosa L	V
Heliconia laulao W.J.Kress	V
Hibiscus rosa-sinensis L	V
Ipomoea litoralis Bl	M
Ipomoea pes-caprae (L) R.Br	M, W
Jatropha cucas L	V
Lanatana aculeata L	M, I, W
Laportea interupta (L) Chew	M
Microlepia scaberula Mett ex Kuhn	M
Micromelum minutum (Forst.f) Seem	M
Mikania micrantha H.B & K	M, W
Morinda citrifolia L	M
Musa paradisica L	C, V
Ocimum basilicum L	V, I
Pandanus dubious Spreng	V
Phymatosorus scolopendrium (Burm.f)Pichi-Serm	M
Physalis angulata L	M
Piper insectifugum C.DC ex Seem	M

Piper methysticum Forst.f	V
Pipturus argeneus (Forst.f) Wedd	V
Pisonia grandis R.Br	M
Polygala paniculata L	M
Pometia pinnata Forster & Forst.f	C, V
Premna taitensis A.C.Smith & S.Darwin	M
Psidium guajava L	C, I
Pueraria lobata (Willd) Ohwi	F, W
Sida rhombifolia L	M, W
Spondius dulcis Sonn	C
Syzygium gracilipes (A.Gray) Merr & Perry	M
Syzygium inophylloides	V
Syzygium samaragense (Bl) Merr & Perry	V
Syzygium sp.	M
Terminalia glabrata A.Gray	C
Thespesia populnea (L) Corr Serr	V
Trema cannabina Lour	M
Triumfetta rhomboidae Jacq	M, W
Vigna marina (Burm) Merr	F, W
Vitex trifolia L	M
Zehneria mucronata Bl	M
Zingiber zerumbet (L) Sm	M

Plant parts are usually selected in pairs. This process is called **soa** or **asoa**. The parts are chosen in pairs because it is felt that pairs represent completeness. Non-paired parts since they are incomplete could be infiltrated by a mischievous **`atua**, to complete the pair. The presence of the **`atua** would negate any effectiveness of the preparation. The plant parts are also selected for physical perfection. It is very important that leaves not be torn or blemished, since this could also reduce the effectiveness.

Once the various herbal portions have been selected, they are usually crushed or shredded. This is facilitated with a stone anvil or a hard block of wood and a handheld stone or knife. Herbal mixtures are usually worked by hand to promote an even mixture. The mixtures are then either applied alone or with **lol** to the skin, the mix may be added to water and drunk, or may be processed further. Further processing will typically constitute the production of a water extracted solution. The herbal concoction will be placed in an **ununu** (a fibrous network of vascular tissue from the base of a coconut leaf petiole which resembles course cheese cloth.) The **ununu** will then either be squeezed to release a solution from the herbage, or will be held in water, coconut juice, or **lol** to release some of the herbal chemistry into the solvent. In any case, the herbage is usually discarded and the solution used medicinally, although sometimes the herbage from the **ununu** will be used for massage. Alternatively the herbage may be placed in water and worked by hand to form the solution. The mixture will then be cleaned of particulate and plant material with either an **ununu** or a **sakoto** (a fern leaf or other devise used as a strainer.) In any of the uses of an **ununu** or **sakoto**, a piece of cloth may be substituted, but this does not reflect the traditional approach.

Herbal treatments may be applied via a variety of routes and be used to treat simple daily ailments to complex socio-cultural problems. Routes which are used include; topical, oral (internal suspensions or solutions), intranasal (mucosal), aural, vaginal (mucosal) and ocular. Topical and internal infusions are the most commonly used at the present time. Any route may be used in conjunction with **sarao**. Treatments of specific parts of the body will be specified by the location rather than by the plants used or disease treated, for example **vai faliag** is an herbal treatment (**vai**) which is applied to the ears (**faliag**.)

Herbal treatments vary widely in complexity and distributional usage throughout Rotuman culture. Many non-healers (non-specialists) will use common treatments in much the same manner as average members of western societies use non-prescription medications and observe good dental and health practices. Most of the home remedies used by non-healers are simple to make or require no manufacturing. An example of a simple or non-specialist remedy is the use of **`ai raurau**, Mikania micrantha H.B. & K. in the treatment cuts and minor wounds. No manufacturing or extraction is required and the remedy is quickly and efficiently applied by simply crushing the leaves and applying them to the injury.

Specialist herbal treatments may be much more intricate in their preparation or may be just as simple and merely be used only by specialists. Simple treatments applied by healers are not used by non-healers because it is felt that a particular spiritual power is needed for the remedy to be effective. An example of a simple specialist remedy is the use of **majila**, Chamaesyce atoto G. Forster in the treatment of stonefish spine poisoning. The latex from the freshly broken leaves is simply applied to the wound. It would seem that anyone could perform this act, yet the healer is still required since she holds the power to heal and thus is able to apply the leaves with effectiveness.

Specialist treatments which are more complex usually involve preparation of one or more herbs in an extraction or infusion of various plant parts into a solution/suspension The addition of herbs to coconut oil prior to application of the oil may also be considered as a complex procedure. An example of a simple extraction is a treatment used for **kapkapa** (skin irritation, scabies) using **giagia**, Cerbera manghas L. leaves. The leaves are either prepared in advance by allowing them to soak in coconut oil for several weeks or they may be rinsed with oil prior to the application of the oil to the sites of irritation. Presumably the oil is able to extract some of the chemical components of the leaves, with the oil subsequently applied to the disease site. An example of a simple infusion is the preparation of **karposi**, Acalypha grandis Benth. for treatment of **mase `uf** (a red rash and inflammation.) The leaves are crushed in water or are chewed by the healer, and then the suspension is placed on the sites of irritation and massaged in. With this type of treatment the plant part is actually applied, or, as with **hosoa**, Pandanus dubious Spreng., the leaves are prepared as a suspension and taken internally to treat **ru ef** (a stomach ache.) More complex extractions or infusions will involve herbage from several different species, mixed and prepared in specific ways to give a compound herbal remedy. Complex extractions are generally the most commonly used by healers whereas simple preparations are more likely to be used by non-healers.

Specialists (healers), may use unique plant species or unusual methods which are not used by the non-specialists. **Vai** may be administered intranasally, vaginally or through the aural canal. Healers will often involve spiritual aspects in their treatments which may be considered as additional ingredients to the **vai** which are not employed by the non-specialists who have no healing power.

Non-specialists are likely to treat common problems which require some type of first aid, and then if required seek the help of a specialist later. Commonly ocular irritations, minor skin irritations and other topical ailments which are of short duration are likely to be treated at home. **Lol**, coconut oil, is commonly used by non-healers just as it is widely used by healers, but the non-healers do not usually have a systematic approach to their massage, nor are they as likely to add herbs to their oil except for scent.

The preparation of **lol** is described in the pharmacopoeia under Cocos nucifera L. Most of the massage by both healers and non-healers is conducted with **lol** as the lubricant. Since massage is so important to almost every aspect of traditional medicine, the **lol** also becomes highly important. The time consuming effort of producing **lol** and the continued usage of it, indicate the value it has to the Rotuman people. Healers will typically have certain herbs which they add to the oil with the stated purpose of providing scent such as **pipi**, Atuna racemosa Raf. fruits, **moskoi**, Cananga odorata (Lam.) Hook.f. & Thouars. flowers, or **pup reag lolo**, Polygala paniculata L. roots. Although the herbs are said to be added for scent, there may be other actions which are being imparted. The **pipi** fruits are quite astringent and thus may add to the therapy. The additives may be antifungal, antibacterial, serve a preservative role or act in other ways to increase the healing efficacy of the coconut oil. **Lol** prepared for some specific treatments includes the addition of **mena**, Curcuma longa L. rhizomes, **`ura**, Morinda citrifolia L. leaves, or **usogo**, Laportea interupta (L.) Chew plants. These specific uses may represent unique extraction requirements or chemical environments required for the treatments to be effective, in which water would be an unsuitable media.

Treatments from simple **lol** to complex herbal mixtures to be taken by mouth, will generally be prepared fresh by the healer. The administration is likewise almost always performed by the healer, although in some cases the patient may have to apply or consume the medication themselves. Occasionally a healer may send the patient home with a small amount of the medication for self administration or in rare cases, instruct the patient in the proper technique for preparation of the medication.

The Rotuman Ethnopharmacopoeia

The following pages present the information regarding traditional herbal medicine obtained during 3 field trips to Rotuma totaling approximately 6 months. The field trips occurred in May 1991, August through December 1991 and June 1992. The data is not inclusive of all uses found on Rotuma, since there has as yet been insufficient time for complete data collection. Herbal preparations in Rotuman medicine are often complex mixtures of parts of several species, thus under each species is found a record of the preparation with references to any other species found in the mixture. This approach has led to multiple listings of each treatment, but allows the reader a full analysis of a given species under the listing of that species. Each treatment is from a recognized Rotuman healer, although common non-specialist remedies are occasionally recorded. These common remedies were confirmed with traditional healers prior to inclusion. Since very little previous ethnobotanical work has been published from Rotuma, the previous data is limited to records brief records gleaned from the literature. Unless otherwise stated, all of the ethnomedicinal data has been gathered by the author. In general, previous records from Rotuma have listed botanical medicinal treatments as "herbs" or "leaves." Churchward in his dictionary (1940), recorded the names of many medicinal plants and these spellings have been incorporated in the following. The names in his dictionary also include several plants recorded (by Churchward) as having medicinal properties, but which could not be identified by present day Rotumans. These plants are discussed at the end of the record of plant species. In addition to the undocumented species from the dictionary is a discussion of several other records of Rotuman medicinal plant usages which I could not verify with modern healers.

The species of plants used medicinally are mainly angiosperms. No gymnosperms have been recorded to be native to the island and only four ferns are used medicinally. One of these ferns, Phymatosorus scolopendrium L., is used extensively, one is used in minor ways and the third is only used as a strainer of medicinal preparations and may have no medicinal activity. The angiosperm species are arranged under phyla and divided into families using Chronquist's (1981) artificial system of classification. Each species documentation record includes the Rotuman name and non-medicinal uses, a description of the Rotuman medicinal usage and a brief description of medicinal uses from other Polynesian islands.

The information contained in the Ethnopharmacopoeia was recorded with the understanding that it be used only for scientific research purposes. The formulations given rarely site dosage or other specifics which may be crucial in the proper usage of these species. For non-Rotumans it is not recommended that these treatments be used, since in most cases the Rotuman diseases which are treated are not at all or are only vaguely analogous to western disease categories. For Rotumans it is likewise not recommended that these treatments be used, since the information has not been properly passed to those who might choose to use it and the power to heal has not been given, which will certainly reduce or negate any potential effectiveness.

For the non-Rotuman reader, two definitions are needed to clarify the text. The terms **ununu** and **sakoto** are frequently within the formulation descriptions. An **ununu** is a piece of dead petiole material from the base of a coconut leaf. The material which is largely composed of vascular nets has the appearance of course cheesecloth but has a more harsh texture. The **ununu** is used as a strainer of solutions and as a packaging material for herbal preparations. The term can also refer to a package of herbs which has been prepared by a healer for a patient to use in self treatment away from the

healer. A **sakoto** is any device used as a strainer. It is usually used in reference to either a plant (fern) leaf which is used as a strainer, or to a piece of cloth or **ununu** which is used to strain out particulate from a solution.

PTERIDOPHYTA

Aspidiaceae

Cyclosorus unitus (L) Ching
Collection # M371
Description: Terrestrial fern, found in shaded or damp areas and near roadsides in mixed disturbed vegetation.
Non-medicinal uses: The mature fronds are used as strainers in food preparation.
Rotuman name: **Sakoto**
Medicinal usage: This species is not used directly as a medicinal agent but may, by its use contribute to or alter the chemical composition of other species used medicinally. The fronds which have a finely divided surface are used as strainers in the preparation of herbal aqueous and oil solutions.
Medicinal usage from other islands:
None identified, but another species, Cyclosorus penniger (Forst.f.) Copel (**piupiu**) is used in New Zealand. The roots are used to treat boils. (Brooker et al 1981:28)

Dennstaedtiaceae

Microlepia scaberula (Kuhn) Mett.
Collection # M419
Description: Common fern in shaded slightly damp areas.
Non-medicinal uses: None reported.
Rotuman name: **Julia ne moa**
Medicinal usage: Used to treat **ru hual** (generalized pain often focusing in the chest.)

Treatment of **ru hual**: Several pairs of unopened fronds (croziers) are crushed together with six to eight pairs each of **ti togo** Centella asiatica (L.) Urban, leaves and **joan ne pija**, Triumfetta rhomboidae Jacq., leaves. The mixture is placed in an **ununu** and squeezed to release a solution. The solution is drunk in the morning, at noon and in the evening. If there is soreness associated with the pain, then massage will be performed using the dregs from the **ununu** as the massage lubricant. If the dregs are not used for massage then the **ununu** may have water added to it and more doses wrung from it. The patient is instructed to avoid salty, fatty or sweet foods.
Medicinal usage from other islands:
None identified, but other Microlepia sp. are used medicinally in Hawai'i (**palapalai** or **palai**) (Neal 1934), and Fiji (**mata**) for dental pain.(Zepernick 1972)

Polypodiaceae

Phymatosorus scolopendrium (Burm.f) Pichi-Serm.
Collection # M073
Description: Very common fern with creeping rhizomes. Found throughout the island in damp areas, as an epiphyte or epilith and occasionally growing terrestrially in dense patches.
Non-medicinal uses: None reported.
Rotuman name: **Sesei**, **Sisei**
Medicinal usage: Used to treat: Bleeding puncture wounds, **li ne uaf** (a badly infected cut), **maf pirpir** (lit. "yellow eyes", lack of appetite, **ar u'u matit** (cold palms)), and a general state of ill health), **mamosa** (lethargy, lack of appetite, weight loss, dry cracked tongue), **tagi** (seizures), **koho** (cough in adults), eye irritation/infection, **puna** (boils), **ila** (skin discolorations), and **kapkapa ne masmasa** (skin irritations or allergic reactions.)

Treatment of bleeding from a puncture caused by a broken bone: If after setting a broken bone, persistent bleeding from the site of bone penetration occurs, the healer will crush several **sesei** leaves in some water. The leaves will be discarded and the solution applied to and washed over the cut. After thorough cleaning, two fresh **`ura**, Morinda citrifolia L., leaves will be rolled between the hands to release a thick green juice which is placed on the cut to stop the bleeding.

Treatment of **li ne uaf**: A solution will be prepared as above and the infected area washed thoroughly. An **`ura** M. citrifolia root is cleaned and the bark scrapped off into an **ununu**. The **ununu** is held over the infection and squeezed to release a juice on the wound. A froth will form at the site of the infection which is indicated to be the ejection of the infectious agent from the cut. No restrictions are placed on the treated individual and the treatment is not repeated.

Treatment of **maf pirpir**: **U`apea**, Ficus tinctoria Forst.f., leaves in pairs are mixed with pairs of **sesei** rhizomes and **maragi**, Trema cannabina Lour., bark strips in equal volumes. The mixture is chopped finely and placed in an **ununu**. The **ununu** is held in a cup and squeezed to release a fluid. The resulting solution is drunk three times a day. The same **ununu** is used to prepare all three doses each day and a maximum of two days of treatment are given. If treated early enough, the symptoms may resolve after only one day. Adults will be given a more concentrated solution made with many pairs of herbal parts, whereas children will be given more mild dosages.

Treatment of **mamosa**: This treatment is identical to that given above for **li ne uaf**, except much more of the herbal mix must be from **sesei** rhizomes.

Treatment of **tagi**: A solution is prepared by crushing fresh leaves in water. The leaves are discarded and the solution is drunk. This treatment is usually effective after the first dosage but the healer may ask the patient to return for 3 days of daily treatment to ensure a cure. See note at the end of this species report regarding usage of **sesei** in seizure patients.

Treatment of **koho**: About one meter of rhizome is selected, cleaned with water then pulverized. The pulverized rhizome is then either mixed with water to provide a solution or is chewn by the healer to provide a more potent treatment. The resulting solution, in both cases, is mixed with crushed young **`ura** Morinda citrifolia L., fruits. A portion of the solution is swished in the mouth and throat, then swallowed. Coughing may be controlled for several hours and treatment may be repeated.

Treatment of eye irritation/infection: A small rhizome is selected and thoroughly cleaned with water. The rhizome is then carefully rubbed over the eye and into the corners of the eye. The patients vision will become blurred, but will rapidly

return. Only one treatment is indicated.

Treatment of **puna**: A cleaned rhizome is vigorously massaged over the site of the boil until erythremic. Once the blood flow has been stimulated to the site, the massage will continue with the intention of rubbing the boil to a single central point for expulsion. To this end the massage is centrally directed toward the point at the middle of the boil. The treatment is repeated daily for up to three days, by which time the boil should have erupted. If by the third day the boil has not erupted, the healer will use a different treatment to dissipate the boil or send the patient to another healer. Alternatively the rhizomes may be crushed and soaked in **lol**, (coconut oil) in advance. The oil then is used in the massage treatment, without a fresh rhizome.

Treatment of **ila**: A handful of fresh rhizomes is selected and cleaned. They are shredded or chopped and wrung thoroughly in water to produce a solution which is used for bathing the area of blemished skin. Young children who are treated may sit in the solution while being washed. Treatments are given daily until the discolorations fade. See note below regarding the use of **sesei** in certain patients.

Treatment of **kapkapa ne masmasa**: A large quantity of rhizomes is collected, cleaned and soaked in several liters of water. The solution is used as a soaking rinse on irritated areas or the person may bathe in the solution. This treatment is only recommended for adults.

Note: **Sesei** is felt to be too strong for use on a newborn or very young child especially if the child has **ialila** (a birthmark which cyclically appears and fades.) If it is used on a child such as this, the child will develop reddish spots on the arms and body or a generalized mottling may occur. The birthmark may fade to give the appearance of a cure, but the child will often then begin to develop seizures leading to death. In newborns, even without the presence of a birthmark, use of **sesei** may cause scaring from the reddish spots which appear, spread over the body and break open.

Medicinal usage from other islands:

Fiji: The plant is called **kadakada**, **vativati** ....

Futuna(east): The fern is called **tiga'a niu**. The leaves are part of a treatment for ulcerated mouths in children. (Biggs: 1985)

Niue: The fern is called **mamanu**. The rhizomes are used to treat gastrointestinal ailments and boils. (Whistler 1992:183)

Samoa: The fern is called **lau auta** or **lau magamaga**. The leaves are used to treat septic wounds, abscesses, swellings and inflammations. (Whistler 1992:184) The rhizomes are used to treat inflammation, chills and are used for analgesia. The leaves are used for inflammation and internal distress. (Cox 1993)

Tonga: The plant is called **laufale**. The leaves, stems and rhizomes are used to treat **kulokula** (fever, chills and red swellings on the skin.) (O'Rourke-George 1989:140)(Bloomfield 1986) The leaves are used to treat boils. (Croft and Tuipulotu 1980) Leaves are applied to carcinomas on the breasts and induration of the breast, with pain an redness. The leaves and rhizomes are drunk to treat vaginal bleeding. (Singh 1984)

ANGIOPHYTA

LILIOPSIDA

Agavaceae

Cordyline terminalis (L.) Kunth

Collection # M102

Description: A very common low herb with narrow, sometimes branching stems. The inflorescences may be white, pink or red. The tuberous roots are starchy and sweet.

Non-medicinal uses: The roots are cooked to produce **puha**, which is a sweet starchy substance. The leaves are used in ceremonial skirts and necklaces.

Rotuman name: **Rauji**, **Ji**

Medicinal usage: Used as a means of promoting abortion.

A fresh stem is cleaned and used mechanically to promote abortion of a pre-term child.

Medicinal uses from other islands:

Fiji: This plant is called **nggai**, **nggainggai**, **vasili**, **vasilikau**, **vasili ni veikau**, **masawe**, **kokoto**, **ngolo** and **ti**. Smith (1979:151) reported that this species is used for "unspecified medicinal uses."

Hawai'i: The plant is called **ki**. The leaves are used to treat fever and headaches. (Whistler 1992:140)

Samoa: The plant is called **lau ti**. The leaves are used in massage along with coconut oil. This is particularly effective in the treatment of headaches and fevers since the leaves have a cooling effect on the forehead. The rhizomes are used to treat **oso fa puni moa** (a shock to the system which causes an intestinal problem.) The leaves are also used to apply most external medicines and are used to treat inflammations. (Cox 1990:130,135-6) (Cox 1993)

Tahiti: The plant is called **auti**. The leaves are part of a treatment for "ombilicale" infection, dysmenorrhea, and "funiculite". (Grepin & Grepin 1980:27,45,53)

Tonga: The plant is called **si**. The leaves are used to treat **hangatamaki** (internal and external ulcerative conditions), **mea** (a type of dermatitis), **pala va'e** (sores on the foot or leg), **pala huhu** (sores on the breast), **fuofua** (serious pimples on face and ears), **`ulukila** (boils on the head causing hair loss), **moli teka** (a boil that appears hard and discolored), **kiatolo** (hard swelling or lump beneath the skin), **mata kulu** (swelling and redness of the eyes), **mata fuhu** (a boil occuring on the eyelid), and boiled leaves are applied to a painful back and stomach. (O'Rourke-George 1989:57-58)

Aloeaceae

Aloe vera (L.) Burm.f.

Description: Introduced potted plant, commonly found in most villages. Plants largely consist of the low terminal rosette of succulent leaves. Leaf margins have short spines. An inflorescence is very rare. This species was probably introduced along with the medicinal usages.

Non-medicinal uses: None reported other than ornamental.

Rotuman name: **Alo**

Medicinal usage: Used to treat **susun** (topical burns) and **mamosa** (lethargy, lack of appetite, weight loss, dry cracked tongue.)

Treatment of **susun**: A succulent leaf is selected from a plant which is usually growing in or near the house. The leaf

is either cut in half to release the natural salve or is crushed and cut open to reveal the salve. The salve is liberally smeared onto the burn and is reapplied as often as desired.

Treatment of **mamosa**: Two pairs of **alo** leaves, four pairs of **hahi`a**, Syzygium samaragense (Bl.) Merr. & Perry, leaves, and four pairs of **koao**, Psidium guajava L., leaves are chopped together and mixed into a mass. The mass is placed in two cups of warm water (not sea water) and is stirred to produce a liquid. The leaves are strained out with a **sakoto** Cyclosorus unitus (L) Ching, leaf to produce the final solution. About one cup of the solution is drunk each day for as long as several weeks. The treatment is prepared fresh each day and is given to treat the active disease as well as for prevention. Since two out of the three ingredients in this treatment are relatively recent introductions to Rotuma, this treatment is likely to be either a new formulation or a modification of an older one.

Medicinal uses on other islands

Cook Islands, Samoa, Tahiti, and Tonga: The herb is called **aloe**. The leaves are used to treat cuts and burns and are taken in an infusion to treat internal ailments.

Araceae

Amorphophallus campanulatus (Roxb)Bl ex Dune Collection # M375

Description: Erect herb with a very large leaf on a thin stem arising from a corm. Not common, occurring in small scattered bunches, usually under second growth tree cover.

Non-medicinal uses: None reported.

Rotuman name: **Soro**

Medicinal usage: Used in the treatment of **mo huga** (constipation), **puga** (boils under the armpit), **siki eji** (boils on the back of the neck), **siki fa** (boils on the back), **siki efe** (boils on the stomach), **mase `uf** (redness of the extremities which spreads toward the trunk and is considered to be potentially fatal. May cause impotence in men if it spreads to the genitals.), **mase susu** (breast lumps), and **kapu hu hual** (swollen thighs.)

A section of the **soro** stem is used to treat a variety of illnesses, but all the treatments documented are performed at a distance with no physical contact between the patient and the healer. This type of healing is called **Sarau soa**.

For each of the above illnesses the healer seats herself in front of the seated patient so that they are facing one another. The healer then dips each end a short (10-20cm long) **soro** stem in coconut oil and begins to move the stem back and forth with a twisting motion in front of the patient. While performing this step, she is focusing on the illness and mentally asking for spiritual assistance in treating the problem. These diseases although having physical symptoms are thought at times, to have spiritual causes. Each end of the stem is waved in the direction of the patient in paired motions, until the healer decides that the "massage" is complete. The first therapy session usually takes place with the healer face to face with the patient but later sessions will usually occur at preset times, i.e. sun rise, sun set or in the present era, at a certain time in the day. At the appointed time, the patient will sit down wherever they may be and face the healers home. The healer can be found at that same time in front of her home, performing the same ritual massage facing in the direction of the patient. This unusual method of healing is considered to be just as effective as healing by physical contact.

Throughout the course of treatment the healer and the patient must follow certain prohibitions. If dark urine is passed or painful urination is experienced by the patient, then they (the healer and the patient), must not eat hot or salty foods. Neither individual may wear red and both must eat off of only banana leaves in the traditional fashion. They may wash but they must avoid the ocean until the treatment is complete.

Medicinal uses in other islands:

None identified.

Epipremnum pinnatum (L) Engler

Collection #M235,330

Description: Climbing herb with highly variable leaf size. Leaves simple and entire and smaller in young or well shaded plants verses dissected leaves on mature or larger plants. Found throughout the island often epiphytic on trees.

Non-medicinal uses: None reported.

Rotuman name: **Rauvaru**

Medicinal usage: Used as an applicator of other medications and to treat **atua mur** (swelling and redness in the thighs and legs accompanied with fever and diagnosed by the presense of sensitivity in two areas on the lower back (kidneys?) called **is kapu** and **is muri**.) The treatment using the leaves as applicators is included since other applicator leaves are available and often easier to use and yet the healer felt that this species had to be used.

A single pair of leaves was formerly used to apply **mena**, Curcuma longa L. powder, medicinally. The leaves also were mixed in other ways with the **mena** and used medicinally. The data is from a healer whose mother used these treatments but did not pass these particular uses on to her son (the healer providing this information.) He remembered his mother preparing the treatments but the production of **mena** was discontinued prior to the time when he was learning and thus he was not taught to use these treatments.

Treatment of **`atua mur**: Pairs of **rauvaru** leaves are crushed, shredded and mixed with a small amount of coconut oil. The mixture is bound between two **`ura**, Morinda citrifolia L., leaves. This preparation is made occasionally and set aside by the healer in expectation of a patient presenting themselves. Upon presentation of the patient, the package is retrieved and the contents rubbed on the entire body of the affected individual. This treatment also will involve extensive massage usually without any oil or lubricant other than this pre-prepared product. Massage will occur daily until the disease resolves. Resolution of the disease is proclaimed when the two areas on the lower back, **is kapu** and **is muri**, are no longer sensitive and the fever has passed. The individual is advised to avoid bathing, wearing red clothing or eating red food. The patient must also sleep on the floor and not in a bed. This treatment may be combined with other treatments for **atua mur** as described under Euodia hortensis Forst.f., (Rubiaceae.)

Medicinal uses on other islands:
None identified

Arecaceae

Cocos nucifera L.

Description: The coconut palm is one of the most common and most highly valued plants on Rotuma. The tree is found in almost every part of the main island and each of the unpopulated nearby islands. The coconut has many different varieties with each producing fruits of differing colors, shapes and uses. The trees vary greatly in height but many can reach 25 or more meters tall if not broken off by winds or cut down for other uses.

Non-medicinal uses: Every part of the coconut tree is useful. The roots are used for fish traps, the stems (trunks) for house construction, the leaves for thatch, baskets, and etc. and the fruits are eaten, used as a drink and the endosperm is sold as the islands major export.

Rotuman name: **Niu**(covering many different varieties)

Medicinal usage: Treatments include **mase nuj** (a swollen mouth or jaw), **mea ta koi** (A skin disease, possibly fungal, which starts as a red spot on the skin and spreads as a ring then rapidly spreads over the whole body. Said to lead to death if untreated.), as well as numerous lesser remedies. Coconut oil is used in many treatments as a base for medicinal herbs or as massage oil.

Treatment of **mase nuj**: Coconut oil is applied first to the edges of the swelling which is said to stop the spread of the swelling. Oil is then massaged toward a central area in the swelling with the perspective that the illness will be massaged to a certain point and then induced to come out of the body. Treatment is repeated at least twice daily until the infection emerges as a lesion. The disease may at times extend into the area of the ears requiring a separate treatment for **mase filiga**. During treatment the patient is advised to avoid smoking, eating hot food or drinks and must avoid fires and bright sunlight. If these prohibitions are given to the patient and not followed then the healer or a member of the healers family will contract the same disease in the mouth or jaw.

Treatment of **mea ta koi**: Two very young coconut fruits, **suas ne nui**, are pounded into a fine paste and added to some **lol**, coconut oil, and a sprinkle of **mena**, Curcuma longa L., powder. The mixture is placed in an **ununu** which is then wrapped by two **`ura**, Morinda citrifolia L., leaves and placed over a fire. Once hot, the **`ura** leaves are removed and the **ununu** placed over the affected area and squeezed to release hot fluids onto the affected site. Treatment is repeated daily for up to 5 days. No bathing is allowed during the treatment and the affected area must not get wet.

Treatment of heat stoke/sun exposure: Unscented coconut oil is applied lightly and is not rubbed in. The Rotumans are very careful about excessive exposure to the sun so this is a rare occurrence.

Treatment of **po`o** from walking or wearing shoes too much: Coconut oil, usually unscented is applied to the blisters.

Children who have developed sores on their legs after playing in the ocean may be washed with coconut oil each morning and evening to treat the sores.

For **ru faliag** (earaches) that must be treated at home without a healer, coconut oil will be massaged in and around the ear. Earaches are considered to be best treated by healers who use massage and/or herbal treatments.

Ru kia may be treated by eating very immature coconut fruits, **suas ne niu**. They numb the entire mouth and throat.

Inflamed eyelashes are removed with a **peinuku**. A coconut husk which has had the majority of the fibers removed from it can have one of the long stronger outer fibers peeled from the inside to make a long string called a **peinuku**. The **peinuku** is made into a loop and used to pull out eye lashes which have become inflamed.

The coconut lamina midrib and petioles are used by bone setters as splints. The bone is set by the healer and two or more midribs tied parallel to the bone to maintain the position, then in three days the splints are removed, the bone alignment confirmed and new splints tied on.

The **ununu** which is used as a strainer, filter or satchel for transport of medicinal herb mixes is produced from the dead fibers at the bases and lower edges of the coconut leaf petioles. The fibrous material is cut or torn off of a lower tree (which has leaves still close to the ground) and is rolled in the hands, twisted and otherwise contorted to shake loose any non-fibrous materials. The cleaned **ununu** then resembles a section of course cheese cloth. Pieces used are usually at least three to four square decimeters in surface area but some may be larger or for small dosages smaller. These devices are often prepared on site, as needed although some healers may keep a clean sample in their homes for quick usage.

In addition to its many uses as food, building material, etc, the coconut is used medicinally as a source of massage oil. The massage oil may be used alone or may have other plant materials added to it. The oil is lipophilic and thus may serve as an extractive solvent which favors non-polar substances.

Coconut oil is produced rather commonly in spite of the heavy labor demanded and the low yield of oil. Any number of coconut fruits may be used but ten is usually considered as a reasonable minimum quantity. Mature nuts are selected which are said to have a higher yield of oil although they are harder to extract. The mature nuts are called "**hara**". Each coconut has the exo- and mesocarps removed and the endocarp is cracked in half. The endosperm which is now revealed is grated to a fine pulp. The pulp is squeezed with "**vih nau**", the coconut mesocarp fibers. The **vih nau** filters out the pulp residue and leaves behind a milky suspension. The process is repeated until all of the pulp has been extracted and the resultant suspension is cleaned of loose material. If any scents or medicinal herbs are to be added to the coconut oil, they will usually be added at this time.

A large fire is built with the endocarps (shells) of the coconuts, "**reh pak rau**", and when the shells have been burned and the flame dies down, a cooking container with the milky coconut extract is placed over the coals. The suspension is stirred constantly to prevent burning. After at least 2 hours, a clear oil will begin to appear on the surface of the suspension. The suspension will continue to be stirred and

heated until the bulk turns clear and a brown residue appears on the bottom. This is a critical stage as there is a fine line between completion of the clearance to coconut oil called "**lol**" and the possibility of burning the oil which will ruin it by leaving the oil with an unpleasant burned smell. For this reason the fire is kept low and the suspension stirred for a longer period to avoid burning and wasting the batch. Once the solution is clear, the oil is poured into containers for storage.

Ten mature coconuts will usually produce one twelve ounce bottle of oil, so in most productions, 20 to 50 or more coconuts will be used to ensure a larger oil production. Medicinally a large volume of oil is often used for massage, with a single session using up to one-half to one -12 ounce bottle of oil.

Additionally herbs may be added to plain **lol** after it has cooled. This is not as common and was only mentioned as a practice by healers.

Medicinal uses on other islands: Medicinal usage is listed at the end of the next entry on this same species.

Cocos nucifera L. var."**`uta**"

Collection # M533

Description: The **Nui `uta** is a unique variety of coconut on Rotuma, in which the husk can be removed by hand (other varieties requiring some form of tool or a rock to open.) The mesocarp is both rich with fluids and is sweet rather than dry and bitter as are the other Rotuman varieties. The fluid found in the mesocarp will stain hands or clothing brown to orange. When eaten, the mesocarp is chewed to release the fluids as well as a large amount of non-fibrous tissue which is swallowed. The fibers are discarded. The endocarp is also edible, although in mature nuts it may be firm and more difficult to chew. The inner fluid has the same taste and consistency as that of other varieties at the same stages of maturation. The endosperm may develop later and to a lesser extent than in other coconut varieties and therefore is usually not noticeable in sub-mature fruits.

Non-medicinal uses: The coconuts are not only used medicinally but may be taken on trips to the forest or to community functions and used as a refreshing snack and thirst quencher.

Rotuman name: **Niu `uta**

Medicinal usage: Used to treat **lao `e sui** (fish bones lodged in the throat), **mamosa tamor** (lethargy, chest pain, fever, sweating, and a tendency to cough up scaly material), and **mou huag** (constipation.)

Treatment of **lao `e sui**: Two fresh coconuts are retrieved and opened. The juice is rapidly drunk by the individual with the fish bone caught in their throat. The process is repeated until the healer declares that the bone has been extracted. (See discussion of **Sarao lao `e sui** for a more detailed description.)

Treatment of **mamosa tamor**: Two fresh green **niu `uta** are retrieved and the exocarps removed with a knife. The mesocarps in this variety are soft and succulent with a great deal of clear juice. The juice and the mesocarp material which is exposed will rapidly turn brown. Strips of the mesocarp are torn off and squeezed by hand into a cup or coconut shell cup. Several rhizomes of **rag`apua**, Zingiber zerumbet (L.) Sm., are scraped and the pulp placed in with the coconut juice. The mixture is stirred until well worked then is strained with an **ununu**. The individual will drink about one cup (less for children) each day, within the healers home. Treatment will continue for no more than five days, before a cure is pronounced. Throughout the treatment, the patient must avoid consuming lemons, salty and fatty foods, and must not wear clothing or ornaments which are red.

Treatment of **mou huag**: The very young fruits of the **nui `uta** are picked from the tree and carried to the ground without being dropped. The exo- and mesocarp of each fruit is shredded and wrung to release its juice. The resulting solution is drunk as needed to relieve the constipation.

Medicinal uses on other islands:

Tahiti: The tree is called **ha'ari**, **atura hupuru**, and **tumu haari**. The fruits are used to treat "nevralgie". The fruit endosperm is used in a treatment for 1980:24,32,65)

Tonga: The tree is called **niu**. Coconut oil and coconut juice are used as solvents or bases in many medicinal treatments. The fiberous **kaka** (**ununu**: Rotuman) of the coconut tree is often used as a strainer and leaf midribs may be utilized as splints or supports in bone setting. Juice is used to treat **langa kete mofuta** (pain or abdominal distress), **langa kete** (bloating), back pain, heartburn, and is applied to burns. (O'Rourke-George 1989:132-3) The juice from husks is used to treat **ila** (a skin rash on children.) (Whitcombe 1930) Kernal scrapings of the mature green nut are used for severe bleeding in early pregnancy and to treat **toka'ala** (Post-partum abdominal pain due to retained blood clots in the uterus.) (Singh et al 1984)

Heliconiaceae

Heliconia laufao W.J.Kress

Collection # M416

Description: Herb with large leaves up to 2 meters tall. Flowers erect, red and yellow, with yellow fruits. Commonly found near villages growing in dense patches. Kress (1990 6:32) has divided H. paka (A.C.Smith) W.J.Kress from H. laufao. H. paka is now described as only being the endemic Fijian species while H. laufao represents the Samoan species. Since the Rotumans consider this species to have arrived from Samoa, I have assigned it to that species. Many Rotuman plants have arrived from Fiji, its closed neighbor, and thus some of the heliconias on Rotuma, under the same traditional name may represent H. paka.

Non-medicinal uses: The leaves are used commonly in place of banana leaves as coverings for food, ovens, to eat food off of and as wrapping for native puddings prepared in the earthen ovens (**koua**.)

Rotuman name: **Par Samoa**

Medicinal usage: The fresh leaf petioles may be wrung of all solution and smashed to provide a type of strainer. Although several non-healers mentioned this as an alternative straining device, only one healer mentioned it and none ever were observed using this species for this purpose.

Medicinal uses on other islands:

None identified.

Musaceae

Musa paradisica L. var."mea"

Collection # M497

Description: Giant herbs producing edible bananas. This variety is very large with stems up to 6 or more meters tall and very large bunches of fruit.

Non-medicinal uses: The fruits are eaten raw or cooked. The leaves are used as serving containers for food and as food for swine. The leaves may also be used as packaging material for ceremonial necklaces and skirts while in transport to the site of the ceremony.

Rotuman name: **Par mea**

Medicinal uses: Used to treat excessive menstrual flow/ hemorrhage, or dysmenorrhea, **mase faliga** (earaches) and **tu kiog** (difficulty in maintaining a menstrual period.)

Treatment of excessive menstrual flow, hemorrhage: Young leaf shoots (need not be paired) of **par mea** are crushed with cleaned paired strips of inner bark from the **ratua** Erythrina variegata Stickm., and or paired leaflets of the **ratua** and paired strips of bark and shoots from young **ker mi`a** Syzygium gracilipes (A. Gray) Merr. & Perry. The mixture is placed in an **ununu** and squeezed to release a juice. A small volume of the juice is drunk while the healer massages the patient with coconut oil from the chest down to the legs, both on the front and on the back.

Treatment of dysmenorrhea: The same preparation as above is used except that the **ratua** E. variegata is replaced by inner bark from the **pinau**, Thespesia populnea (L.) Corr. Serr.

Treatment of **tu kiog**: Strips of clean **ratua**, Erythrina variegata Stickm., inner bark and paired leaves along with a pair of leaf shoots and two young branches of **ker mi`a**, Syzygium gracilipes (A.Gray) Merr. & Perry, a young shoot of **par mea**, two **pinau**, Thespesia populnea (L.) Corr. Serr., branches and some cleaned inner bark of the **mori**, Citrus aurantium L., are all finely chopped and mixed together. The resultant mixture is added to water and drunk by the patient. The treatment is usually only given once but may be repeated if needed. The treatment should not be given to a pregnant woman, since it is felt that this will cause a miscarriage, although the identical treatment without the E. variegata , is given to stop miscarriage. No massage is given with this treatment unless there is massage being given to promote pregnancy.

Treatment of **mase faliga**: Very young unopened leaves of **par mea** are selected in pairs. Each leaf is split in half and the halves kept paired. The leaves are then wiped over the ear and the surrounding areas in strokes flowing in a single direction forming rings around the ear. The cause of the pain is said to be **puna**, a boil, and the leaves will make the boil come out and no longer be painful. The treatment is repeated until all of the paired leaf halves have been used and discarded. Each massage session lasts 20 to 30 minutes and may require up to 5 days of once daily treatment. The patient is advised to stay out of bright sunlight and to avoid the ocean.

Medicinal uses on other islands:
See discussion after the next variety.

Musa paradisica L. var."Rotuam"

Collection # M497

Description: This variety of banana is of average size, reaching to 3 meters tall. The fruits are not the most desirable variety but are easily found in larger plantations.

Non-medicinal uses: The fruits are occasionally eaten. The leaves are used as serving containers for food and as food for swine.

Rotuman name: **Par Rotuam**, **Roro**

Medicinal usage: The leaves are used to treat **filo`u** (headaches refractory to massage and with visual photosensitivity)

Treatment of **filo`u**: The patient is instructed to lay down on a mat face up. An immature leaf which is still rolled up in the pseudostem is removed and unrolled. The leaf is spit lengthwise into two pieces and one half is placed below the head and wrapped up around the head. The other piece is placed above and wrapped down over the head such that the entire crown and forehead are covered but the face and neck left exposed. A large band of cloth is next wrapped around the banana leaf and used to tie the leaf halves in place. The healer who has applied the leaves in the patients home early in the morning returns home and returns after about two hours. Upon her return she checks to see if the person is sweating. If the patient is not sweating then the bandage and banana leaf will be changed and the process repeated. If the patient is sweating then only the cloth bandage will be changed and the banana leaf will be left in place. The treatment will be repeated each morning for up to 5 days. Each morning a new banana leaf will be wrapped on and the old leaf will be taken back to the healers home to be disposed of in the ocean.

Medicinal uses on other islands:

Cook Islands: The herb is called **meika**. Juice from crushed roots is taken with coconut oil as a laxative. (Whistler 1992:98)

Samoa: The herb is called **fa`i**. The roots are used to treat inflammation and hallucinations. (Cox 1993) Young and old leaves are used medicinally. (Cox 1989:494)

Tahiti: The herb is called **mei`a**. Pulp of the fruit is applied to inflammations and rashes. (Whistler 1992:82)

Pandanaceae

Pandanus dubius Spreng.

Description: Tree-like form, freely branching, reaching to 8+ meters tall. Found in and near villages. Not observed in the inland valleys.

Non-medicinal uses: The leaves may be occasionally used in weaving.

Rotuman name: **Hosoa**

Medicinal usage: Leaf shoots are used to treat **ru ef** (stomach ache) caused by eating poisonous fish.

Treatment of **ru ef**: The young leaf shoots of the **hosoa** are selected in pairs, smashed and chopped finely. The leaf pulp is mixed with water and drunk as an infusion.

Medicinal uses on other islands:
None identified.

Poaceae

Centosteca lappacea (L.) Desv.
Collection # M372
Description: Procumbent grass with wide flat leaf blades. Common near swampy areas.
Non-medicinal uses: Fed to cattle and swine.
Rotuman name: **Saurag**
Medicinal usage: The leaves are used to treat infections.

Pigs which have developed an infection after being bitten by a dog will be fed the leaves of this grass to promote healing.

Medicinal uses on other islands:
Tahiti: The herb is called **`ofe`ofe** or **`ohe`ohe**. Crushed leaves are applied to sores and fractures and taken internally in remedies for inflammation and **mariri** (fever.) (Whistler 1992:83)
Tonga: The herb is called **mohuku`apopoa**. Leaf infusions are used to treat a variety of ailments. (Whistler 1992:55)

Eleusine indica (L.) Gaertn.
Collection # M532
Description: Common grass of pastures, lawns roadsides and disturbed areas.
Non-medicinal uses: Eaten by cattle, swine and dogs.
Rotuman name: **Pup**
Medicinal usage: Used to treat **siki eji** and **siki efe** (varieties of cutaneous and subcutaneous infections, boils) and **mase susu** (pain and/or lumps in the breast tissue)

Treatment of **siki eji** and **siki efe**: The boils which are treated may either be found as lumps under the skin or as lesions with a spread lump under the opening. In either case the treatment begins with massage of the area around the site of infection with **lol**, coconut oil. The massage is performed in a manner such that the skin is worked constantly towards the center of the lump or lesion. After massage, the healer will chew the fresh, green karyopsis of the E. indica along with the inflorescence stalk. The chewed plant material is then smeared over the oily surface which was massaged. Once the plant is evenly spread over the entire affected site, the healer will begin to blow paired puffs of air over the skin surface. These steps are repeated until the healer feels she is finished with the session. The treatment is repeated once daily for up to five days and in most cases a lump will emerge as a lesion by the third day. If the lump has not emerged within five days, then the healer feels that it will not emerge but will dissipate.

Treatment of **mase susu**: Treatment is as above except the karyopsis are crushed by hand rather than chewed and a small amount of oil will be used to facilitate their spreading over the breast tissues. The treatment is repeated daily for five days with a lesion typically emerging from the lump or painful area within three days. If no lesions occur within five days, then the treatments may continue, although it is felt that the lump or pain will dissipate and no lesion will occur.

Medicinal uses on other islands:
None identified.

Zingiberaceae

Alpinia sp.
Collection # M549
Description: Very small herb, usually below 0.5 meters in height but occasionally up to 1 meter tall. Flowers reportedly are never seen. This could possibly be A. vitiensis Seem.
Non-medicinal uses: None reported.
Rotuman name: **Kapui Rotuam**
Medicinal usage: The most common medicinal usage of **kapui Rotuam** is in **lol**, medicinal massage oil. Additionally the plant is used to treat **ru kia** (sore throats), **koh ta ma koa** (cough and colds with excessive phlegm), and **mamosa** (lethargy, loss of appetite, dry cracked tongue.)

Mature leaves are removed and laid in the sun to dry. After drying, the leaves are mixed with coconut oil, allowed to set for several days and then the leaf material is removed. Alternatively, the dried leaves are mixed with coconut oil as it is being manufactured (see Cocos nucifera L.) and the leaf particulate settles out with no filtration needed. The leaves are given only minor consideration as a healing agent but are very commonly used in medicinal massage oil. The Rotumans consider them as providing only a pleasant scent to the oil.

The young shoots may be mixed in water and the resulting solution drunk to treat **ru kia**, due to excessive smoking.

Treatment of **koh ta ma koa**: Two immature (still crunchy) pseudostems will be mixed with the inner bark from two limbs of **pinau**, Thespesia populnea (L.) Corr. Serr., and two rhizomes of **rag`apua**, Zingiber zerumbet (L.) Sm. The components are crushed together and placed in an **ununu**. The **ununu** is squeezed to release a small amount of juice which is drunk. Small volumes (five to ten milliliters) are given to children and larger volumes are given to adults.

Treatment of **mamosa**: Unopened apical leaves of the **kapui Rotuma** are pounded and added to any other treatment for **mamosa** or may be used to prepare an infusion and drunk alone.

Medicinal uses on other islands:
None identifiable.

Curcuma longa L.
Collection # M560
Description: Rhizomotous herb with stems reaching to 1.5 meters tall. Rarely flowering. Semi-cultivated and propagated by breaking-up and planting the rhizomes.
Non-medicinal uses: A powder made from water extracts of the rhizomes was formerly used extensively as a ceremonial paint. See McClatchey 1993 for an extensive discussion of the traditional non-medicinal uses.
Rotuman name: **Raga**, **Mena** (the non-aqueous powder from the rhizomes or the powder mixed with coconut oil.)
Medicinal usage: The rhizomes and/or the **mena** powder were formerly applied to women in labor. The **mena** is used to treat

mea ta koi (a skin disease possibly fungal, which starts as a red spot on the skin and spreads as a ring then rapidly spreads over the whole body. Said to lead to death if untreated.), **mou huag** (constipation), **li ne uaf** (a badly infected cut), **puna** (boils), **ialila (**recurrent skin blemishes) and is used as a mosquito repellant. Additionally, in the 1950's when there was a severe outbreak of yaws, many of the healers questioned tried to apply **mena** powder mixed with oil to the lesions to control the disease. It was felt that this did reduce the infection. The medicine for this procedure was produced by slowly heating the oil until almost too hot to touch, then **mena** powder was sprinkled into the oil until a "sufficient" quantity was present.

Preparation of **mena** powder: **Raga** is not usually used directly or in a fresh state but is prepared into **mena** and stored for later use. **Mena** is produced from the rhizomes of the **raga** traditionally only by men, although both men and women will use the final product. The men begin by ritually purify themselves through washing, praying, following certain food restrictions and avoiding contact with women, particularly sexual contact. After a day and night of ritual purification, the married men will have the younger men bring to them the tuberous rhizomes of the **raga**. The men clean the orange-yellow rhizomes very carefully. While some are cleaning others begin to prepare a **koua** (oven) in which the product of their labor will be cooked. The cleaned rhizomes (**huni**) are then shredded (**hua**) with a tool called a **tama**. The shredded **huni** is then steeped in warm water and the starchy aspect of the rhizome is worked out by squeezing repeatedly under water. The solution is then filtered with a **sakoto**, Cyclosorus unitus (L.) Ching, leaf. The suspension is now a yellowish-orange color and is called **tau`a**. The suspension is allowed to sit while the suspended particles precipitate. Once the solution has cleared of most of the suspended particles, the water is poured off and fresh water is added to again suspend and wash the orange precipitate. The process is repeated several times. Each man involved removes a bowl of the **mena** from the process and each man places his bowl inside the **koua**. The bowls are cooked and attended all day, through the night and into the next morning. In the morning each man removes his bowl and distributes the now dried powdered **mena**.

The rhizomes were rubbed over the bodies of women in labor by midwives and the **mena** powder would be applied to the body after the child had been born. Alternatively the **mena** would be added to coconut oil which had been boiled with **`ura** Morinda citrifolia L. roots, and this mixture would be rubbed over the entire body of the new mother.

Treatment of **mea ta koi:** Two very young coconut, Cocos nucifera L., fruits are pounded into a fine paste and added to some **lol** coconut oil, and a sprinkle of **mena** powder. The mixture is placed in an **ununu** which is then wrapped by two **`ura**, Morinda citrifolia L., leaves and placed over a fire. Once hot, the **`ura** leaves are removed and the **ununu** placed over the affected area and squeezed to release hot fluids onto the site. Treatment is repeated daily for up to 5 days. No bathing is allowed during the treatment and the affected area must not get wet.

Treatment of **mou huag**: A pinch of the **mena** powder will be mixed in a half cup of water and drunk to relieve constipation.

Treatment of **li ne uaf**: **Mena** powder is mixed with oil and massaged into the cut. The cut will sting and feel like it is "opening again."

Treatment of **puna**: **Mena** mixed with oil is applied and massaged into the skin on and around the site of the boil. Additional oil may be used for further massage. This is said to cause the boil to rise to the surface.

Treatment of **ialila**: **Mena** powder is applied dry to the site of a skin blemish. The powder is rubbed in thoroughly, then oil is applied over the site. The treatment may be repeated daily until the mottling fades. This same treatment is used when a slight blemish occurs on the skin over a hardened area of tissue. These blemishes are often referred to as recurrent "birthmarks."

Use as a mosquito repellant: The earliest European explorers to Rotuma noted that the islanders were constantly covered in the **mena** powder and oil (Gardiner 1898.) One of the reasons given for this extensive usage was that of a mosquito repellant. The **mena** mixed with coconut oil was applied liberally to the body with repeated applications as needed.

Gardiner (1897:492) reported the **mena** to be used along with **ifi**, Inocarpus fagifer (Parkinson) Fosb. fruits in a poultice for topical ailments.

Medicinal usage on other islands:

Cook Islands: The herb is called **renga**. Infusions of the herb are used to treat urinary tract infections and septic puncture wounds. (Whistler 1992:141)

Fiji: The plant is called **avea, cago, haldi, rerega**. The rhizomes are used to treat symptoms of eating a poisonous fish. (Weiner 1984:102)

Samoa: The herb is called **`ago**. The rhizomes mixed with the unopened leaves of **fue sina**, Vigna marina (Burm.f.) Merr. and **matalafi**, Psychotria insularum A.Gray, are used to treat **mumu lili** (seizures, fevers and dizziness which strikes infants and toddlers.) (Cox 1989:493, 1990:131-3) The rhizomes are also used to treat rashes and internal distress. (Cox 1993)

Tonga: The herb is called **ango** or **enga**. The powder made from the rhizomes was traditionally applied to the mother and child at childbirth to keep them warm and to induce lactation. (Gifford 1929) The powder is applied to **hangatamaki** (boils), **mea hafe** (a rash which looks like a burn and may be accompanied by fever), **pala** (sores on the skin) and **pala va'e** (skin ulcerations on the foot and leg.) (O'Rourke-George 1989:177-8) The **enga** mixed with coconut oil is given to babies with white tongues. The powder is applied with leaves to children suffering from **kulokula** (fever, chills, and red swellings on the skin), **mea hafe** (a rash which looks like a burn and may be accompanied by fever), **mea lafi** (a rash around a child's ear, cheek or armpit), **pulepule kai** (an abscess that bursts, appears like ringworm and spreads), to treat flatulance and worms in children and **punga** (small abscesses on the neck or armpit that are swollen and lumpy.) (Parsons 1981) The powder in used to treat sores on a child's body. (Whitcombe 1930)

``Uvea: The herb is called **ango**. The prepared powder is applied to sores and rashes. (Whistler 1992:141)

Zingiber zerumbet (L.) Sm.
Collection # M418
Description: A common herb found in and around villages as well as under second growth forests. Flowers are white, occurring on a separate stalk from the foliage.
Non-medicinal uses: None reported.
Rotuman name: **Rag`apua**
Medicinal usage: Used to treat: diabetes, **koho** (coughs and colds), and **mamosa** (lethargy, loss of appetite, dry cracked tongue.)

The rhizomes are crushed in water and the fresh solution may be drunk each morning to treat diabetes. The individual being treated is instructed to avoid sugar, and fatty or salty foods. Diabetes is considered as an introduced disease. This treatment unlike traditional treatments must be taken every day for a very long period of time (often years..) before it can be discontinued without the disease state returning.

For the treatment of **koho**: Two rhizomes are cleaned of loose dirt and the outer layer of tissue is scrapped off and discarded. The inner rhizome is crushed and added to the inner bark of two limbs of **pinau**, Thespesia populnea (L.) Corr. Serr., and two immature stems of **kapui Rotuam**, Alpinia sp. . The mixture is crushed, then placed in an **ununu**. The **ununu** is squeezed to release a small amount of juice. Small amounts (five to ten milliliters) are given to children and larger amounts are given to adults.

For coughing that is persistent and excessive a solution of the rhizomes will be drunk in addition to a special type of massage being performed on the back and chest while laying down. The massage which involves tapping on the body as well as rubbing, highly resembles tympanic therapy used in western medicine to loosen mucous from the lungs.

Treatment of **mamosa**: Several young stems are crushed and extracted in water to provide a solution. The solution is swished around the mouth and then swallowed. This may be used daily for as long as needed for active cases as well as for prevention. The formulation may also include an equal amount of crushed and water extracted **pinau**, Thespesia populnea (L.) Corr. Serr., bark.
Medicinal uses on other islands:
Fiji: The plant is called **caga, beta, danidani, drove,** and **layalaya**. The rhizomes are used to remedy the effects of eating poisonous fish, as a cough remedy, for diabetes and thrush. (Weiner 1984:103)
Futuna(east): The herb is called **ago a lulu**. Juice is dripped from the leaves onto wounds to promote healing. "A bright orange ointment is made from the root and used as a cosmetic and as protection against the sun." (Biggs 1985:128) (This preparation sounds much more like the preparation of Curcuma longa L. and thus may be a misidentification.) The rhizomes are used to treat wounds. (Whistler 1992:215-6)
Samoa: The herb is called **`ava pui**. The rhizomes are used medicinally. (Cox 1989:494) The rhizomes are used to treat stomachache and ulcers. (Whistler 1992:215) The nodes are used to treat inflammation. (Cox 1993)
Tonga: The herb is called **anga** or **angoango**. The rhizomes are used to treat **pala ngutu** (sores in the mouth especially in children), **pala fefie** (oral thrush), **kiatolo** (tooth ache, swollen gums, with dark blood and pus exuding from the gums), **langa kete** (abdominal distress), **pala ngakau** (intestinal or gastric ulcers), constipation, **totoma'olunga** (high blood pressure), **mofi Tonga** (Tongan fever) and **suka** (diabetes.) The rhizomes are taken both internally and applied externally for redness around a baby's nose and buttocks, and for mucous in the throat. (O'Rourke-George 1989:179-80) The rhizomes are used to treat **kahi** (internal blockage) and for cessation of menses. (Singh et al 1984)

Dicotyledonae

Anacardiaceae

Spondius dulcis Park.
Collection # M192
Description: Large deciduous tree with edible fruit. Common near villages.
Non-medicinal uses: The fruits are eaten raw or cooked with other food items.
Rotuman name: **Vi**
Medicinal usage: The leaves are used to treat **mamosa** (lethargy, loss of appetite, loss of weight, dry cracked tongue) and **ru ef** (stomach aches) or **filo`u** (headache.)

Treatment of **mamosa**: The leaves may be crushed and prepared as an infusion or may be chewed daily.

Treatment of **ru ef** or **fili`u**: The inner bark is mixed with bark from the **tog oi**, Terminalia glabrata A.Gray, and **pinau**, Thespesia populnea (L.) Corr. Serr.. This mixture is crushed together and consumed with water to relieve the symptoms. The treatment is usually only given once.
Medicinal uses on other islands:
Fiji: The plant is called **Wi**. The stems are given after a false pregnancy and for weakness following childbirth. The bark is taken to cleanse the bowels, to procure abortion, promote sterility, treat fish poisoning and is used for treatment of cataracts. (Weiner 1984:59)
Futuna: The tree is called **vi**. Bark infusions are used to treat headaches and fever. (Whistler 1992:202)
Samoa: The tree is called **vi**. The fruits mixed with coconut milk and tapioca Manihot esculenta Crantz, is fed to women who have just given birth. The leaves are also used medicinally. (Cox 1989:493, 1990:129-30) The leaves are used to treat eye infections (Cox 1993)
Tahiti: The tree is called **vi**. Fruit is used to treat liver problems, for fish or food poisoning, and ear infections. The leaves are used as an astringent for sore throats and mouth infections. (Whistler 1992:202)
Tonga: The tree is called **vi**. The bark is used to treat **langa kete** (abdominal distress), **hake vela** (heart burn), **'au** (continuous discharge of blood from the uterus), and **feitama kovi** (morning sickness, hyper-emesis.) The young leaves are used to aid small children who cannot swallow their saliva or

food. Leaves are used to treat **mata kovi** (sore or diseased eyes) and are applied to **pala huhu** (sores on the breast.) (O'Rourke-George 1989:60-1) The bark is used to treat diarrhea. (Weiner 1984:59)
The bark is taken to stop bleeding in pregnant women prior to their due date. (Singh et al 1984)

Annonaceae

Cananga odorata (Lam.) Hook.f. & Thoms.
Collection # M071
Description: A common forest tree, sometimes trimmed to remain short, but often becoming tall if not near a village. Flowers are yellow and aromatic. Trimmed trees may flower all year long.
Non-medicinal uses: The wood is used to make canoe hulls and the flowers are worn ornamentally.
Rotuman name: **Moskoi**
Medicinal usage: The flowers of this species are added to massage oil, **lol**, and applied in that form for many different ailments.
The flowers may be dried or used fresh, when added to coconut massage oil to provide a pleasant scent.

Bennett (1832:474) reported the Rotumans using the flowers to scent coconut oil. He further noted that samples of dried flowers which he had procured, retained their scent even 12 months later.
Medicinal uses on other islands:
Fiji: The tree is know as **mokosoi**. The stems are used to treat gonorrhea, high blood pressure, back pains, dizziness and headaches. The bark is used to promote fertility, treat toothaches and migraine headaches. (Weiner 1984:60)
New Guinea: Sap and juice are inhaled to treat asthma. The leaves are rubbed on skin to relieve irritation (Weiner 1984:60)
Samoa: The tree is called **moso`oi**. The bark is used medicinally to treat asthma. (Cox 1989:493)(Cox 1993) The bark is employed as a laxative. (Whistler 1992:131)
Tonga: The tree is called **mohokoi**. Bark is used for stomach problems and leaves are used to treat infants with diarrhea and to treat severe boils. (Weiner 1984:60) The bark is used to treat stomach complaints, **langa kete** (abdominal distress), **makehekehe** (severe recurring abdominal pain), and **kahi** (disease caused by internal blockage and stiffness.) The leaves are used to treat **engeenga** (jaundice) in babies, **langa `ulu** (headache), **lavea** (wounds), **`ulufi** (a boil issuing pus), and for **pala huhu** (sores on the breast.) (O'Rourke-George 1989:62-4) The leaves are applied to aching joints in **sausau mate** (one side of the body is "dead" or paralyzed with numbness occurring in certain parts of the body. (Parsons 1981)

Apiaceae

Centella asiatica (L.) Urb.
Collection # M169
Description: Small herb found growing low to the ground in slightly shaded areas often among leaf litter.
Non-medicinal uses: None reported.
Rotuman name: **Ti togo**
Medicinal usage: Used to treat **ru** (generalized pain although often focused in the chest), and **ru ef** with **san** (stomach cramping/diarrhea.)

Treatment of **ru**: Six to eight pairs each of **ti togo** leaves and **joan ne pija**, Triumfetta rhomboidae Jacq., leaves are crushed with several pairs of unopened **julia ne moa** Microlepia scaberula (Kuhn) Mett. fronds. The mixture is placed in an **ununu** and squeezed to release a solution. The solution is drunk in the morning, at noon and in the evening. If there is soreness associated with the pain, then massage will be performed using the dregs from the **ununu** as the massage lubricant. If the dregs are not used for massage then the **ununu** may have water added to it and more doses wrung from it. The patient is instructed to avoid salty, fatty or sweet foods.

Treatment of **ru ef** with **san**: Six to eight pairs of leaves are selected and crushed until quite juicy. The leaves are then mixed with crushed **joan ne pija**, T. rhomboidae leaves and a small amount of water (not sea water or coconut water). Alternatively the juice is leached from the crushed leaves into a very small amount of water or even dripped into a container with no water at all. A little water is said to be good for the mixing process. The mixture is taken internally but occasionally the pulpy residue is used in massage of the body.
St.John (1938:voucher 18938) recorded that the juice of this species was used "medicinally for chest colds or for sore throat."
Medicinal uses on other islands:
Fiji: The plant is called **totodro**. Leaves are used to treat rheumatic aches or swelling of the joints, bleeding ulcers, stomach aches, diarrhea, convulsions, fractured bones, eye injuries, lumps under the skin with an itchy feeling and for promotion of miscarriage. Unnamed plant parts are used to treat sickness inside the chest, hemorrhoids, severe chest pain and intestinal cramps. (Weiner 1984:99-100)
Niue: The herb is called **tono**. The leaves are applied to swellings and boils. (Whistler 1992:136)
Samoa: The herb is called **tono** or **togo**. The leaves are used medicinally. (Cox:1989:493) The leaves are used to treat eye ailments, migraine headaches, and occasionally swellings and boils. (Whistler 1992:136) The leaves are used to treat inflammations, bacterial, eye infections and sunblindness. (Cox 1993)
Tonga: The herb is called **tono**. Leaves are used to treat convulsions in infants. (Weiner 1984:100) The leaves are used to treat **tapitopito** (condition of newborns in which there is a hollowness around and discharge from the umbilical area), **mavaeua** (condition in infants characterized by a wide aperture of teh fontanelle, which may become hardened), **mea hafe** (rash which looks like a burn and may be accompanied by fever), **mea fele** (rash or fine granular "pimples" that are red, ooze, and spread), **hangatamaki** (boils), and are applied to mosquito bites. (O'Rourke-George 1989:171-2) The leaves are applied for induration of the breasts with redness and with coconut oil for infection of the nipple, with watery discharge. (Singh et al 1984)

Apocynaceae

Cerbera manghas L.
Collection # M308
Description: Small to medium sized tree growing in low forests near the ocean. Abundant on the unpopulated islands adjacent to Rotuma. Leaves and stems with copious white milky, sticky sap.
Non-medicinal uses: None reported.
Rotuman name: **Giagia**
Medicinal usage: Used to treat **kapkapa** (scabies, itching skin and irritated areas in patches), **mase huhual** (swelling and redness sometimes over the entire body), and **mamasa** (itching)

The leaves are used to treat **kapkapa**, **mase huhual**, and **mamasa**. The preparations and applications are the same for each of the indications. Four to six fresh leaves are mixed with **lol** (coconut oil), either by rubbing the oil over and on the leaf surfaces or by adding whole leaves to a bottle of oil and allowing the mixture to sit until needed. This mixture may sit for weeks to months so it is not absolutely a fresh preparation, although the original oil and leaf mixture interaction involves fresh leaves. For immediate use, the oil is rubbed over the leaves by hand, then the healer massages the oil into the area which is affected. After the oil has been worked in, the whole leaves will be rubbed on the area and more oil may be added with the entire massage time taking up to an hour or more. When oil which has been previously prepared and set aside is used, only the oil is used and the leaves are not rubbed on the body. Treatments are usually only once daily but with more severe or widespread disease states the massage may be twice a day. Five to ten days (treatments) are usually required before the skin clears and thus health is restored. There are no cultural restrictions on the individual being healed but it is important to watch for a new outbreak as a recurrent type called **tui huhual** (entire body swollen, red, and without a fever) which is considered to be much more difficult to heal and may be lethal.

St.John (1938:voucher 19112) noted that crushed leaves with coconut oil were used as a salve for skin sores.
Medicinal uses on other islands:
Fiji: The tree is called **drani toloni rewa, rewa, savirewa** and **vasa**. Sap is given to parents whose offspring have died. Leaves are chewed and inhaled to treat migraine headaches. The leaves are used to treat rheumatism. Undesignated plant parts are used to treat pain in the eye sockets at sunrise and sunset; and for fish poisoning. (Weiner 1984:60)
Samoa: The entire plant is used medicinally. (Cox 1989:493) The leaves with coconut oil are applied to skin sores. (Whistler 1992:65)

Asteraceae

Mikania micrantha H.B. & K.
Collection # M109
Description: Trailing weedy vine, commonly outgrowing surrounding grasses and other small plants to become a thick mat which smothers out its competition.
Non-medicinal uses: The stems and leaves are torn away in clumps and used as packing around **papula**, Colocasia esculenta (L.) Schott, **mereni** Citrullus lanatus (Thunb.) Matsum. & Nakai and other foods which must be carried in

baskets for some distance. This plant is considered as a weed and has few uses.
Rotuman name: **`Ai raurau**
Medicinal usage: Used to treat **ra' meamea** (minor cuts and wounds), **susun** (burns) and **mase susu** (pain and/or lumps in the breast tissue).

Treatment of **ra' meamea**: The leaves and stems are crushed and rolled between the hands to release a juice which is applied to cuts to stop bleeding. This may even be used as first aid of large or deep wounds. After the juice has been applied more leaves will be placed over the wound and leaves or vines of any larger species will be used to form a bandage for protection and compression.

Treatment of **susun**: Fresh leaves and stems are either chewed or crushed in the hands and placed on the burned area of skin. The area is not massaged and the plant material will be frequently replaced.

Treatment of **mase susu**: Fresh leaves and stems of **`ai raurau** are rolled between the hands until well crushed and the juice dripped on the breasts. A pair of **usi**, Euodia hortensis Forst.f., leaves is then carefully brushed over the breasts in strokes which end away from the body. The leaves are stroked in this manner until the healer feels that the session is completed. The treatment is repeated daily for five days with a lesion typically emerging from the lump area within three days. If no lesions occur within five days, then the treatments may continue, although it is felt that the lump or pain will dissipate, no lesion will occur.
Medicinal uses on other islands:
Fiji: The plant is called **wa bosucu**. Leaves are used to stop bleeding, applied to swollen areas, and are applied to boils in the armpit. The vapor of cooked leaves is used to aid in removal of fish barbs. (Weiner 1984:66) The leaves are rubbed on bee stings. (Whistler 1992:172)
Niue: The vine is called **fue saina**. The plant is used to treat itches, sooth stings from wasps or bees, and for stanching bleeding wounds. (Whistler 1992:172)
Samoa: The vine is called **fue saina**. The plant is used the same as above in Niue. (Whistler 1992:172)

Barringtoniaceae

Barringtonia asiatica (L.) Kurz
Collection # M167
Description: Common tree found in low forests, near the ocean and sometimes numerous on nearby uninhabited islands.
Non-medicinal uses: B. asiatica fruits are traditionally used as a source of fish poisons and the young fruits have been used as toys (tops) by children. The wood is occasionally used in the construction of small hand tools such as adz or chisel handles. The wood is considered as undesirable for construction.
Rotuman name: **Hufu**
Medicinal usage: The fruits or the bark may be used to treat **ru**

al (toothache) and the bark is used to treat **ru ef** (abdominal pain) and **hun ha** (upper leg and sometimes lower abdominal pain.)

Treatment of **ru al**: Three or four fruits are cracked open and the embryos and cotyledons removed for use. These are pounded finely and resulting pulp is placed in a B. asiatica leaf. The leaf is folded into a cone and the tip of the cone placed in the mouth over the painful tooth. The cone is squeezed so that juice drips onto the site of the pain. Care is taken to ensure that as little as possible is swallowed since the patient will become "groggy", disoriented and dizzy. The fruits may also be crushed to a fine pulp and a small amount of the pulp placed over the area of the toothache. The bark may be prepared in a similar fashion with it being pounded finely and placed in the leaf to use in the same manner for a toothache. Alternatively the bark may be rinsed in water for a few minutes until the water becomes slightly murky. The solution is allowed to settle and a cup is used to retrieve some of the solution without the bark fragments which either sink to the bottom or are brushed aside. The solution is used as a mouth rinse for the toothache wherein the solution is rinsed around then expectorated with a minimum being swallowed. One treatment is sufficient to stop the toothache.

Treatment of **ru ef** and **hun ha**: Bark is stripped off to form about two to three handfuls which is pulverized with a stone mortar. The pulverized bark is mixed with **lol** (coconut oil) until it is thoroughly saturated with oil. Mixing is performed by hand kneading the mass. The oil is then strained out of the bark with a leaf of the **sakoto** Cyclosorus unitus (L.) Ching, or with an **ununu**. The cleaned oil is the desired product and the bark is discarded. The oil produced is used as a massage oil over the sights of pain on the abdominal area and on the upper legs. If knots are felt under the skin, the healer will work the knots to a central point where it is said that the disease will condense and then resolve. Massage may be repeated over the course of several days until the pain subsides and/or a boil rises to the surface and ruptures. The oil is not to be consumed although it was not known to the healer why this was important or how it was possible when the oil is being placed on the legs and abdomen, but it is a standard warning traditionally given to each patient.

Medicinal uses on other islands:

Cook Islands: The tree is called **`utu**. Grated seeds mixed with coconut cream are applied to burns. (Whistler 1992:93)

Fiji: The tree is called **vutu**. Bark is used to treat chest pains or for vomiting resulting from heart trouble. (Weiner 1984:77)

Tahiti: The tree is called **hutu** or **hotu**. Grated seeds are used to treat septic wounds and a few other ailments. (Whistler 1992:78)

Tonga: The tree is called **futu**. The leaves or bark are used in a bath for **pala** (sores or lesions) on the skin. (O'Rourke-George 1989:68) The bark is used to treat allergies. (Bloomfield 1986)

Caricaceae

Carica papaya L.

Collection # M190

Description: Very common tree found in most cultivated areas as well as in and near villages and roads. Trees are usually short, with single stems not exceeding 5 to 6 meters in height.

Non-medicinal uses: The fruits are eaten with several varieties being recognized and cultivated.

Rotuman name: **Esu**

Medicinal usage: Used to treat **ru al** (tooth ache) or **tuga** (an exposed nerve in a tooth.)

Treatment or **ru al** or **tuga**: Several fresh roots are collected and cleaned in water. The roots are chewed or pounded until pulpy, then rinsed in water to provide a suspension. The suspension is swished in the mouth and over the area of the toothache, then expectorated. The pulverized roots may alternatively be placed in the mouth without water as a poultice. This may be repeated as often as desired. The treatment will provide relief for a moderate toothache but for a more severe problem, the **majila**, Excoecaria agallocha L., is used.

Medicinal uses on other islands:

Fiji: The plant is called **maoli, weleti** and **uto**. Bark is used to treat toothaches. The stem juice is used to treat boils on the legs with the bark held on the boil. Stem sap is applied to wounds. The root is employed to treat yellow breast milk and to promote lactation. (Weiner 1984:64)

Micronesia: Roots are chewed to produce a juice which is applied directly to ulcers of the cornea of the eye. The latex is applied to tinea sores. (Weiner 1984:64)

Samoa: The tree is called **esi**. The inner bark is used to treat toothaches. (Whistler 1992:133)

Tahiti: The tree is called **`i`ita**. Grated seeds, with or without the fruit pulp, are used as a vermifuge for intestinal worms. The flowers are employed in the treatment of high blood pressure. (Whistler 1992: 133)

Tonga: The tree is called **lesi**. Juice is taken for **hela** (asthma) and is applied to wounds. The latex is used to numb toothaches. Bark is used to treat **fakalele** (diarrhea.) (O'Rourke-George 1989:69-70) The seeds are used a purgative. (Parsons 1981) Stem scrapings are taken for failure of lactation. (Singh et al 1984)

Casuarinaceae

Casurina equisetifolia Stickm.

Collection # M194

Description: Trees with very hard wood, found near the coast, almost on the beach or above sea cliffs. Tend to be in drier locations.

Non-medicinal uses: The hard wood was formerly used to make clubs, spear tips and other tools and weapons.

Rotuman name: **Toa**

Medicinal usage: Used to treat **tu kiog** (difficulty in maintaining a menstrual period.)

Treatment of **tu kiog**: A strip of the inner bark is taken from a larger tree and is pounded with a stone until shredded. The shredded bark is then mixed with water and worked vigorously by hand in the water. The same procedure is carried out with bark from the **tar fai** Micromelum minutum (Forst.f.) Seem. and/or the **tog oi** Terminalia glabrata A.Gray,

with the resultant solutions being mixed. The final mixture is filtered with an **ununu** and drunk. Massage may or may not be given with this treatment since this treatment is also prepared and self administered by non-healers.

Medicinal uses on other islands:

Cook Islands: The tree is called **toa**. The grated bark is used to treat mouth infections (as an emetic) and urinary tract infections. (Whistler 1992:135)

Fiji: The tree is called **nokonoko**. Stems are used to remedy serious headaches and the bark is used for migraine headaches and as a mouthwash. Leaves are used to treat leprosy lesions. (Weiner 1984:66-67)

Samoa: The tree is called **toa**. Bark is used to treat coughs, asthma, and diabetes. (McCuddin 1974)

Tonga: The tree is called **toa**. The bark is used to treat **pala ngutu** (sores in the mouth especially in children) and abdominal distress with sharp shooting pains. (O'Rourke-George 1989:70-1) The bark is used as an emetic. (Bloomfield 1986) The bark is used to treat **kahi muifa'ele** (hemorroids.) (Parsons 1981) Bark is drunk to stop menses as well as for menorrhagia, and is employed in an infusion for **kahi** (illness believed to be caused by internal blockage or stiffness) specifically if causing painful urination. (Singh et al 1984)

Chrysobalinaceae

Atuna racemosa Raf.

Collection # M358

Description: Tall forest tree found throughout the island.

Non-medicinal uses: None reported.

Rotuman name: **Pipi**

Medicinal usage: The fruits are used as a scent in **lol,** coconut oil.

The fruits are pealed and the seed removed and crushed. The crushed seed is then added to hot coconut oil and allowed to sit. The fruits are considered to give the massage oil a pleasant scent and this is one of the more popular scents added by healers.

Medicinal uses on other islands:

Fiji: The tree is called **Sa**. Bark is used to treat high blood pressure. (Weiner 1984:92)

Samoa: The fruits are used medicinally. (Cox 1989:493)

Tonga: The tree is called **pipi fai lolo**. The seeds are used in the production of massage oil. (Whistler 1992:57)

Clusiaceae

Calophyllum inophyllum L.

Collection # M095

Description: Very common tree along beaches and on mountain ridges.

Non-medicinal uses: The trees are planted as wind breaks and the wood is used extensively in the manufacture of canoes, bowls, scrapers, drums and many furniture items. The fruits are used to make a dye for tatoos.

Rotuman name: **Hefau**

Medicinal uses: Used to treat **kur mog** (irritated scalp with red peeling skin), **li ne uaf** (infected wounds), **kapkapa**(scabies or other scaling skin diseases), and **pa mafa** (eye injury)

Treatment of **kur mog**: Mature fruits which have turned black are peeled and the inner hard white seed is scrapped on a rock to produce a fine paste/powder. This is placed in a container and cooked over a fire until a clear solution forms. The solution is strained and the filtrate discarded. The solution is applied to the scalp and other areas of skin irritation. Prior to application the individual will bathe in the ocean and dry off, avoiding the use of fresh water. The solution may then be applied. A shorter method which may be used by non-healers is to scrape the seeds into a pulp and apply the paste to the scalp. In either case the individual must avoid washing in the ocean for the rest of the day. The treatment may be reapplied daily with the skin clearing in three to five days.

For **li ne uaf** (small cuts which become infected with white exudate): The area must first be washed in the ocean until all of the exudate is removed, then a poultice of black (mature) **hefau** fruits is prepared and applied to the cut. The poultice is prepared by removing the outer black hull of the fruit and grinding the inner yellow fruit on a smooth rock. The ground fruit forms a paste which is then applied.

Treatment of **kapkapa**: unopened light yellow to light green leaves are collected and crushed in fresh water. The solution is then used for bathing.

Treatment of **pa mafa**: Paired leaf shoots are chewed and placed in a mature **hefau** or **tiere** Gardenia vitiensis Seem., leaf which has been rolled into a cone. The cone will then have a small hole lanced in the lower apex. The juice is then dripped onto the affected area through the point of the cone, by squeezing on the cone. The treated eye will sting at first, but will eventually feel better. The treatment should only be used once, although if the irritation or pain in the eye persists to the following day, a fresh application may be used. The affected eye must not be washed for a day or two and the individual must avoid the ocean. Alternatively a larger volume may be mixed in a container and the face held under the solution with the eyes open to rinse the eyes more thoroughly. The eyes will at first be very sore but afterward will feel better and vision will return. Even if the eye has been cut, this treatment does not need to be repeated. The eye may still appear to be wounded but there will be no pain associated with the injury even on the following day.

Gardiner (1897:492) reported that the oil produced from the fruits was used as a massage oil.

Medicinal uses on other islands:

Cook Islands: The tree is called **tamanu**. A bath is prepared from soaked leaves in sea water which is then used to treat rashes, inflammations, infections and scabies. (Whistler 1992:129)

Fiji: The tree is called **dilo**. The leaves are used in preparing an eyewash for removing foreign objects and for eye pain.

Samoa: The tree is called **fetau**. The leaves are used to treat inflammation. (Cox 1989:493)(Cox 1993) The leaves are used to treat conjunctivitis, sore eyes and are used in a bath to treat rashes, inflammations, infections and scabies. (Whistler 1992:129)

Tonga: The tree is called **feta'u**. The leaves are used in medicinal baths to treat **'avanga** (spirit induced illness) and **pala huhu** (sores on the breast.) Steam from a decoction of leaves in inhaled for severe fever. (O'Rourke-George 1989:91-2) The leaves are used in a medicinal bath to treat **hangatamaki 'alu hui** (abscess of the bones.) (Parsons 1981)

Combretaceae

Terminalia catappa L.
Collection # M388
Description: Large coastal tree.
Non-medicinal uses: None reported.
Rotuman name: **Tog oi**, (The fruits are called **Salisa**.)
Medicinal usage: Used to treat **tu kiog** (difficulty in maintaining a menstrual period), and **mamosa** (lethargy, weight loss, dry cracked tongue, loss of appetite.)

Treatment of **tu kiog**: A strip of the inner bark is taken from a larger tree and is pounded with a stone until shredded. The shredded bark is then mixed with water and worked vigorously by hand until a colored solution forms. The same process is carried out with strips of bark from the tarfai, Micromelum minutum (Forst.f.) Seem. and/or Casurine equisetifolia L. The chosen bark solutions are mixed and filtered with a **sakoto**. A large volume of the prepared solution is drunk by the affected woman. Massage is said to be occasionally used with this treatment but is not common since this treatment may be prepared by non-healers and self administered.

Treatment of **mamosa**: An infusion of the inner bark is prepared and drunk. This may be given for a child with **mamosa**, teen age children do not usually get **mamosa** and adults would not usually be given this treatment but another for this disease.

St.John (1938:voucher 1991.418) recorded that the tree was used medicinally.
Medicinal uses on other islands:
Futuna(east): The tree is called **talie**. Juice from the leaves is placed on the lips of a baby whose mouth has been burned by hot food and drink, and the juice is dripped into wounds to encourage clotting. (Biggs 1985:125)
Samoa: The tree is called **talie**. The meristems are used to treat inflammation. Bark is employed in menstrual problems and maternal complications. (Cox 1993)
Tahiti: The tree is called **`autara`a** or **`aua**. The Leaves were used to treat bronchitis. (Nadeaud 1864) The leaves are used to remedy tuberculosis. (Whistler 1992:208)
Tonga: The tree is called **selie**. Inner bark is is prepared into an infusion and given to infants for thrush and other mouth infections. (Whistler 1992:207-8)

Convolvulaceae

Ipomoea littoralis Bl.
Collection # M551
Description: Creeping vine with pale blue flowers.
Non-medicinal uses: None reported.
Rotuman name: **Johea**
Medicinal usage: Used to treat **te hual** (boils which have not yet ruptured) and **kia oar ru** (sore throat with lesions and sometimes exudate in the throat.)

Treatment of **te hual**: Boils which have not yet ruptured may be treated with a leaf paste. The paste is prepared by pounding up the leaves, and placing them in a cloth with enough well water to make a thick paste. The cloth with the crushed leaves wrapped in it, is squeezed over the lump in the skin (unopened boil.) The solution is used to dampen the area prior to and following massage to bring the boil to the surface. The treatment is repeated daily until the boil emerges. After the boil emerges a different herbal treatment using **armea** bark, Pipturus argeneus (Forst f.) Wedd. and **`ura** leaves, Morinda citrifolia L. is followed. **Johea** is not used on open boils.

Treatment of **kia oar ru**: Pairs of leaves are crushed and placed in an **ununu**. The **ununu** is squeezed over a cup of coconut juice to release a few drops of solution into the coconut juice. The coconut juice is then drunk to relieve the sore throat. Treatment may be repeated several times daily.

This species is said to have had many medicinal uses in the past, but the healers who are said to have used it extensively are dead and did not pass on their knowledge.
Medicinal uses on other islands:
Cook Islands: The vine is called **papati**. Boiled stems and leaves are given to infants with convulsions. (Whistler 1992:94)

Ipomoea pes-caprae (L.) R.Br.
Collection # M368
Description: Vine with numerous leaves, found growing in the upper edge of the high tide zone, forming dense mats of foliage above beaches, and is sometimes found slightly inland.
Non-medicinal uses: None indicated.
Rotuman name: **Puka**
Medicinal usage: Used in **vai ne asu vau haina** (medicine which promotes easy child delivery), and to stop excessive menstrual flow.

Treatment with **vai ne asu vau haina**: Three to four pairs of **puka** leaves are selected and crushed. The pulp is placed in water which is then strained with an **ununu**. The solution is drunk once a week during the ninth month of pregnancy. While gathering the **puka** leaves, the healer will be given a sign which will indicate some characteristic of the child. If the healer is asked to provide the medicine and must look for the leaves at night, then an encounter with another person in the dark will indicate that twins will be born. If while gathering the leaves, the healer is overcome with a bad feeling, then the baby will die. Many other signs are possible, but all will occur while the medicine is being prepared.

Treatment of excessive menstrual flow: The same treatment as above is prepared and given in a strong dose for three dosages. Menstrual flow should return to normal. Any solution which is left over along with the leaves which were extracted must be discarded into the ocean by the healer for the treatment to be effective.
Medicinal uses on other islands:

Fiji: The plant is called **lawere,** or **yale yale**. Leaf buds are taken for nausea and stomach pain. Leaves are taken postpartum to "clean out the female reproductive system", promote menstruation, and are given during labor to relieve pain and hasten delivery. Stalk fluid is taken to cure gonorrhea. (Weiner 1984:68)
Samoa: The leaves are used to treat inflammation. (Cox 1989:493) (Cox 1993)

Cucurbitaceae

Zehneria mucronata Bl.
Collection # M534
Description: Rare trailing vine found in edges of plantations.
Non-medicinal uses: None reported.
Rotuman name: **Jou ne atua**
Medicinal usage: Used to treat **tausun** (fevers that may cause seizures) and **mamosa** (lethargy, dry cracked tongue, and loss of appetite.)

Treatment of **tausun**: Four to five pairs of leaves are crushed and placed in an **ununu**. The **ununu** is placed in a small amount of water and squeezed to release a solution. The solution is then drunk one time to relieve the fever. Alternatively the solution may be prepared with the addition of **titogo** Geophila repens (L.) I.M.Johnston, leaves to the **ununu** mixture.

Treatment of **mamosa**: A solution is prepared in the same manner as above and drunk daily until the symptoms subside.
Medicinal uses on other islands:
None identified.

Dioscoreaceae

Dioscorea bulbifera L.
Collection # M225
Description: Very common, fast growing creeping vine found in most parts of the island.
Non-medicinal uses: The aerial tubers are used as famine foods.
Rotuman name: **Fui**
Medicinal usage: Used to treat ocular infections, **re** (irritations) and to remove fragments from the eye.

Treatment of ocular infections and irritations: Pulp from the vines is squeezed out of the vine and applied to the eye. The eye is rinsed repeatedly and will begin to feel numb rather than irritated.

Removal of fragments from the eye: A piece of vine is selected that appears to be well hydrated. The vine is rolled between the hands to break down the inner structures, softening the plant tissue. The skin of the vine is then carefully peeled off to reveal the pulp and juice inside. The strand of vine is brushed across the eye to capture the fragment or to clear the eye of obstructions. The eye may begin to feel numb after application.

After each of the above treatments, the patient is instructed to avoid any form of fire or smoke for the following two days.

Medicinal uses on other islands:
Futuna(east): The young leaves are used as a dressing for infected wounds and sores. (Biggs 1985:128)

Euphorbiaceae

Acalypha grandis Benth.
Collection # M 573
Description: Small plant under 1 meter in height which grows in disturbed areas and along roadsides.
Non-medicinal uses: The leaves are eaten with coconut milk during times of famine.
Rotuman name: **Karposi**
Medicinal usage: Used to treat **mase `uf** (a red rash and inflammation which begins on the legs, arms, fingers and or toes and spreads towards the body trunk.)

Treatment of **mase `uf**: Typically with a case of **mase `uf**, only massage is used, but in more extreme cases where the skin has broken open and pus has exuded, the herbal treatment of the leaves will also be used. The leaves are chewed by the healer, then spread over areas with lesions. The areas are massaged with the massage intended to "move" the disease toward the lesions, and subsequently out of the body. Massage is repeated daily for three days. Following each massage session, freshly chewed leaves will be added to the lesions. Individuals under treatment are prohibited from eating in their own house, drinking hot or cold drinks, eating fatty/oily foods or bathing. The healer and any party which travels with her to the home of the patient may not eat in the patients home throughout the course of treatment. When the three day therapy is completed the healer either declares a successful treatment, indicating that the disease will subside without further treatment, or the healer will declare that the treatment used was not correct, thus another healer will need to be seen for the proper treatment.

Two Rotuman varieties of A. grandis are recognized: **mi`a** (red leafed) and **jarau** (green leafed.) The red leafed variety is used for the treatment of adults and the green leafed variety, which is considered as a weaker medicinal form, is used on children.

St.John (1938:voucher 18994) documented its use as a poultice of crushed leaves which was placed on boils to draw pus.
Medicinal uses on other islands:
Futuna(east): The plant is called **kala `apusi**. The bark is used to treat **gaegae** (lassitude and general weakness) to restore **makeke** (energy and strength.) It is applied for body pains, and to treat **tulu`i** (headache.) (Biggs 1985:123)

Aleurites moluccana (L.) Willd.
Description: Extremely rare now, although once a common tree.
Non-medicinal uses: The fruit was formerly pressed to release an oil which was burned in torches for night fishing.
Rotuman name: **Si`ursi**
Medicinal usage: Used to treat **kur mog** (irritated scalp with peeling red skin) or **kapkape** (any other scalp irritations.)

Treatment of **kur mog** or **kapkape**: The nuts from the fruits are pounded up and pressed to release an oil. The oil may be applied to the irritated skin.

This species has been collected from Rotuma previously, in 1983 by R. Thaman and H. Manner. The collection (#DOA12, #20038 SUV) is from Noatau, Rotuma and was identified with the Rotuman name, **si`ursi**. Churchward (1940) also identifies the candlenut tree, (A. mollucanna), as **si`ursi**. In spite of extensive searching, no **si`ursi** trees could be located on Rotuma at the time of this study.

Medicinal uses on other islands:

Fiji: The tree is called **lauci, sikeci,** and **qereqere**. Stem liquid is given to children who are weak and fail to walk by two years of age, is used in a remedy for weakness after childbirth and for relapsed illnesses. Stem liquid of the male plant is used to treat pains in the bones. (Weiner 1984:70)

Futuna(east): The tree is called **tuitui**. Scrapings from the bark are used for a child's sore throat. (Biggs 1985:126)

Samoa: The tree is called **lama**. The leaves and stem bark are used medicinally. (Cox 1989:493) The bark or root is applied to wounds. (Uhe 1974) The leaves are used as an anti-fungal. (Cox 1993)

Tonga: The tree is called **tuitui**. The bark is used to treat **kukokula** (fever, chills, and red swelling on the skin), **pala ngutu** (sores in the mouth), **pala fefie** (oral thrush), **kahi** (illness caused by internal blockage), **makehekehe** (severe recurring abdominal pains), and **hake vela** (heartburn.) The nuts are used to treat **pala va'e** (skin ulcerations on the foot and leg), **pala huhu** (sores on the breast) and **'ulukila** (Boils on the head causing local hair loss.) The leaves are also used to treat **pala ngutu**. (O'Rourke-George 1989:79-80) The bark is used for infertility, cessation of menses, and **toka'ala** (post-partum abdominal pain due to retined blood clots in the uterus.) (Singh et al 1984) The bark is used to treat **feitama kovi** (morning sickness, hyperemesis), and the nuts are applied to boils on the scalp. (Bloomfield 1986) The nuts are used in a treatment of **hulupa** (small painful boil occurring at the tip of fingers or thumb) and in the treatment of **mea** (dermatitis.) (Parsons 1981)

Chamaesyce atoto (Forst.f.) Croizat

Collection # M539

Description: Very small herb growing in sandy shaded soil above high tide mark.

Non-medicinal uses: None reported.

Rotuman name: **Majila**

Medicinal usage: Used to treat **koi mosran** (stonefish spine poisoning.)

Treatment of **koi mosran**: Upon presentation of a patient who has been penetrated by the poisonous spine of a stonefish, the healer will dig up and clean an **`ura**, Morinda citrifolia L., root. Once cleaned the outer bark will be scrapped off and placed in an **ununu** or piece of cloth. The area of the wound will be slightly enlarged with a knife to allow a free flow of blood. Once blood is flowing, a leaf of the **majila** will be broken off and the **pul** (milky latex) dabbed on the site. Following a thorough application of the **pul**, the **ununu** will be held over the wound and squeezed to release a few drops of juice into the wound. More of the **pul** may be applied if the wound continues to bleed. The stonefish toxin produces a great deal of pain and inflammation. The pain will dissipate within five minutes of application. The inflammation will recede in the following several hours with a proportional time frame depending on the lapse between the time of injury and that of treatment. Any **majila** or **`ura** root material which remains must be discarded in the ocean. No further treatments are needed and no restrictions or recommendations are made to the patient.

Medicinal uses on other islands:

None identified.

Exocaria agallocha L.

Collection # M409

Description: Small to medium height tree growing on the beach just above the beach or above sea cliffs. The leaves and stems have copious milky latex.

Non-medicinal uses: None reported.

Rotuman name: **Majila**

Medicinal usage: Used to treat **ru al** (dental pain) or **tuga** (an exposed nerve) and **koi mosran** (stonefish spine poisoning.)

Treatment of **ru al** or **tuga**: Eight to twelve pairs of leaves are selected and boiled in seawater. The solution is allowed to cool, then is used as a mouth rinse which is expectorated. The dental pain will resolve within minutes of rinsing and the effect will last for up to six hours.

Treatment of **koi mosran**: Eight to twelve pairs of leaves are selected and pulverized with an even volume of **`ura**, Morinda citrifolia L., roots. The resulting mixture is placed over the wound and tightly bound in place so that the juice is forced into the wound. The area around the wound may be massaged. The pain will reside rather rapidly and the swelling will slowly fade over several days. Only one treatment is needed.

For each of the above treatments, a warning is given to avoid getting the sap of the **majila** in the eyes since it is very irritating and can cause blindness.

Medicinal uses on other islands:

Fiji: The tree is called **sinu gaga**. Leaves are used to aid in removal of fish spines (stonefish), and to treat bloody sputum. The bark is used to relieve pain and fever caused by filariasis. (Weiner 1984:72) The leaves are used in a treatment for sore eyes. (Spencer 1941)

New Guinea: Stem sap is swallowed to induce vomiting if food poisoning is suspected. Bark sap is taken for constipation and stomachs. The roots are used to promote abortion. (Weiner 1984:72)

Jatropha curcas L.

Collection # M156, 212

Description: Small tree growing to 4 meters tall but usually trimmed to under 3 meters in height. The trees are commonly found in plantations with vanilla crops. This was introduced

from South America.
Non-medicinal uses: The tree is used as a prop for vanilla Vanilla planifolia Jackson, plants.
Rotuman name: **Virviri**
Medicinal usage: The fruits are used to promote **mumufa** (vomiting.)

Treatment to promote **mumufa**: Two to three ripe fruits are eaten to induce vomiting if bad food has been eaten. These may also be given if an illness is thought to reside in the throat.
Medicinal uses on other islands:
Cook Islands: The tree is called **tuitui pakarangi**. The seeds are taken as a purgative. (Whistler 1992:163)
Fiji: The tree is called **wiriwiri** and several other names. The leaves and inner bark are used as a purgative. (Smith 1981,vol. 2:545-6)
Tonga: The tree is called **fiki**. Chewed leaves are given to infants to treat stomachaches and to alleviate symptoms believed to be caused by the delayed closure of the fontanel. Leaves are used in external liniments for treating "ghost sicknesses". (Whistler 1992:162-3)

Fabaceae

Cassia alata L.
Collection # M070
Description: Occasional bush to small tree found in wet areas usually at the edges of clearings. Flowers are bright yellow in spikes.
Non-medicinal uses: None reported.
Rotuman name: **`Ai ne tane**
Medicinal usage: This species was consistently reported for treatment of fungal infections: the treatment of **nao** (tinea capitis, tinea pedis, tinea corporis, although tinea cruris was never reported), **tane** (possibly tinea versicolor: described as white patches around the mouth and face; commonly considered to be caused by the sun or very low tides) and **mir ta koi** (systemic or at least widely spread skin infection). The treatments are the same with only the extent and duration of application varying.

Each pinnately compound leaf of this species of cassia has 10 leaflets. For medicinal purposes the healer will select pairs of leaflets beginning at the apex of the leaf and working towards the base. Leaves which are yellowed (not green), not symmetrical, insect damaged or are blemished in any other way will usually not be used. Since the plants are rare, the healer may at times use imperfect specimens rather than none at all, but the faith in the effectiveness is not as high. Ten to twenty pairs of leaves are selected, and macerated by pounding between two stones, or if a large stone is not available to use as an anvil then a section of wood will be used.

The resulting pulp is then rubbed vigorously on the site of the infection. As the healer rubs in the green paste, the skin will begin to redden and swell within the area of infection while areas outside of the infection will retain normal skin tone and only be stained green. After the area appears to be thoroughly inflamed, the healer will place a small amount of the plant pulp on the infection and wrap a bandage over it. The treatment is repeated once or twice daily for three to six days. Each day as the healer removes the old bandage, the skin is inspected for healing. The results of the first application are quite dramatic with a rapid keratolytic action and moderate sustained inflammation of the infected site. The patient experiences little discomfort in spite of the damage which appears to have occurred. Each successive treatment causes less and less erythremia until the skin when rubbed only stains to green, which indicates that the condition has been eradicated.

Throughout the course of the treatment the patient is advised to avoid the ocean and not to get the bandage wet. The healers feel that salt water will cause the treated area to become irritated and the bandage is to prevent an accidental scratching of the area which will spread the disease. The bandage is also not to be removed until the healing process is complete, thus maintaining a constant medicinal bombardment. This particular treatment was demonstrated by a healer, but it is sometimes used by non practitioners and is still considered as effective.

It should be noted that for the treatment of **mir ta koi**, the healers consider treatment as rapidly and consistently as possible to be crucial since the disease, if unchecked, can quickly spread over the entire body and lead to death.
Medicinal uses on other islands:
Fiji: The plant is called **bai ni cagi**. Leaves and bark are used to treat fungal disease. (Weiner 1984:63)
Samoa: The plant is called **la`au fai lafa**. The leaves are used to treat ringworm. (Cox 1989:493)(Cox 1993)(Christophersen 1935)
Tonga: The bush is called **te'elango**. The leaves are used to treat **lafa** (ringworm), **tane** (fungal infection Tinea versicolor), and are added to many skin ointments. (O'Rourke-George 1989:102)

Erythrina variegata L.
Collection # M541
Description: Tall tree with bright red flowers and black legumes. The Rotumans recognize two varieties of this tree, one having thorns and the other not having thorns. The thorned variety is used medicinally.
Non-medicinal uses: None reported.
Rotuman name: **Ratua**
Medicinal uses: Used to treat excessive menstrual flow and **tu kiog** (difficulty in maintaining a menstrual period.)

Treatment of excessive menstrual flow, or hemorrhage: Paired strips of cleaned inner bark and/or paired leaflets are mixed with young leaf shoots of **par mea**, Musa paridisica L., and paired strips of bark and shoots from young **ker mi`a** Syzygium gracilipesu (A.Gray) Merr. & Perry. The mixture is placed in an **ununu** and squeezed to release a juice. A small volume of the juice is drunk while the healer massages the patient with coconut oil from the chest down to the legs, both on the front and on the back.

Treatment of **tu kiog**: Strips of clean **ratua** inner bark and paired leaves along with a pair of leaf shoots and two

young branches of **ker mi`a,** Syzygium gracilipes (A.Gray) Merr. & Perry, a young shoot of **par mea**, Musa paradisica L., two **pinau**, Thespesia populnea (L.) Corr. Serr., branches and the some cleaned inner bark of the **mori**, Citrus aurantium L., are all finely chopped and mixed together. The resultant mixture is added to water and drunk by the patient. The treatment is usually only given once but may be repeated if needed. The treatment should not be given to a pregnant woman, since it is felt this will cause a miscarriage, although the identical treatment without the E. variegata is given to stop miscarriage. No massage is given with this treatment unless there is massage being given to promote pregnancy.
Medicinal uses on other islands:
Fiji: The tree is called **drala** or **segai**. The stems are used to remedy sore throats and yellow breast milk. The leaves are used in treatments of filariasis, diarrhea and swollen breasts. Young leaves are used to treat large boils. (Weiner 1984:87)
Futuna(east): The tree is called **gatae**. The bark is taken by women after childbirth (**le vai o le toka`ala**.) (Biggs 1985:125)
Samoa: The stem wood and bark are used for inflammation and viral infections. (Cox 1989:493)(Cox 1993) The leaves are used to treat eye ailments. (Whistler 1992:67)
Tonga: The tree is called **ngatae** or **ngatae Tonga**. The bark is used to treat **makehekehe** (severe recurring abdominal pains), **kahi muifa'ele** (hemorrhoids), to prevent pregnancy, and for **makehekehe tu'upule** (shooting pain and stiffening in the upper abdomen.) The leaves are used to treat **langa kete** (abdominal distress.) (O'Rourke-George 1989:99-100) The bark is used for infertility. (Singh et al 1984) The leaves are prepared for post-partum hemorrhage. (Bloomfield 1986)

Pueraria lobata (Willd.) Ohwi
Collection # M404
Description: Occasional trailing vine with purple/pink flowers seen in open fields, edges of meadows and below old coconut groves in poor lighting.
Non-medicinal uses: The legumes and starch extracted from the inner parts of the roots can be eaten in times of famine.
Rotuman name: **Ga`a**
Medicinal usage: Used to treat **ru ef** (nonspecific digestive discomfort or pain sometimes associated with diarrhea) and **san** (severe diarrhea, weight loss, lack of appetite and sometimes leading to death.) Usually the disorders treated with this species are thought to be caused by eating "bad" food.

Treatment of **ru ef**: Six to ten pairs of leaflets are selected only using the apical leaflets (each compound leaf has 1 symmetrical apical leaflet and 2 lateral, asymmetrical leaflets.) The leaflets are mixed with 6 pairs of **`ura** Morinda citrifolia L. leaves and/or ten pairs of **fai kau** Clidemia hirta (L.) D.Don leaves and/or ten pairs of **koao** Psidium guajava L. leaves or the P. lobata leaflets may be used alone. The leaves selected are pulverized together and added to a cup or more of coconut Cocos nucifera L. juice. The mixture is then swallowed with the volume taken dependent upon the size of the individual and the experience of the healer. If the condition is particularly bad or cramps are occurring then the healer will also take some of the leaf mixture and massage the abdomen with the leaves with or without **lol**, coconut oil. For persistent problems the treatment may be repeated every few hours, but usually one treatment is sufficient to resolve the condition. Stomach cramps or other pains should resolve within a few hours or possibly within one-half hour. Diarrhea should also resolve within two hours although for severe diarrhea additional treatments may be required to finally control the problem. The patient is advised to only drink coconut juice during the two to three days following the treatment as well as throughout any prolonged treatment.
Medicinal uses on other islands:
None identified.

Vigna marina (Burm.) Merr.
Collection # M362
Description: Creeping/climbing vine with yellow flowers usually found near the beach mixed with Ipomoea pes-caprae (L.) R.Br.
Non-medicinal uses: The legumes are occasionally eaten by humans and swine eat the foliage and legumes.
Rotuman name: **Karere**
Medicinal usage: Used to treat boils that are sore and to remove particulate from the eye.

Treatment of boils that are sore: The leaves are heated up by rolling them between the hands. Once crushed and heated, they are rubbed on the boil site to promote extrusion.

Removal of particulate in the eye: A very young stem is selected and bent into a hoop which is used to scrape any foreign material from the surface of the eye.

St.John (1938:voucher 19110) reported that mashed leaves were used as a poultice for boils.
Medicinal uses on other islands:
Cook Islands: The vine is called **po`ue**, **pipi**, **ka`eta** or **keketa**. Leaf infusions are used to bathe fractures. (whistler 1992:211)
Fiji: The plants is called **tokatolu**, **wavue** or **drautolu**. The leaves are used to aid healing of fractured bones, to remedy food poisoning, and to treat weakness after childbirth. Vapor formed from the leaves, water and hot stones is inhaled to relieve headaches. (Weiner 1984:87-88)
Samoa: The vine is called **fuefue moa**. The leaves are used for inflammation. (Cox 1989:493)(Cox 1993) Leaves are used in treating **mumu tua`ula** (a type of fever in children) and **saua tamaiti** ("ghost sickness" in children.) (Whistler 1992:210) The plant is used as part of a remedy for carbuncles and deep abscesses. (McCuddin 1974)
Tonga: The vine is called **lautolu tahi**. The leaves are used to treat **mavaeua** 9condition in infants characterized by a wide aperture of the fontanelle, which may become hardened), **nge'esi 'ulufefeka** (labored, short, breathing with a fever and frequent twitches in a baby), **kulokula no'osia** (accumulation of mucous in an infant's throat causing labored breathing), **tapitopito** (hollowness and discharge from the unbilical area in a newborn), **engeenga** (jaundice), **tu'umamahi** (painful

urination, urinary tract infection), **langa kete** (abdominal distress), to clean the digestive system, and **kulokula mate** (part of the body paralyzed.) Steam from boiled leaves is inhaled to treatsevere fever. (O'Rourke-George 1989:104-6) The leaves are used to treat infertility, **talau** (post-partum hemorrhage), **kulokula no'osia** to encourage vomiting, and for **tapitopito**. The leaves are used to treat sudden pain due to spirits which occurs in the back and worsens with movement andfor **pala loto** (internal pain and swelling.) (Parsons 1981)

Lamiaceae

Ocimum basilicum L.
Collection # M390
Description: Small herb with purple flowers grown near homes in villages and occasionally seen wild.
Non-medicinal uses: Ornamental.
Rotuman name: **Tamor**
Medicinal usage: Used to treat cough in children.

Treatment of cough in children: Pairs of leaves are selected and pulverized. The leaves are then mixed in water to extract the juice. The solution is filtered with cloth and the dregs discarded. The solution is drunk to relieve cough. Alternatively the solution may be prepared with the addition of **sesei**, Phymatosorus scolopendrium (Burm.f.) Pichi-Serm. rhizomes and/or **`ura**, Morinda citrifolia L. fruits, and/or **rag`apua**, Zingiber zerumbet (L.) Sm. rhizomes.
Medicinal uses on other islands:
Fiji: The plant is called **tamole**.
Futuna: The bush is called **pea** or **`ukaki**. A lotion made of the leaves is used to treat painful swellings, possibly in the belief that these syptoms are supernaturally induced by demons. (Whistler 1992:177)
Tahiti: The bush is called **miri**. A warm infusion of of the leaves is employed in massage to exorcise malevolent spirits. (Whistler 1992: 177)

Malvaceae

Hibiscus rosa-sinensis L.
Collection # M398
Description: This common hedge/ornamental bush is found throughout the island. Many varieties of flowers and leaf shapes may be seen.
Non-medicinal uses: The bushes may delineate property lines, provide wind breakage and be used as fences for animals. The flowers are used ornamentally on clothing, in the hair or as household decorations.
Rotuman name: **Kauta**
Medicinal usage: Used to promote an easy delivery of a child, to treat cough in babies who are always sick and as chewing sticks.

Promotion of an easy delivery: In the last month during pregnancy the expectant mother will prepare a thick and sticky mixture of crushed leaves which is consumed with a small amount of water each day. This mucus-like product is considered to promote an easy delivery and is eaten in greater and greater quantities as the time of birth nears. One healer recommends this treatment only in the last week of pregnancy and only with stems from the double hibiscus.

Treatment of cough in babies who are always sick: Leaves are crushed finely and mixed in water. The infusion is then given to child to swallow.

The stems of the hibiscus are an alternative to the stems of **finak ne puak**, Sida rhombifolia L., and are used in the same manner as dental chewing sticks. The fresh stem is peeled of outer bark to expose the woody interior. The woody interior is chewed until a fibrous end is revealed which is used to brush the teeth. Prior to brushing, the teeth may be scrubbed with charcoal to provide white teeth. Brushing may occur in the ocean with the mouth being rinsed with sea water.

Gardiner (1897:492) reported that the leaves were crushed along with leaves of taro (**papula** Colocasia esculenta (L.) Schott) to form a poultice for topical ailments.
Medicinal uses on other islands:
Cook Islands: The bush is called **kaute `enua**. leaves or flowers are used to remedy ailments in children. (Whistler 1992:156)
Fiji: The bush is called **senitoa** or **senitoa yaloyalo**. Leaves are used to bring on a delayed menstrual period, facilitate childbirth and to treat stomach aches. (Weiner 1984:78)
New Guinea: Vapor of boiling leaves is used to soothe aching eyes and the solution is used as an eye wash. Leaves are used to treat stomach aches. Flowers and young leaves are used to facilitate the labor process. Roots and leaves are used to relieve fever and to treat bloody wounds and swellings. The white flowers are employed for mouth infections. Yellow flowers are eaten with ginger root to relieve labor pains. The roots are chewed to cure diarrhea. (Weiner 1984:78)
Samoa: A medicinal variety is called **`aute Samoa**. The stem wood is used medicinally. (Cox 1989:493) Leaves may be given to a young mother suffering from postpartum relapse sickness, and the leaves /flowers are employed in treating boils, sores and inflammation. (Whistler 1992:156)
Tahiti: The plant is called **`aute**. The leaves are used to treat pediatric ailments. (Whistler 1992:156) Leaves are employed in the treatment of vomiting. (Petard 1972)

Sida rhombifolia L.
Collection # M098
Description: Common small woody bush found on roadside and in disturbed areas. The flowers are small and yellow.
Non-medicinal uses: None reported.
Rotuman name: **Finak ne puak**
Medicinal usage: Used as chewing sticks and to treat **la noh mou** (miscarriage.)

Use as chewing sticks: Fresh stems are cut and the bark peeled off. The stems are then chewed until numerous fibers are revealed. The fibers protruding from the end of each stem are used to brush the teeth. The stems do not have much flavor (good or bad) and are chewed at leisure any time of the day. Brushing is sometimes performed in the ocean with the mouth being rinsed with sea water. Prior to brushing the individual may rub their teeth with charcoal which is said to provide very white teeth.

Treatment of **la noh mou**: For the prevention of a miscarriage, fresh stems will be cut and pounded into a thick slimy paste which is mixed with a small amount of water. The infusion is drunk although this is difficult and usually requires some work to swallow.

Medicinal uses on other islands:

Fiji: The plant is called **cavukacidra**, **denime**, **deniose**, **denivuaka**, **qavinilawi**, **bariara**, **tabuturu**, or **denipuaka**. Leaves are used to cleanse the bowels, treat stomach aches, stop diarrhea, for strained muscles, migraine and to facilitate childbirth. (Weiner 1984:92)

Samoa: The bush is called **mautofu**. The leaves are used as an anti-bacterial. (Cox 1989:493)(Cox 1993) Crushed leaves are applied to cuts, puncture wounds, and boils. (Whistler 1992:67,198)

Thespesia populnea (L.) Sol. ex Correa

Collection # M129

Description: Common beach and low undergrowth tree.

Non-medicinal uses: None reported.

Rotuman name: **Pinau**

Medicinal usage: Used to treat **koh ta koa** (coughs and colds with excessive phlegm), sores or scabs around the mouth associated with **mamosa** or **nuj ko'** (canker sores), dysmenorrhea, **tu kiog** (difficulty in maintaining a period), and **hununuak** (breathlessness, possibly asthma.)

Treatment of **koh ta koa**: Two small (approximately 2-3 cm across by 0.5 meters long) **pinau** limbs are selected and the outer brown bark scraped off and discarded to reveal the inner green bark. The inner bark is scraped off and added to two rhizomes of **rag`apua**, Zingiber zerumbet (L.) Sm. and two immature stems of **kapui Rotuam**, Alpinia sp.. The mixture is crushed together, then placed in an **ununu**. The **ununu** is squeezed to release a small amount of juice. Small volumes (five to ten milliliters) are given to children and larger volumes are given to adults.

For the treatment sores or scabs around the mouth which are accompanying **mamosa** (lethargy, weight loss, dry cracked tongue) or sores around the mouth or for **nuj ko'** (canker sores not associated with **mamosa**), the fruits are used. The fruits are cut open to reveal the seeds and a yellow film found on the seeds is scraped off and applied to the sores. If the seeds are exposed to air for more than a few minutes, the yellow film will begin to turn red. The red film is not used. The yellow film provides relief of pain in addition to healing the sores. For persistent cases, the juice from green **`ura**, Morinda citrifolia L. fruits may be added to the yellow film and placed on the sores.

Treatment of dysmenorrhea: Paired strips of cleaned inner bark are crushed together with young leaf shoots (need not be paired) of **par mea**, Musa paridisica L. and paired strips of bark and shoots from **ker mi`a**, Syzygium gracilipes (A.Gray) Merr. & Perry. The mixture is placed in an **ununu** and squeezed to release a juice. A small volume of the juice is drunk while the healer massages the patient with coconut oil from the chest down to the legs, both on the front and on the back.

Treatment of **tu kiog**: Strips of clean **ratua**, Erythrina variegata Stickm., inner bark and paired leaves along with a pair of leaf shoots and two young branches of **ker mi`a**, Syzygium gracilipes (A.Gray) Merr. & Perry, a young shoot of **par mea**, Musa paradisica L., two **pinau** branches and some cleaned inner bark of the **mori**, Citrus aurantium L., are all finely chopped and mixed together. The resultant mixture is added to water and drunk by the patient. The treatment is usually only given once but may be repeated in needed. The treatment should not be given to pregnant women, since it is felt this will cause a miscarriage, although the identical treatment without the E. variegata is given to stop miscarriage. No massage is given with this treatment unless there is massage being given to promote pregnancy.

Treatment of **hununuak**: **Pinau** bark is crushed with rhizomes of **rag`apua**, Zingiber zerumbet (L.) Sm., and mixed with water to form a thick infusion. The infusion is drunk daily for five to ten days. The treatment will be given in conjunction with massage of the chest, abdomen and back. The diaphragm is said to be very hard in the individual with this problem and the roll of the massage and infusion is to relax the diaphragm. In addition to checking the firmness of the diaphragm each day, the healer will also probe along the lower edge of the scapulae for hard areas which must be massaged. Treatment is declared a success when the diaphragm and muscles near the scapula have returned to a normal state.

St.John (1938:voucher 19001) indicated that "a decoction of scraped bark is put on babies tongues if white coated."

Medicinal uses on other islands:

Fiji: The tree is known as **mulomulo** and **mulumulu**. The bark is used to treat sickness following intercourse, loss of appetite, diabetes and gonorrhea. The stem is given as a remedy for yellow urine and a bad appetite. Unnamed parts are employed for diarrhea and stomach ache. (Weiner 1984:78)

Futuna(east): The tree is called **milo**. Barkis used to treat stomach pains, cough, rheumatic pains, and is used in **vai kita** (relapse medicine). (Biggs 1985:124)

Samoa: The tree is called **milo**. The leaves are used to treat internal illnesses. (Cox 1989:493)(Cox 1993) Bark infusions are used to treat thrush and other mouth infections. A leaf or bark infusion is instilled into the eyes to treat eye injuries. (Whistler 1992:209)

Tonga: The tree is called **milo**. Leaves are used to treat sore teeth, infected gums and for teething. The bark is prepared for **pala** (internal and external sores or lesions), **pala ngutu** (sores in the mouth especially in children), **pala fatafata** (chest pain believed to be caused by internal lesions), **kahi muifa'ele** (hemorrhoids), **langa kete** (abdominal distress), **nami** (pain in the stomach and back causing a person to hunch over), and **pihi** (the constant urge to urinate and have frequent watery bowel movements, usually in children.) (O'Rourke-George 1989:112-3) The bark is used for **tu'utu'u toto** (diarrhea with blood, dysentary), **kahi muifa'ele**, and as an emetic. (Parsons 1981)

The bark is used to treat thrush. (Bloomfield 1986)

Melastomataceae

Clidemia hirta (L.) D.Don
Collection # M120
Description: Weedy bush with white flowers and blue to purple fruits. Found throughout Rotuma in disturbed areas and under second growth forest.
Non-medicinal uses: The bushes are rather woody and sometimes scattered in pastures and thus are used as tether sites for cattle, goats, etc. The Rotuman name literally implies "a place to tether a cow."
Rotuman name: **Fai kau**
Medicinal usage: Used to treat **ru ef** (miscellaneous digestive discomfort or pain sometimes associated with diarrhea) and **san** (severe diarrhea, weight loss, lack of appetite, and sometimes is a cause of death.)

Treatment of **ru ef** and **san**: Leaves are selected in pairs, the amount varies depending on the size of the individual and the previous use of the particular healer, but about 10 pairs are used. The leaves are ground with a stone into a loose rather dry leaf paste. Six to ten pairs of **ga`a**, Pueraria lobata (Willd.), Ohwi leaves and/or ten or more pairs of **koao**, Psidium guajava L., leaves are prepared in the same way and are mixed with the C. hirta leave paste. Water or the juice from a coconut Cocos nucifera L. is added to one cup of the leaf mixture and the product is swallowed. The volume which is swallowed is dependent on the size of the individual but most adults would consume the cupful. If the condition is particularly bad or cramps are occurring then the healer will also take some of the leaf mixture and massage the abdomen with the leaves with or without **lol** (coconut oil.) For persistent problems the treatment may be repeated every few hours. But usually one treatment is sufficient to resolve the condition. Stomach cramps or other pains should resolve within a few hours or possibly within one-half hour. Diarrhea should also resolve within two hours although for severe diarrhea additional treatments may be required to finally control the problem. The patient is advised to only drink the coconut juice during the two to three days following the treatment as well as throughout any prolonged treatment.
Medicinal uses on other islands:
Fiji: The bush is called **airoi ni siga**, or **kaurasiga**. The leaves are used to treat thrush and are chewed and tied over bleeding wounds. (Weiner 1984:79)

Meliaceae

Aglaia samoensis A.C.Smith
Collection # M353
Description: A small tree only observed near villages.
Non-medicinal uses: The flowers are used ornamentally.
Rotuman name: **Ragkori `Uvea**
Medicinal usage: Used as a scent in **lol** (massage oils.)

Usage as in **lol**: The flowers are mixed with freshly prepared **lol**, to provide it with a pleasant scent. This particular addition is only used by healers.
Medicinal uses on other islands:
None identified, but a related species, Aglaia psilopetala is used medicinally in east Futuna. The tree is called **malamea**. There the bark is used to treat swollen testicles. (Biggs 1985:128) This is of particular interest since the Rotumans claim that A. samoensis was brought to Rotuma from `Uvea which is very close to and culturally linked with Futuna. Another related species, Aglaia saltatorum A.C.Smith is used medicinally in Tonga and Fiji to scent coconut oil. The tree is called **langakali** in both Tonga and Fiji. (Zepernick 1972:22)

Moraceae

Artocarpus altilis (Parkinson ex Z) Fosb. Collection # M165
Description: Breadfruit trees reaching to 10+ meters tall Many cultivars are recognized and propigated on Rotuma. Some cultivars are seeded and others bear fruit without seeds.
Non-medicinal uses: The fruits are eaten seasonally. The wood is used for canoes and the bark was formerly used in the production of clothing.
Rotuman name: **`Ulu**
Medicinal usage: Used to treat **ru faliag** (a swollen painful inner ear sometimes with exudate)

Treatment of **ru faliag**: Very young leaves which are still sticky and rolled into buds are selected. Each leaf has the outer layer pealed off to reveal two white inner buds which are chewed then spit into a funnel made from an **ifi**, Inocarpus fagifer (Parlans ex Z) Fosb., or **`ulu** leaf. A few drops of solution are squeezed from the funnel and dropped into the affected ear. More of the solution is squeezed out and used to massage around the ear. Although many cultivars of **`ulu** exist, there is no specificity of this treatment for a certain cultivar.
Medicinal uses on other islands:
Fiji: The tree is called **buco ni viti**, **buco uso**, **uto dina** and **uto buco**. The bark is used to treat chest pains and vomiting resulting from heart trouble. The stem bark is employed in the treatment of pain in the bones and maternal postpartum infections. The roots are used to treat respiratory ailments and painful breathing and weakness after childbirth. The leaves are used as a remedy for fish poisoning and to relieve convulsive spasms. Young fruit is taken to treat pain in the lungs and vomiting of blood. An unnamed part is used to treat fish poisoning. (Weiner 1984:80-81)
Futuna: The leaf petiole is chewed and the juice applied to ailing eyes. (Whistler 1992:126)
Samoa: The tree is called **ulu**. The roots are used to treat diarrhea, viral infections, fungal infections, and internal distress. (Cox 1989:493)(Cox 1993)
Tahiti: The tree is called **maiore** or **`uru**. Crushed stems tips are taken for **tupito** (abdominal pain.) Various plant parts are used to remedy tonsillitis, coughs in children, blood in the urine and to promote expulsion of the afterbirth in postpartum women. (Petard 1972)
Tonga: The tree is called **mei**. Bark is used to treat relapsed illness. The white sap is used to treat boils, abscesses, sores, and wounds. (Whistler 1992:125-6)

Ficus tinctoria Forst.f.

Collection # M220

Description: Large bush to small tree found in scattered stands throughout Rotuma.

Non-medicinal uses: None reported.

Rotuman name: **U`apea**

Medicinal usage: Used to treat **maf pirpir** (lit. "yellow eyes", lack of appetite, **ar u`u matit** (cold palms), and general ill health) and **mamosa** (lethargy, lack of appetite, weight loss, dry cracked tongue.)

Treatment of **maf pirpir**: **U`apea** leaves in pairs are mixed with pairs of **sesei**, Phymatosorus scolopendrium (Burm.f.) Pichi-Serm., rhizomes and **maragi**, Trema cannabina Lour., bark strips in about equal volumes. The mixture is chopped finely and placed in an **ununu**. The **ununu** is held in a cup and squeezed to release a fluid. The resulting solution is drunk three times a day. The same **ununu** is used for all three doses each day and a maximum of two days of treatment are given. If treated early enough the symptoms may resolve after only one day of treatments. Adults will be given a more concentrated solution made with many pairs of herbal parts, whereas children will be given more mild dosages.

Treatment of **mamosa**: The treatment is identical to that given above except much more of the herbal mix must be from **sesei** rhizomes.

Medicinal uses on other islands:

Samoa: The tree is called **mati**. Inner bark infusions are applied to eye ailments. (Whistler 1992:68)

Tahiti: The tree is called **mati**. The fruits may be used in remedies for internal ailments, especially liver problems. (Whistler 1992:80)

Myrtaceae

Psidium guajava L.

Collection # M178, 365

Description: Small to medium height tree with bark which peels off in strips. Found scattered throughout Rotuma in the forests and near plantations.

Non-medicinal uses: The fruits are eaten seasonally.

Rotuman name: **Koao**

Medicinal usage: Used to treat **ru ef** (miscellaneous digestive discomfort or pain sometimes associated with diarrhea) and **san** (severe diarrhea, weight loss, lack of appetite, and sometimes is a cause of death), **mamosa** (lethargy, lack of appetite, dry cracked tongue, difficulty in swallowing.), **puna** (common boils), and **`af`af ne fatmanava** (pain in the chest, difficulty in breathing, difficulty in performing physical tasks, orthostatic hypotension, may lead to a coronary infarction if untreated, possibly heart disease, angina.)

Treatment of **ru ef** and **san**: Ten or more pairs of leaves are selected along with 6 to 10 pairs of **ga`a**, Pueraria lobata (Willd.) Ohwi leaves and/or 10 or more pairs of **fai kau**, Clidemia hirtia (L.) D.Don leaves. The leaves are smashed together with a stone into a loose rather dry leaf paste. A cup of the mixture is mixed with some coconut juice and drunk. If the case is particularly bad then the healer will also take some of the leaf mixture and massage the abdomen with the leaves with or without coconut oil. Stomach cramps or other pains will resolve in one-half hour to a few hours. Drinking only coconut juice for the next day is usually recommended. It should be noted that guava trees are a recent introduction into Polynesia and that the leaves are eaten by non healers for the same purposes. It is possible that the guava leaves have been added to already existing formulas as an example of the healers adapting to new species and incorporating successful introductions.

Treatment of **mamosa**: **Mamosa** which occurs in young children who are considered to have spent too much time playing in the forest, eating wild foods and in particular mangos, and have muscles which are hardened and unable to relax may be treated with an infusion of guava leaves.

Treatment of **puna**: For common boils, a thick suspension is prepared from **koao** leaves shredded and mixed with water. The bitter tasting suspension is swallowed. The boils are felt to be treated thus by the **koao** leaves cleaning the blood since the common boils are felt to be caused by unclean blood.

Treatment of **`af`af ne fatmanava**: Two small **varvara**, Premna taitensis A.C.Smith & S. Darwin, limbs as long as the forearm are selected and the inner bark removed and chopped. The bark is mixed with up to 100 pairs of **ti togo**, Geophila repens (L.) IM.Johnst. , leaves and six pairs of **koao** leaves. The entire mixture is chopped very finely and placed in an **ununu**. The **ununu** is then squeezed and twisted while submerged in some fresh water. The resultant solution is drunk over the course of three days. The patient will take the **ununu** of herbs home with them and prepare the drink as often as they desire each day. If the herbs seem to loose their potency, the patient will return for a fresh **ununu**. The treatment is discontinued after three days and must not be reinitiated. Following the days of treatment, the individual will progressively recover and not need to seek further treatment. While using the solution, the individual is restricted from drinking coconut juice, eating hot foods or bathing at night since these may lead to a secondary disease state, **mamosa** (lethargy, dry cracked tongue, and loss of appetite.) If too much of the solution is drunk during the

therapy, the individual will experience **mak sul maf** (orthostatic hypotension.)

Medicinal uses on other islands:

Fiji: The tree is called **guava** or **quawawa**. The leaves are used to treat diarrhea, coughs, stomach ache, dysentery with pain, and toothaches. (Weiner 1984:83)

Futuna(east): The tree is called **vi papalagi**. Scapings of the trunk are used to remedy fatigue and body pain. (Biggs 1985:126)

Niue: The tree is called **kautonga**. Leaves are used as ghost medicine. (Weiner 1984:83)

Samoa: The tree is called **ku`ava**. The leaves are used to remedy diarrhea. (Cox 1989:494)(Cox 1993) An infusion of the leaves is sometimes applied to rashes. (Whistler 1992:192)

Tahiti: The tree is called **tuava**. Tender shoots are applied to severe wounds to stop bleeding. The plant is a common ingredient in remedies for women's ailments such as miscarriage, uterine bleeding, premature labor, and painful menstruation. (Petard 1972)
Tonga: The tree is called **kuava**. Leaves are used to cure stomach ache. (Weiner 1984:83) The leaves are used to treat **makehekehe** (severe recurring abdominal pain) and for diarrhea. (O'Rourke-George 1989:122)

Syzygium gracilipes (A.Gray) Merr. & Perry
Collection # M355
Description:Small to medium height tree found in second growth forests. The fruit is red.
Non-medicinal uses: None reported.
Rotuman name: **Ker mi`a**
Medicinal usage: Used to treat **tu kiog** (difficulty in maintaining a menstrual period), excessive menstrual flow, hemorrhage and dysmenorrhea.

Treatment of **tu kiog**: Strips of clean **ratua**, Erythrina variegata Stickm., inner bark and pairs of leaves along with a pair of leaf shoots and two young branches of **ker mi`a**, a young shoot of **par mea**, Musa paradisica L., two **pinau**, Thespesia populnea (L.) Corr.Serr., branches and some cleaned inner bark of the **mori**, Citrus aurantium L., are all finely chopped and mixed together. The resultant mixture is usually only given once but may be repeated is needed. The treatment should not be given to a pregnant woman, since it is felt this will cause a miscarriage, although the identical treatment without the E. variegata, is given to stop miscarriage. No massage is given with this treatment unless there is massage being given to promote pregnancy.

Excessive menstrual flow, hemorrhage: Paired strips of cleaned bark and young stem shoots are crushed together with cleaned paired strips of inner bark and/or leaves of **ratua**, Erythrina variegata Stickm. and young leaf shoots (need not be paired) of **par mea** Musa paradisica L. The mixture is placed in an **ununu** and squeezed to release a juice. A small volume of the juice is drunk while the healer massages the patient with coconut oil from the chest down to the legs, both on the front and on the back.

Treatment of dysmenorrhea: The same preparation as above is used except the **ratua**, E. variegata is replaced by inner bark from the **pinau**, Thespesia populnea (L.) Corr.Serr.

Medicinal uses on other islands:
None identified.

Syzygium inophylloides
Collection # M231, 307
Description: Medium height forest cauliflorous tree with pale pink to brown fruit.
Non-medicinal uses: The fruits may be eaten and the wood can be used in house construction.
Rotuman name: **Hahi`a ramram**
Medicinal usage: The bark is used to treat **kia oar ru** (sore throats.)

Treatment of **kia oar ru**: The inner bark is collected, cleaned of any outer bark, shredded and then is soaked in a small amount of water. The bark is then removed (not filtered, just picked out) and the solution is swallowed. Within a minute or two the throat becomes numb thus providing the relief. The treatment is said to last for several hours. The solution will not usually be taken again although there would be nothing wrong with repeated usage.
Medicinal uses on other islands:
None identified.

Syzygium samaragense (Bl.) Merr. & Perry Collection # M369
Description: Small to medium height tree with bright red fruit, flowers pendulous.
Non-medicinal uses: The fruits may be eaten and the wood can be used in house construction and for small tool handles.
Rotuman name: **Hahi`a**
Medicinal usage: The leaves or bark are used to treat **mamosa** (depression, loss of appetite, dry cracked lips and tongue, lack of physical stamina) and the bark is used to treat **kia oar ru** (sore throats.)

Treatment of **mamosa**: Four pairs of leaves or 2 large strips of bark are pulverized and mixed with four pairs of **koao** Psidium guajava L. leaves and four **alo** Aloe vera (L.) Burm.f. leaves. The mixture is crushed until quite juicy then is mixed with 2 cups of warm water (not sea water) and is stirred to produce a dark green liquid. The leaves are strained out with a **sakoto** Cyclosorus unitus (L) Ching, leaf to produce the final solution. About one cup of the solution is drunk by the patient each day. The solution is prepared fresh daily and is given from three to five days up to a month or more until the patient recovers. An alternative and probably more traditional preparation is to rinse the bark in water, strain out the bark fragments and drink the solution following the regiment provided above. Children treated with either method are said to regain their appetites the same day that treatment is initiated.

Treatment of **kia oar ru**: The inner bark is collected, cleaned of any outer bark, shredded and then is soaked in a small amount of water. The bark is then removed (not filtered, just picked out) and the solution is swallowed. Within a minute or two the throat becomes numb thus providing the relief. The treatment is said to last for several hours. The solution will not usually be taken again although there would be nothing wrong with repeated usage.
Medicinal uses on other islands:
None identified.

Syzygium sp.
Collection # M130
Description: Small tree found at edges of clearings.
Non-medicinal uses: None reported.
Rotuman name: **`Am`ama**
Medicinal usage: Used to treat **koho** (cough) and **ru kia** (sore

throat.)

Treatment of **koho**: The leaves are eaten to treat coughs. They may be eaten at any time of the day, but the early morning is preferred because the leaves are the juiciest and have the least amount of bitter taste. If eaten later in the day, the leaves become more bitter tasting.

Medicinal uses on other islands:

None identifiable without species designation. Many Syzygium sp. are used medicinally throughout the South Pacific. (Cox 1989:494) (O'Rourke-George 1989) (Whistler 1992:203-4)

Nyctaginaceae

Pisonia grandis R.Br.

Collection # M403

Description: Medium height tree which is uncommon on Rotuma, but common on the nearby uninhabited islands. The tree is quite succulent and filled with sap when young. These may be growing in mixed age stands forming a thicket.

Non-medicinal uses: None reported.

Rotuman name: **Puak vai**

Medicinal usage: Rotuman medicinal usage is limited to veterinary cases of **puak san** (porcine), **kau san** (bovine) and **komea san** (canine) diarrhea.

Treatment of **puak san**, **kau san** and **komea san**: When the affected animal is seen to become lethargic, looses weight, discontinues eating, appears bloated and is seen to have very watery diarrhea the animal is diagnosed with **san** (diarrhea and stomach bloating.) There are no healers who treat animals so this treatment is performed by the owner of the afflicted animal. The P. grandis is relatively rare on Rotuma so it may be necessary for the animals owner to make a trip to one of the nearby side islands. This journey will take most of a day and the best islands to retrieve the plant from, are hazardous to approach and leave by canoe. A large sack of leaves, about a bushel, are gathered and taken to the place the animal is kept. A large handful of the leaves is selected with no particular criteria. The leaves are crushed in a bucket of water and repeatedly wrung by hand within the water. The result is a murky solution which is then placed in front of the sick animal. The animal will usually drink the solution without encouragement. The animal drinks as much as they desire and if required, another bucketful will be prepared. If the animal refuses to drink then it will be enclosed with the bucket and no other water until it chooses to drink. Once the animal has finished drinking, the bucket is removed from the area. Other animals who reside with the afflicted creature may also be allowed to drink an amount of the solution, but this is not always offered to them. Within a few minutes after drinking, the animal may vomit but usually any bloating or diarrhea will subside after a day or more without vomiting. A second dose is not required and the animal will usually return to normal in a few days with normal bowel movements. The wood of this small tree is considered as too soft for any construction and thus is not used by Rotumans. The leaves are only used in veterinary medicine although a Rotuman healer asked if **puak vai** would probably be just as effective in humans as it is in animals.

Medicinal uses on other islands:

Tonga: The tree is called **pukovai**. The leaves are used to treat **mata kovi** (sore or diseased eyes), and constipation. (O'Rourke-George 1989:128)

Piperaceae

Piper insectifugum C.DC ex Seem.

Collection # M384

Description: Woody vine, frequently branching, usually found growing epiphytically on trees. The flowers are white and the fruits are white turning bright orange.

Non-medicinal uses: None reported.

Rotuman name: **Sasa**

Medicinal usage: Used to treat **fua ma mon** (boils in the edges of the nostrils)

Treatment of **fua ma mon**: If the boil has erupted, then the roots of the **sasa** will be cleaned and smashed. The smashed roots are placed in a cloth and squeezed over a cone made of a **tiere**, Gardenia vitiensis Seem., leaf. The cone is used to direct the solution onto the site of the boil. Massage next occurs in a unique manner. A cork (**i`om**) made of pandanus leaves from a **tahroro** (a fermented condiment of coconut meat, capsicum and salt water) container is dipped in coconut oil and used to apply the massage oil. The oil is stroked down the nose toward the site of the lesion. If the boil has not emerged then only massage will be performed. Treatment is repeated daily for five to ten days with the boil either emerging or dissipating.

Medicinal uses on other islands:

Fiji: The plant is called **waqawa**.

Piper methysticum Forst.f.

Collection # M522

Description: Cultivated bush growing up to 3 meters tall but commonly 2 meters tall. Two Rotuman varieties are recognized: **jarau** (green) and **kele** (black) which refers to the stem coloration.

Non-medicinal uses: The roots and rhizomes of both varieties are dried, crushed and extracted in water to produce the ceremonially important drink, **kava**. The drink is now commonly consumed as a part of social activities.

Rotuman name: **Kao**, **Kava**

Medicinal usage: Used to treat **joan ne pija** (warts)

Treatment of **joan ne pija**: Fresh leaves are rubbed on the site of infection each day until the warts have dissolved.

Medicinal uses on other islands:

Fiji: The bush is called **yaquona**. Leaves are used to treat convulsions and stiffness in children. Branches are utilized in a sore throat remedy. Black stems are used in an undescribed medicine and an unnamed plant part is used to treat filariasis. (Weiner 1984:88)

Hawai'i: The bush is called **`awa**. Kava prepared from the rhizomes is drunk for urinary ailments and venerial infection. (Whistler 1992:186)

Samoa: The roots are used medicinally. (Cox 1989:494) The

drink is taken for stomachaches, backaches, and urinary tract infections. (Whistler 1992:186) The rhizomes are used to relieve internal distress and inflammation. (Cox 1993)
Tonga: The plant is called **kava Tonga**. Leaves are given to sooth crying infants. (Weiner 1970, 1984:88) The leaves are prepared and drunk or applied for wounds which are septic or may cause tetanus. (O'Rourke-George 1989:137) The leaves are used for toothache. (Bloomfield 1986) The leaves are used to treat watery vaginal discharge. (Singh et al 1984) Yellow leaves are used to remedy stings from poisonous fish and insects, bites of centipedes, and some kinds of inflammations. (Whistler 1992:186)

Polygalaceae

Polygala paniculata L.
Collection # M208
Description: A small herb growing to 0.5 meters tall with highly aromatic roots. The flowers are small and white.
Non-medicinal uses: None reported.
Rotuman name: **Pup reag lolo**
Medicinal usage: Used as a component of **lol** (massage oils.)

The fresh roots are cleaned and crushed then added to bottles of freshly made coconut oil. The roots have a pleasant scent which is passed on to the massage oil. The bone setters usually use this scent in their massage oil, although they do not assign any particular healing power to this species or rational for the preference of this scent. **Lol** made with **pup reag lolo** was also identified as a good type to use when treating **hu hual** and **puna**.
Medicinal uses on other islands:
None identified.

Rubiaceae

Gardenia vitiensis Seem.
Collection # M229
Description: Tree growing to 20 meters in height. Flowers creamy white, turning yellow.
Non-medicinal uses: None reported.
Rotuman name: **Tiere**
Medicinal usage: Used to treat **pa mafa** (eye injury.)

Treatment of **pa mafa**: Paired **hefau**, Calophyllum inophyllum L., leaf shoots are chewed and placed in a mature **hefau** or **tiere** leaf which has been rolled into a cone. The juice is then dripped into the affected eye through the point of the cone, by squeezing the cone. The treatment should only be used once, although if irritation or pain in the eye persists to the following day, a fresh application may be used. The affected eye must not be washed for a day or two and the individual must avoid the ocean.
Medicinal uses on other islands:
None identified.

Geophila repens (L.) IM.Johnst.
Collection # M557
Description: Very small plant (less than 10cm tall), leaves reniform, flowers white, fruits red turning hard and brown. Found in damp shaded areas.
Non-medicinal uses: None reported.
Rotuman name: **Ti togo**
Medicinal usage: Used to treat **`af`af ne fatmanava** (pain in the chest, difficulty in breathing, difficulty in performing physical tasks, may lead to a coronary infarction, possibly heart disease, angina) and **mou huag** (constipation.)

Treatment of **`af`af ne fatmanava**: Paired leaves (up to 100 pairs) are chopped finely and added to the chopped inner bark scrapped from 2 limbs of **varvara** Premna taitensis A.C.Smith & S. Darwin and 6 pairs of **koao** Psidium guajava L. leaves. The ingredients are mixed and crushed together, then placed in an **ununu**, (coconut fiber container/sieve.) The **ununu** is wrung in a small amount of fresh water to release a solution which is drunk by the afflicted individual. The individual being treated will take the **ununu** home with them and as often as desired prepare more of the solution from the original **ununu**. Treatment is discontinued after three days and is rarely or never repeated in that individual. While using the solution the individual is restricted from drinking coconut juice, eating hot foods or bathing at night since these may lead to a secondary disease state, **mamosa** (lethargy, dry cracked tongue, and loss of appetite). If too much of the solution is drunk during the therapy, the individual will experience **mak sul maf** (orthostatic hypotension.)

Treatment of **mou huag**: **Ti togo** leaves mixed with **varvara**, P. taitensis leaves, are crushed, placed in an **ununu,** and squeezed in water to form a solution. The solution is drunk to relieve the constipation.
Medicinal uses on other islands:
Futuna(east): The herb is called **tona**. The herb is used to treat **gutu papala** (mouth infections.) (Biggs 1985:127)
Samoa: The herb is known as **tono**. The plant is used to treat intestinal disturbance. (Whistler 1992:152)

Guettardia speciosa L.
Collection # M562
Description: Common beach tree with white connate flowers.
Non-medicinal uses: None reported.
Rotuman name: **Hana**
Medicinal usage: Used to treat irritations in the external aural canal.

Treatment of irritations in the external aural canal: Flowers with sufficient pollen will have the bottom of the floral tube broken off, the tube placed in the ear and then the pollen gently blown into the ear canal. If very little pollen is present, then the flowers are crushed by hand and the juice dripped into the ear. The effects of this treatment are the immediate relief of itch and irritation. The effect lasts for several hours and may be repeated although one treatment is considered as sufficient.
Medicinal uses on other islands:
Fiji: The tree is called **buabua**. The stem bark is utilized in a preparation to bring on menstruation. The plant is also employed in remedies for maternal postpartum infections. (Weiner 1984:93) The inner bark is used to treat sore eye. (Spencer 1941)

Tahiti: An unnamed plant part is used to treat diarrhea, fever and nervous system disorders. (Weiner 1984:93)
Tonga: The tree is called **puopua**. The bark is used as a treatment for epilepsy. (Weiner 1970, 1984:93) The bark is used to treat **kahi** (illness believed to be caused by internal blockage), **pihi** (constant urge to urinate and frequent watery bowel movements usually occurring in children), **topamomoko** (watery
diarrhea in babies or children), and **tu'utu'u** (severe diarrhea.) (O'Rourke-George 1989:145-6) The bark is used to treat dysentery, **'au** (continuous discharge of blood from the uterus), **mahaki'ia fakalanga** (dysmenorrhea with lower abdominal and back pain), and for other gynecological and obstetric problems. (Bloomfield 1986)(Singh et al 1984) The bark is used to treat stomachache. (Whistler 1992:52)

Morinda citrifolia L.
Collection # M096
Description: Common small bush to medium sized tree in and near villages. Fruits are green to yellow/white and the flowers are white.
Non-medicinal uses: None reported.
Rotuman name: **`Ura**
Medicinal usage: Used to treat sores or scabs around the mouth whether associated with **mamosa** (lethargy, weight loss, dry cracked tongue and loss of appetite) or alone (**nuj ko'**) but which are persistent. It is also used to treat peeling or cracking of the toes and feet which is not associated with tinea pedis, **susun** (topical burns), **filo`u**(headaches) and fever, inability to breath immediately after birth, post parturition maternal care, **koi mosran** (stonefish spine poisoning), **hiaj ne to'**(bone fractures or dislocations), bleeding caused by a bone puncture, **li ne uaf** (a badly infected cut), and **mea ta koi** (A skin disease possibly fungal, which starts as a red spot on the skin and spreads as a ring then rapidly spreads over the whole body. Said to lead to death if untreated.)

For the treatment of sores or scabs around the mouth associated with **mamosa** or alone (**nuj ko'**): The immature (green) fruits are crushed and the juice extracted. This juice is added to the fresh yellow film removed from the seeds of the **pinau**, Thespesia populnea (L.) Corr. Serr. and the mixture is applied to the external sores. The treatment will not only alleviate the lesions but will also relieve pain associated with the lesions. The **`ura** fruits may be used alone to treat the sores, in which case the crushed fruits are placed in an **ununu** and squeezed until juice is freely leaching from the **ununu**. The **ununu** is then daubed on the lesions as needed to apply the juice.

For sores found within the mouth, **nuj ko'**, the immature fruits are crushed and mixed with coconut oil. The mixture is placed in an **ununu**, then wrapped with a banana leaf and heated over a fire. After heating, the **ununu** is squeezed and the resulting warm solution is drunk. In children only a small dose can be given because higher doses will cause nausea and vomiting. Occasionally this is given in the higher dosage to promote vomiting and thus remove the cause of the illness. This is usually the case if the illness is felt to reside in the throat and/or if there is mucus built up in the throat.

Treatment of peeling or cracking of the toes and feet which is not associated with tinea pedis: The **`ura** fruits are crushed and applied to the affected site. This is not a specialized treatment and requires no specialized application.

Treatment of **susun:** The leaves are applied to the site of the burn until wilted and then are replaced with fresh leaves. The treatment is repeated until the leaves no longer wither and the fever discontinues.

Treatment of **filo`u** or fever: The leaves are applied and the head massaged with the leaves until the leaves are wilted. The treatment is repeated until the leaves no longer wither and the fever and headache discontinue.

Treatment of breathing difficulty upon birth: Upon delivery of a child which is not breathing, the midwife will wrap the umbilical cord with a pair of **`ura** leaves to promote breathing. If breathing does not occur then the midwife will begin to pile **`ura** leaves on the child until it begins to breathe.

Treatment to promote good post parturition health of the mother: The midwife formerly would boil roots of the **`ura** in coconut oil which would then be mixed with **mena**, Curcuma longa L. and rubbed over the entire body of the new mother.

Treatment of **koi mosran**: Upon presentation of a patient who has been penetrated by the poisonous spine of a stonefish, the healer will dig up and clean an **`ura** root. Once cleaned, the outer bark will be scraped off and placed in an **ununu** or piece of cloth. The area of the wound will be slightly enlarged with a knife to allow a free flow of blood. Once blood is flowing, a leaf of the **majila**, Chamaesyce atoto (Forst.f.) Croizat, will be broken off and the **pul** (milky latex) dabbed on the site. Following a thorough application of the **pul**, the **ununu** will be held over the wound and squeezed to release a few drops of juice into the wound. More of the **pul** may be applied if the wound continues to bleed. The stonefish toxin produces a great deal of pain and inflammation. The pain will dissipate within five minutes of application. The inflammation will recede in the following several hours with a proportional time frame depending on the lapse between the time of injury and that of treatment. Any **majila** or **`ura** root material which remains must be discarded in the ocean. No further treatments are needed and no restrictions or recommendations are made to the patient.

Treatment of **koi mosran**: Young **`ura** leaves are pounded together with entire cleaned **usogo** plants, Laportea interupta (L.) Chew. The mixture is placed in a piece of thin cloth and a small amount of coconut oil is added. The cloth is then wrapped with two **`ura** leaves and placed over a fire to be heated. The site of the poison puncture is enlarged with a knife. The hot package is removed from the fire and small amounts of the juice dripped into the wound. The juice is only applied to the site and care is taken to ensure that it does not get anywhere else on the individual. Massage will next be conducted using a small amount of the juice on the adjacent skin. The massage is always in the direction of the injury. From the beginning of the preparation until the treatment has been completed and the pain relieved, usually requires about one hour.

Treatment of bleeding from a puncture caused by a broken bone: If after setting a broken bone, persistent bleeding from the site of bone penetration occurs, then the bone setter will crush several **sesei**, Phymatosorus scolopendrium (Burm.) Pichi-Serm., leaves in some water. The leaves will be discarded and the solution applied to and washed over the cut. After thorough cleaning, two fresh **`ura** leaves will be rolled between the hands to release a thick green juice which is placed on the cut to stop the bleeding.

For treatment of **hiaj ne to': `Ura** leaves will be wrapped over the skin and tied on after the bone has been set but before the splints have been applied.

Treatment of **li ne uaf**: A solution will be prepared as above (for bone punctures) and the infected area washed thoroughly. An **`ura** root is cleaned and the bark scrapped off into an **ununu**. The **ununu** is held over the infection and squeezed to release a juice on the wound. The wound will begin to bubble and it is felt that the infection is now being forced out of the cut. No restrictions are placed on the treated individual and the treatment is not repeated.

Treatment of **mea ta koi**: Two very young coconut, Cocos nucifera L., fruits are pounded into a fine paste and added to some coconut oil, and a sprinkle of **mena** Curcuma longa L., powder. The mixture is placed in an **ununu** which is then wrapped by two **`ura** leaves and placed over a fire. Once hot, the **`ura** leaves are removed and the **ununu** placed over the affected area and squeezed to release hot fluids onto the site. Treatment is repeated daily for up to 5 days. No bathing is allowed during the treatment and the affected area must not get wet.

Medicinal uses on other islands:

Fiji: The tree is called **kura**. The young fruit is used to treat bad breath, a raspy voice, mouth ulcers, and hemorrhoids. The stems are used to treat hernias and the leaves are used to aid in removal of splinters and barbs of poisonous fish. (Weiner 1984:93)

Futuna(east): The tree is called **nonu**. The fruit is used to treat **gutu papala**(ulcerated mouths) of children. The bark is taken by women with stomach pains and by pregnant women who do not want a child (**se fia fai tamaliki**.) (Biggs 1985:123-4)

Micronesia: Fruits are used to treat ulcerated sores on the feet, diabetes, stonefish and stingray wounds and tuberculosis. The roots are used to treat boils and small pox. The shoots are used to treat eye infections. (Weiner 1984:94)

Niue: The tree is called **nonu**. Vapor from broken leaves is used to treat styes. (Whistler 1992:174)

Samoa: The tree is known as **nonu**. The fruits and leaves are used medicinally. (Cox 1989:494) Flowers are used to treat styes. The fruit is applied to treat infections of the mouth and gums, sore throats, and toothaches. Juice from the crushed leaves is dripped into the eyes, nose or mouth to treat "ghost sickness." (Whistler 1992:174)

Tonga: The tree is called **nonu**. The young fruits are used to treat **pala ngutu** (sores in the mouth especially in children), **pala fefie** (oral thrush). Leaves are used to treat **mea fele** (rash or fine granular "pimples" which are red, ooze, and spread), boils, **pala huhu** (sores on the breast), and **'avanga** (spirit induced illnesses.) (O'Rourke-George 1989:146-151)

Note: This is by far the species with the greatest depth and breadth of usage in Polynesia. Thus the above uses are only a sample of the information available in the references. See the review article by Morton (1992) for a more complete study of this species.

Rutaceae

Citrus aurantium L.

Collection # M103

Description: Orange trees are sporadically cultivated with lime, lemon and grapefruit trees.

Non-medicinal uses: The fruits are eaten in season.

Rotuman name: **Mori**

Medicinal usage: Used to treat postpartum bleeding and **tu kiog** (difficulty in maintaining a menstrual period.)

Treatment of postpartum bleeding: After delivery of the placenta, the midwife prepares a steaming basin of water and adds a handful of **mori** leaves and/or a handful of **pen kunei**, Lantana aculeata L. leaves. The new mother will squat over the steaming solution for several minutes to help stop the bleeding. In some cases the mother is said to feel very cold after giving birth and in these cases it is considered as critical for this steam treatment to be performed because the mother may die otherwise.

Treatment of **tu kiog**: Strips of clean **ratua**, Erythrina variegata Stickm. inner bark and paired leaves along with a pair of leaf shoots and two young branches of **ker mi`a**, Syzygium gracilipes (A.Gray) Merr., a young shoot of **par mea**, Musa paradisica L., two **pinau**, Thespesia populnea (L. Corr. Serr. branches and some cleaned inner bark of the **mori**, are all finely chopped and mixed together. The resultant mixture is added to water and drunk by the patient. The treatment is usually only given once but may be repeated if needed. The treatment should not be given to pregnant women, since it is felt this will cause a miscarriage, although the identical treatment without the E. variegata is given to stop miscarriage. No massage is given with this treatment unless there is massage being given to promote pregnancy.

Medicinal uses on other islands:

Samoa: The tree is called **moli`aina**. The bark is used to treat **failele gau** (postpartum sickness.) (Whistler 1992:137) The bark is used to treat heatstroke. (Zepernick 1972:44-5) Cox (1993) records Citrus aurantifolia Chris. as being used for inflammation.

Tonga: The leaves are part of a treatment for **kita** (relapse sickness.) (Whistler 1992:137)

Citrus limona Osbeck

Collection # M370

Description: The limon tree, with fruit usually green to light yellow at maturity. Occasionally found in gardens and in villages.

Non-medicinal uses: The fruits may be eaten.

Rotuman name: **Lamane**

Medicinal usage: Used to treat postpartum bleeding.

Treatment of postpartum bleeding: After delivery of the placenta, the midwife prepares a steaming basin of water and adds a handful of **lamane** leaves and/or a handful of **pen kunei** Lantana aculeata L. leaves. The new mother will squat over the steaming solution for several minutes to help stop the bleeding. In some cases the mother is said to feel very cold after giving birth and in these instances it is considered to be crucial for this steam treatment to be performed because the mother may die otherwise.

Medicinal uses on other islands:

Cook Islands: The tree is called **tiporo**. Lemon juice is mixed with eggs, milk or sugar and taken to treat coughs and sore throats. (Whistler 1992:97)

Fiji: The tree is called **molikarokaro**. The fruit is used to treat tuberculosis. The roots are used to treat asthma, to aid in expulsion of the placenta after childbirth and to treat relapse after childbirth. The leaves are employed in the treatment of filariasis. (Weiner 1984:95)

Tonga: The tree is called **lemani**. The fruit and leaves are used in a bath for persons with **'avanga** (spirit induced illness.) The bark is used to treat **pihi** (a constant urge to urinate and have frequent bowel movements, usually occuring in children), and **kona nifo** (teething problems.) Unspecified plant parts are used in the treatment of **hake vela** (heartburn), **kahi** (illness believed to be caused by internal blockage), and **langa kete** (abdominal distress.) (O'Rourke-George 1989:153-4) The fruits are added to a mixture used to treat **pala ngakau** (gastric or duodenal ulcers.) (Parsons 1981)

Euodia hortensis J.R. & G. Forster

Collection # M569

Description: Bush to small tree growing up to 5 meters tall. The leaves and flowers have a very strong scent.

Non-medicinal uses: None reported.

Rotuman name: **Usi**

Medicinal usage: Used to treat pain associated with spiritual possession and to drive away spirits, **mase susu** (pain and/or lumps in the breast tissue), **`atua mur** and **tui huhual** (spiritual pain, swollen thighs, red over the entire body, feverish, may eventually affect the entire lower torso. Failure to seek treatment may lead to **maf jiol** (crossed eyes), **la he'** (lameness of a limb) or **mou huag** (constipation)) and is used as a component of massage oils.

Treatment of pain associated with spiritual possession: While in the **sur`atua** trance (a spiritual possession usually by an ancestor) state, a poultice of paired leaves is made by mixing pulverized leaves coconut oil. The thick mixture is smeared liberally over the body and used as a massage lubricant. The massage is said to relieve the deep pains which occur when possessed and to allow the one possessed to be a medium between the living and the dead ancestors.

Treatment of undesired spiritual possession: A healer treated a young girl who had been invaded by 9 mischievous spirits by slapping her with a branch from an **usi** tree. Each time he slapped her a spirit would leave her and she would spit at him. When the last spirit left her she convulsed and fell to the floor. This event was reported as occurring in the village of Juju less than thirty years ago.

Treatment of **mase susu**: Fresh leaves and stems of **`ai raurau**, Mikania micrantha H.B. & K. are rolled between the hands until well crushed and the juice dripped on the breasts. A pair of **usi** leaves is then carefully brushed over the breasts in strokes which end away from the body. The leaves are moved in this manner until the healer feels that the session is completed. The treatment is repeated daily for five days with a lesion typically emerging from the lump area within three days. If no lesion occurs within five days, then the treatments may continue, but it is felt that the lump or pain will dissipate, although no lesion will occur.

Treatment of **`atua mur** and **tui huhual**: Prior to massage, the healer will lightly brush the entire body of the individual with a pair of **usi** leaves or 4 entire branches. The strokes of the leaves/branches begin at the head and work down with the direction of each sweep being away from the top of the body. Coconut oil, **lol**, will then be applied with the application in the same direction, away from the head. The **usi** leaves may be used a second time in the same manner. The treatment is repeated daily until the situation resolves with each treatment lasting an hour or more.

Use in massage oils: The fresh leaves may be added to **lol**, coconut massage oil, and allowed to steep for days to weeks. The leaves are added for their pleasant scent and the oil may be used for massage of many different disease states.

Whistler (1992:146) reports "even on distant Rotuma, the major use of Euodia is for treating "ghost sickness."

Medicinal uses on other islands:

Fiji: The tree is called **mata ni raqiqi**, **Uci ni velkau** and **uci**. The bark is used to treat yellow eyes and urine. The stems are used to treat pediatric convulsions and the leaves are used to treat swollen testicles. An unnamed part is employed in the treatment of a disease caused by spirits. (Weiner 1984:96)

Futuna(east): The bush is called **`usi**. The leaves are used to gently stroke swellings such as boils. The bark is used to treat children's sore throat. "The strong-smelling leaves are use by women who practice medicine (**fafine fai faito`o**) to wash their patients. (Probably patients suffering from ghost sickness, as spirits dislike the strong smell.)" (Biggs 1985:128)

Niue: The tree is known as **uhi**. The leaves are chewed as a remedy for toothaches and stomach pains. (Yuncker 1943)

Samoa: The bush is called **usi**. The leaves are used To treat inflammation and "ghost sickness." (Cox 1989:494)(Cox 1993) The leaves are used to treat "ghost medicine." (Whistler 1992:146)

Tonga: The tree is called **uhi**. The leaves are used as a laxative and to treat fevers, gum sores, headaches and ear aches. (Weiner 1970, 1984:96) The leaves are used to treat **matu'u mei faitoka** (a type of boil), **'ulukila** (a boil on the head causing local hair loss), **pala** (internal and external sores or lesions), **mea** (dermatitis), **fuofua** (pimples), **kiatolo** (hard swelling or lump beneath the skin), **mata kula** (swelling and redness of the eyes), **ngaluholoholo** (inflammation of the eyelids with swelling and itching), **langa kete** and **lolo'ulumanava** (stomach ailments), and for **'avanga** (spirit induced illness.) The bark is used to treat **kahi** (illness

believed to be caused by internal blockage.) (O'Rourke-George 1989:155-9)
Note: This species has many different uses, thus only a sample from the references has been selected for this review.

Micromelum minutum (Forst.f.) Seem.
Collection # M415
Description: A small to medium height tree common is some village gardens and rarely seen in the forest.
Non-medicinal uses: None reported.
Rotuman name: **Tarfai**
Medicinal usage: Used to treat toothache, **ra' la loga** (literally "cuts on the insides" or chest pain (possibly angina or dropsy)), and is used to promote menstruation.

Treatment of toothaches: A pair of leaves is selected and chewed slowly with the juice held in the mouth then slowly swallowed or spit out. Pain will reside almost immediately but repeated usage may be required.

Treatment of **ra' la loga**: A strip of bark is taken from a large tree and is pounded with a stone until shredded. The shredded bark is then mixed with water and worked vigorously by hand to release the color into the solution. The solution is then strained through a **sakoto** to provide the final product which is drunk by the individual. The treatment may be repeated daily until the inner wound is healed. This disease state is considered to be very serious. In the worst cases the patients skin will become pale and the individual will die after a prolonged period. The disease must be treated early and the **tarfai** must not be taken along with western medicine. A day between the administration of **tarfai** and western medicine is considered as sufficient. While being treated the patient must not use soap or eat salty of fatty foods. The bark infusion may be taken up to several times daily if the situation is bad. If there is not a good supply of bark then the leaves may be used as a substitute.

Treatment to promote menstruation: The preparation is the same as above for **ra' la loga**, but may also have added to it strips of bark from **toa**, Casurina equisetifolia L. and/or the bark of **tog oi**, Terminalia glabrata A.Gray. A large volume of the prepared solution is drunk by the woman. Massage is said to be occasionally used with this treatment but is not common since this treatment may be prepared by non-healers and self administered.

Most healers consider this to be a very potent and potentially dangerous medicinal plant. Although it is often used by healers, each was careful to point out that it is too potent of a medicine for some people.
Medicinal uses on other islands:
Fiji: The tree is called **qiqila** or **sasaqila**. The leaves are used to treat white scum on the tongue (thrush?), foul breath and hemorrhoids. The bark is used to treat headaches and some sore throats. An unnamed part of the plant is employed in the treatment of an illness described as swelling without any opening. (Weiner 1984:96)
Futuna(east): The tree is called **takafalu**. The leaves are applied or chewed for treatment of **masaki lasi** (filarial swelling.) An unnamed part of the tree is used to make drops for the treatment of headaches. (Biggs 1985:127)
Samoa: The tree is called **talafalu** or **lau tamafalu**. The bark is used to treat stomachache. The leaves are used to treat headaches, possibly caused by spirits. (Whistler 1992:171-2) The leaves are used for analgesia and as an anti-bacterial. Stem bark is used as an anti-fungal and anti-bacterial. (Cox 1989:494)(Cox 1993)
Tonga: The tree is called **takafalu**. The bark is used to treat **kahi matanakiloma** (hemorroids), **langa kete** (abdominal distress), **pala ngakau** (gastric or duodenal ulcers), and **mofi** (fever.) The leaves are used to treat **pala huhu** (sores on the breast) and to heal the umbilical area. (O'Rourke-George 1989:160) The bark is used to treat **matakelua** (red nates on children.) (Weiner 1970) The bark is used to remedy **pala fefie** (oral thrush), **tu'umamahi** (painful urination, urinary tract infection), **kahi muifa'ele** (hemorrhoids), and **kaitolo** (a hard swelling or lump beneath the skin) of the breasts. (Parsons 1981)

Sapindaceae

Pometia pinnata Forster and Forster f.
Collection # M357
Description: Large canopy forest tree.
Non-medicinal uses: The fruits are eaten.
Rotuman name: **Fao** or **Fava**
Medicinal usage: Used to treat **kapkapa** (scabies or other scaling skin diseases.)

Treatment of **kapkapa** : Fresh leaves are gathered and crushed in fresh water. The solution is then used for bathing.
Medicinal uses on other islands:
Fiji: The tree is called **dawa**, **dawaloa**, **dawasere** and **tawalo**. The bark is used to treat deep pains in the bones, migraine headaches, to aid in expulsion of the placenta after childbirth, relieve rheumatic aching of muscles and joints, relieve pain and fever caused by filariasis, and is used as a cold and flu remedy. The wood is used to treat pain in the bones and the entire plant is employed to treat an illness described as sickness inside the chest. (Weiner 1984:96)
Tonga: The tree is called **tava**. The bark is utilized to cure diarrhea in children, treat other stomach troubles, coughs accompanied by fever, constipation and diaper rash. (Weiner 1984:96) The bark is used to treat **langa kete** (abdominal distress), **pala ngakau** (gastric or duodenal ulcers), **makehekehe** (severe recurring abdominal pains), **nami** (pain in the back and stomach causing the person to hunch over), **fakalele** (diarrhea), **kahi** (illness believed to be caused by internal blockage), to prevent pregnancy, **pihi** (a constant urge to urinate and have frequent watery bowel movements, usually occurring in children), **kulokula 'ohuafi** (small red lumps which appear on the skin, darken, and are painful and hot to the touch), and fro treatment of dysmenorrhea, menorrhagia, vaginal bleeding, cessation of menses, and for problems with afterbirth. (O'Rourke-George 1989:161-4)
note: Many more uses are recorded from other islands with only a selection being presented here.

Solanaceae

Capsicum fruitescens L.
Collection # M079
Description: Bushy herb introduced from the New World. Found in many gardens and as shrubs around houses. The fruits are produced in many varieties but the most common on Rotuma are less than 5 cm long and erect.
Non-medicinal uses: The fruits are eaten as a condiment and spice.
Rotuman name: **`Ai sun**
Medicinal usage: Used to treat **puna** (boils.)

Treatment of **puna**: Several pairs of leaves are selected and chewed by the healer. The site of the boil is massaged and the chewed leaves are applied over the center of the massaged site. If the boil has emerged, then the chewed leaves will be packed into the opening and covered with an unchewed **`ai sun** leaf. This treatment is particularly recommended if the boil occurs on or near the spinal column. The patient is advised to avoid getting the affected area wet and to return for treatment twice daily until healed. Boils over the spine, particularly in children are considered to be potentially fatal.
Medicinal uses on other islands:
Cook Islands: The bush is known as **nita**, **vi nita**, or **vi puaka**. The leaves are part of a treatment for boils.
Samoa: The bush is called **polo** or **polo feu**. The fruits are used to treat internal ailments. Leaves are used for maternal complications and bacterial infections. (Cox 1989:494)(Cox 1993) The leaves are used to treat boils, abscesses, wounds and coughs. (Whistler 1992:132)
Tonga: The bush is called **polo fifisi**. The leaves are used to treat **hila'akilangi** (a painful carbuncle on the stomach or back), **'ulufi** (a carbuncle issuing pus), **'ulukila** (a boil on the head causing local hair loss), **kulokula** (fever, chills, and red swellings on the skin), swelling of teh neck, and **vela** (burns.) The fruits are used to treat **kahi** (illness believed to be caused by internal blockage), **hela** (asthma), **langa kete** (abdominal distress) and **tae** (coughing.) (O'Rourke-George 1989:165-6) the leaves are used to treat skin infections. (Bloomfield 1986) The fruits are added to a mixture for infertility. (Singh et al 1984)

Physalis angulata L.
Collection # M078
Description: Bushy herb growing to 1 meter high with sweet green fruit in papery sacks.
Non-medicinal uses: The fruits are occasionally eaten by children but this is largely considered as a weed.
Rotuman name: **`Urmoa**
Medicinal usage: Used to treat **puna** (boils.)

Treatment of **puna**: The leaves may be rolled between the hands until soft and sticky. These are then placed over open boils or small wounds as bandages which will stick to the skin. These were never reported as common usage but were only noted by healers.
Medicinal uses on other islands:
Fiji: The plant is called **cevucevu**. The leaves are used to facilitate childbirth.
New Guinea: The seeds are utilized in a treatment for infertility in women.
Samoa: The entire plant is used medicinally. (Cox 1989:494)
Tonga: The bush is called **polo pa**. The leaves are taken for **engeenga** (jaundice), **te'ia loto** (an illness caused by being hit by a spirit), and for hemorrhage. (O'Rourke-George 1989:166) The leaves are used for "afterbirth well being." (Bloomfield 1986) Unnamed plant parts are taken for post-partum hemorrhage. (Singh et al 1984)

Tiliaceae

Triumfetta rhomboidea Jacq.
Collection # M387
Description: Occasional herb to small bush, found in inland valleys and occasionally near villages.
Non-medicinal uses: None reported.
Rotuman name: **Joan ne pija**
Medicinal usage: Used to treat **hu hual** (inflammation externally, soreness, redness of an area of skin), **puna** (a general term for boils which may occur on any part of the body), **ru huag** (shortness of breath, pressure in the chest cavity, sometimes noisy breathing), and **san** (stomach cramps/diarrhea.)

Treatment of **huhual**: Ten to twelve pairs of leaves are selected along with 10 to 12 pairs of **pen kunei** Lantana aculeata L. leaves. The leaves are finely chopped and ground together with a stone to produce a fine paste which has bits of leaf and leaf veins. The leaf paste has a few drops of water added to it to soften and ease of working with it, then a small amount is placed over the affected area and lightly rubbed on. More of the paste is then used to massage the area immediately adjacent to the inflammation/redness or soreness. Upon completion of the massage, the affected area is covered with pairs of each type of leaf which are held in place with string thus forming a "medicated' bandage. The treatment will be repeated daily after cleaning off the previous days application for up to 5 days. Treatment is completed when the area is no longer inflamed or a lump and a boil forms (see **puna** treatment below.)

Treatment of **puna**: The leaves are prepared in two different ways depending on the severity of the boil and the location. Boils which are considered as minor or occurring on the extremities are prepared the same as in the above **hu hual** treatment and are applied in much the same way, followed by massage and bandaging as indicated above. Boils which are more severe, located on the body trunk and in particular those found on the back near the spine are treated with the same two leaf species but some of the leaves are chewed by the healer with the resulting bolus being placed in the open boil which may be very carefully cut to enlarge the opening. The paste as prepared above is massaged around the site. Before the leaf bandage is applied, more of the paste will be carefully packed into the boil. This treatment will be repeated once or twice daily for 3 to 10 days depending on the severity, until the area

is clear and healing is well advanced.

During the massage for both **hu hual** and **puna**, the healer may also use **lol** (coconut oil) plain or scented from **pipi** Atuna racemosa Raf. seeds, **moskoi** Cananga odorata (Lam.) Hook. & Thomson flowers, or **pup reag lolo** Polygala paniculata L. roots. For both indications the patient is advised to avoid getting the bandage wet, and to stay away from the ocean.

Treatment of **ru huag**: Six to eight pairs of leaves are pulverized along with 4 pairs of **julia ne moa**, Microlepia scaberula Mett. ex Kuhn young leaf fronds and 20 to 30 **ti togo** Centella asiatica Urban leaves. The pulp is placed in a piece of cloth or an **ununu**. A solution is strained from the cloth or **ununu** and is drunk. If the chest is very sore then massage will be conducted with the herbal dregs left in the cloth or **ununu**. The patient is instructed to avoid eating salty, fatty or sweet foods while being treated. Treatment takes five days with morning, noon and evening treatments each day.

Treatment of **san**: The same preparation is used as above for **ru huag**.

Medicinal uses on other islands:

None identified for nearby islands but Burkill (1966:2228-9) reports that an undefined part of the plant is used with rice water as an astringent after dysentery. The mucilage is also indicated to be used for injection in inveterate gonorrhea, and the fruit is believed to promote parturition.

Ulmaceae

Trema cannabina Lour.

Collection # M410

Description: Rare, small tree found at edges of recently cleared plantations and occasionally near older plantations.

Non-medicinal uses: None reported.

Rotuman name: **Maragi**

Medicinal usage: Used to treat **maf pirpir** (lit. "yellow eyes", lack of appetite, **ar u`u matit** (cold palms), general ill health), **tu kiog** (Lack of a menstrual cycle, in this case when there is pain in the abdomen), and **mamosa** (lethargy, lack of appetite, weight loss, dry cracked tongue.)

Treatment of **maf pirpir**: **U`apea**, Ficus tinctoria Forst.f., leaves in pairs are mixed with pairs of **sesei**, Phymatosorus scolopendrium (Burm.f.) Pichi-Serm., rhizomes and **maragi** bark strips in about equal volumes. The mixture is chopped finely and placed in an **ununu**. The **ununu** is held in a cup and squeezed to release a fluid. The resulting solution is drunk three times a day. The same **ununu** is used for all three doses each day and a maximum of two days of treatment are given. If treated early enough the symptoms may resolve after only one day of treatments. Adults will be given a more concentrated solution made with many pairs of herbal parts, whereas children will be given more mild dosages.

Treatment of **tu kiog**: Fresh leaves of **hat ne sina** Procris pedunculata (J.R.& G.Forst.) Wedd., are paired, crushed and mixed with paired leaves of **maragi**. The mixture is placed in an **ununu** and squeezed in a container of water to produce a solution. The solution is drunk while massage is performed. This will cause the pain to discontinue and the menstrual cycle to begin.

Treatment of **mamosa** : The treatment is identical to that given above except much more of the herbal mix must be from **sesei** rhizomes.

Medicinal uses on other islands:

Samoa: The tree is called **magele**. The roots are used for eye infections. (Cox 1989:494)(Cox 1993)

Tonga: The tree is called **mangele**. The bark is taken for **langa kete** (abdominal distress) with pangs in the upper abdomen. The leaves are used to treat **langa kete** in which the pain jumps from place to place. The leaves are also used to remedy **pala ngakau** (gastric or duodenal ulcers), **toka'ala** (post-partum abdominal pain due to retained blood clots in the uterus), **engeenga** (jaundice), **pala ngutu** (sores in the mouth, especially in children), and **topamomoko** (watery diarrhea in babies and children.) (O'Rourke-George 1989:170-1) Bark infusions are used to treat mouth infections. (Whistler 1992:54) The bark is used to treat **'au** (continuous discharge of blood from the uterus.) The leaves are used to test for true labor verses false labor. (Bloomfield 1986)

Urticaceae

Laportea interupta (L.) Chew

Collection # M561

Description: Small reddish herb growing to 0.5 meters tall. Occasionally found in clearing edges. Flowers occur over the entire stem, even under the soil.

Non-medicinal uses: None reported.

Rotuman name: **Usogo**

Medicinal usage: Used to treat **koi mosran** (stonefish spine poisoning) and **siki `efe** (boils on the abdomen.)

Treatment of **koi mosran**: Young **`ura**, Morinda citrifolia L. leaves are pounded together with entire cleaned **usogo** plants. The mixture is placed in a piece of thin cloth and a small amount of coconut oil is added. The cloth is then wrapped with two **`ura** leaves and placed over a fire to be heated. The site of the poison puncture is enlarged with a knife. The hot package is removed from the fire and small amounts of the juice dripped into the wound. The juice is only applied to the site and care is taken to ensure that it does not get anywhere else on the individual. Massage will next be conducted using a small amount of the juice on the adjacent skin. The massage is always in the direction of the injury. From the beginning of the preparation until the treatment has been completed and the pain relieved, usually requires about one hour.

Treatment of **siki `efe**: **Usogo** roots are cleaned and crushed. The paste is mixed with oil and massaged over the site of the boil. Massage is toward the center of the boil. Treatment is repeated until healed.

Medicinal uses on other islands:

Futuna(east): The herb is called **mageo**. "Scrapings from the trunk[?] are used for treating ghost sickness" Leaves are prepared and drunk to treat swollen testicles, and are used to treat **gugu** (painful swellings which form on the joints.) The plant is also used to help young children who are sick. (Biggs 1985:126)

Samoa: The herb is called **ogo**. The stems are used to treat a cancer-like disease: **nifo loa**, inflammation (cancer?) of the prostrate, and **fuafualili`i**, "small spots" or growths. (Cox 1989:494, 1990:137)

Pipturus argeneus (Forst.f.) Wedd.
Collection # M543
Description: Small, common tree.
Non-medicinal uses: The bark was formerly used in the production of bark cloth and is still used in strips to tie bundles or joints in temporary structures.
Rotuman name: **Armea**
Medicinal usage: Used to treat **te hual** (boils.)

Treatment of **te hual**: Boils which have already ruptured are treated with both massage and dry crushed bark. The area around the boil is vigorously massaged with the intent of "moving" the disease toward the lesion. Following massage and removal of any exudate from the boil, the crushed inner bark is packed into the lesion and covered with an **`ura** Morinda citrifolia L. leaf, which is bound into place with string. The treatment is repeated daily for five days or until the exudate discontinues.
Medicinal uses on other islands:
None identified, but the leaves of the related species P.incanus Wedd. is used in the Moluccas to treat boils, burns, herpes and to remove lice from the hair. An unspecified part is used as a gargle for thrush. (Burkill 1966:1784-5)

Procris pedunculata (J.R. & G. Forst.) Wedd. Collection # M559
Description: Somewhat climbing succulent herb. This species is occasionally found growing epiphytically in trees. Usually found in dark areas under trees, along forest paths and on forested rock outcroppings. The flowers are white, minute and axillary.
Non-medicinal uses: This is highly desirable forage for pigs.
Rotuman name: **Hat ne sina**
Medicinal usage: Used to treat **tu kiog** (Lack of a menstrual period) in this case when there is also pain in the abdomen.

Treatment of **tu kiog**: Fresh leaves are paired, crushed and mixed with the leaves of **maragi** Trema cannabina Lour. The mixture is placed in an **ununu** and squeezed in a container of water to produce a solution. The solution is drunk while massage is performed. This will cause the pain to discontinue and the menstrual cycle to begin.
Medicinal uses on other islands:
None identified.

Verbenaceae

Clerodendrum inerme (L.) Gaertn.
Collection # M521
Description: Rare, sometimes vine-like, shrub found in the low forests above beaches. The flowers are white with purple stamens. Some leaves have purple lines on the petioles.
Non-medicinal uses: None reported.
Rotuman name: **Ortea**
Medicinal usage: Used to treat **susun** (topical burns.)

Treatment of **susun**: The area to be treated must first be washed in the ocean. Several leaves are selected singly or in pairs depending on the size of the area to be treated. The leaves are heated over a fire and rolled in the hands to release juice which is dripped on the burned areas. The solution is allowed to sit on the burns and must not be rubbed in. The solution should be applied while the skin is still wet from the salt water cleaning and then again in a few minutes after the areas have dried. The treatment should be repeated each morning and evening. While healing occurs, the skin will begin to dry and peal, but this must not be pealed off. The treatment is said to leave no scars even from severe burns.
Medicinal uses on other islands:
Fiji: The bush is called **verevere**, **cula ni mase** and **lolovatu**. The leaves are used to remedy a relapsed illness or a bad cough. (Weiner 1984:101)
Micronesia: The leaves are prepared to treat skin rashes caused by prickly heat or chicken pox. (Weiner 1984:101)
Samoa: The bush is known as **aloalo tai**. The leaves are used for inflammation. (Cox 1989:494)(Cox 1993) Leaves are utilized in a cure for headaches. (Weiner 1984:101) Crushed leaves are applied to wounds and punctures. (Whistler 1992:70)
Tonga: The bush is called **tutu hina**. The bark is used to remedy liver disorders and for ulcers. (Weiner 1970, 1984:101) the leaves are used to remedy **lavea** (cuts, wounds), bleeding , **fuofua** (pimples), to clear mucous from the throat, and for diarrhea. (O'Rourke-George 1989:173) The bark is used to treat **kona talea** (a type of "poisoning" which causes a baby to feel tired and uncomfortable.) The leaves are used to treat cuts. (Parsons 1981)

Lantana camara var. aculeata (L.) Mold. Collection #: M076,519
Description: Small bush growing sometimes in dense thickets. Two varieties are found on Rotuma, both being weedy and used medicinally. The common variety has flowers which change color between red, yellow and orange. The rare variety has white flowers. Burkill (1966:1337-8) discusses an endemic version of this species which has white flowers which is rapidly disappearing as it hybridizes with the introduced New World multicolored form. This certainly corresponds with the notion of Rotuman healers, that the white variety used to be much more common and the multicolored variety which is now quite common used to be more rare.
Non-medicinal uses: None reported.
Rotuman name: **Pen kunei**
Medicinal usage:

The leaves of the white flowered variety and the multi-color flowered variety of L. camara var.aculeata are used for sperate indications.
The leaves of the multicolored variety (voucher #M076) are used for the following Rotuman indications: **Hu hual** (inflammation externally, soreness, redness of an area of skin), **puna** (boils) and **tu kiog** (excessive vaginal bleeding

postpartum) and **la noh mou** (miscarriage.) Some healers prefer the white flowered variety (voucher #M519) and will use it exclusively in the treatment of **puna**.

Treatment of **hu hual**: ten to twelve pairs of leaves are selected along with 10 to 12 pairs of **joan ne pija**, Triumfetta rhomboidea Jacq. leaves. The leaves are finely chopped and ground together with a stone to produce a fine paste which has bits of leaf and leaf veins. The leaf paste has a few drops of water added to it for softening and ease of working, then a small amount is placed over the affected area and lightly rubbed on. More of the paste is used to massage the area immediately adjacent to the inflammation/redness or soreness. Upon completion of the massage the affected area is covered with pairs of each type of leaf which are held in place with string thus forming a "medicated" bandage. The treatment will be repeated daily after cleaning off the previous days application for up to 5 days. Treatment is completed when the area is no longer inflamed or a lump and a boil form (see **puna** treatment below.)

Treatment of **puna**: The leaves are prepared in two different ways depending on the severity of the boil and the location. Boils which are considered as minor or occurring on the extremities are prepared the same as in the above **hu hual** treatment and are applied in much the same way, followed by massage and bandaging as indicated above. Boils which are more severe, located on the body trunk and in particular those found on the back near the spine are treated with the same two leaf species but some of the leaves are chewed by the healer with the resulting bolus being placed in the open boil which may be very carefully cut to enlarge the opening. The paste as prepared above is massaged around the site. Before the leaf bandage is applied, more of the paste will be carefully packed into the boil. This treatment will be repeated once or twice daily for 3 to 10 days depending on the severity until the area is clear and healing is well advanced.

During the massage for both **hu hual** and **puna** the healer may also use **lol** (coconut oil), plain or scented from **pipi** Atuna racemosa Raf. seeds, **moskoi** Cananga odorata (Lam.) Hook. & Thomson flowers, or **pup reag lolo** Polygala paniculata L. roots. For both indications the patient is advised to avoid getting the bandage wet, and stay away from the ocean.

Treatment of **tu kiog**: Leaves are selected in pairs and rubbed vigorously between the hands until a juicy mass is produced. The juicy leaves are then placed in a container of boiling/steaming water. The woman who is experiencing the excessive discharge will then squat over the steaming solution. The steam is said to warm the body so that is will return to a normal function. This may be repeated as often as desired but bleeding will usually stop within a day or less. This may also be used following delivery of a miscarriage or abortion. Alternatively the solution may be prepared with the addition of **mori**, Citrus aurantium L. or **lamane**, Citrus limona Osbeck leaves.

Treatment of **la noh mou**: For prevention of miscarriage, the red flowered variety is prepared as above for the steam bath and used in a like manner.

Medicinal uses on other islands:

Tonga: The plant is called **talatala**. The leaves are used to treat cuts. (O'Rourke-George 1989:174) (Bloomfield 1986) (Parsons 1981) (Weiner 1970)

note: Smith (1991,vol.5:172) reports that the plant is poisonous to livestock, so these uses in human medicinals may be somewhat dubious with this recently introduced weed. Contrary to Smith, Burkill indicates that in Java the leaves are chewed as a medicinal, the plant may have topical antiseptic properties, and the stems are used as tooth brushes in Taiping. (Burkill 1966:1338-9) Whistler (1992:166) states that the plant is not used medicinally in Polynesia outside of Tonga, but continues to indicate that the leaves are used as an antiseptic in the Philippines.

Premna taitensis Schauer

Collection # M408

Description: A small tree only occasionally seen.

Non-medicinal usage: None reported.

Rotuman name: **Varvara**

Medicinal usage: Used to treat **`af`af ne fatmanava** (pain in the chest, difficulty in breathing, difficulty in performing physical tasks, may lead to coronary infarction, possibly heart disease, angina), **koh ta koa** (cough and colds), burning in the throat as if something "hard" is present and **mou huag** (constipation.)

Treatment of **`af`af ne fatmanava**: Two small limbs as long as the forearm are selected and the inner bark removed and chopped finely. The bark is mixed with up to 100 paired **ti togo**, Geophila repens (L.) IM.Johnst. leaves and six pairs of **koao**, Psidium guajava L. leaves. The entire mixture is chopped very finely any placed in an **ununu**. The **ununu** is then squeezed and twisted while submerged in some fresh water. The resultant solution is drunk over the course of three days. The patient will take the **ununu** filled with herbs home and prepare the drink as often as desired each day. If the herbs seem to loose their potency, the patient will return for a fresh **ununu**. The treatment is discontinued after three days and must not be reinitiated. Following the days of treatment the individual will progressively recover and not need to seek further treatment. While using the solution, the individual is restricted from drinking coconut juice, eating hot foods or bathing at night since these may lead to a secondary disease state, **mamosa** (lethargy, dry cracked tongue, and loss of appetite.) If too much of the solution is drunk during therapy, the individual will experience **mak sul maf** (orthostatic hypotension.)

Treatment **koh ta koa**: The leaves may either be chewed slowly with the juice swallowed or a solution may be prepared from four to six leaves of **varvara**, several **sesei** Phymatosorus scolopendrium (Burm.f.) Pichi-Serm., rhizomes and/or **rag`apua** Zingiber zerumbet (L.) Sm., stems, and/or strips of **tog oi** Terminalia glabrata A.Gray, bark. The solution is drunk to relieve the cough and cold symptoms.

Treatment of burning in the throat as if something "hard" is present: Two to four pairs of leaves are steeped in warm water, then the leaves are removed. The tea which has been prepared is drunk to relieve the burning sensation.

Treatment of **mou huag**: **Varvara** leaves are mixed with **ti togo**, G.repens, leaves, crushed, placed in an **ununu** and extracted in water to produce a solution. The solution is drunk to relieve constipation.

Medicinal uses on other islands:

Futuna(east): The tree is called **valovalo**. The leaves are used as a liniment for babies who are feverish and to treat ghost sickness. (Biggs 1985:125)

Niue: The tree is called **aloalo**. The tree is used to treat asthma and is employed in "ghost medicines." (Yuncker 1943)

Samoa: The tree is called **aloalo**. The tree may be used to treat fever. The leaves are employed in treating **mumu** (skin inflammations) and as a poultice for sores and wounds. (Whistler 1992:191)

Tonga: The tree is known as **volovalo**. The leaves are used to treat **kulokula** (inflammations.) (Whistler 1992:191)

Vitex trifolia L.

Collection # M527

Description: A highly aromatic, small tree which is rare on Rotuma. The flowers are white and the fruits are blue.

Non-medicinal uses: None reported.

Rotuman name: **Sia'vao**

Medicinal usage: Used to treat **ru filo** (headache.)

Treatment of **ru filo**: One pair of **sia'vao** leaves is rolled between the hands until well crushed. The leaves are then squeezed under the nose with the head tipped back. A drop of solution is allowed to roll back into the nostril to relieve the headache. This species has a very strong aromatic scent which is concentrated in the leaves and subsequently the drop placed in the nose.

Medicinal uses on other islands:

Fiji: The tree is called **dralayalewa**, **bulokaka**, **dralakaka**, **dralakuru** and **vulokala**. The leaves are given as a remedy for stomach pains in which one side of the stomach is hard, to treat gonorrhea, very serious coughs, and serious wounds. Migraine headaches are treated by squeezing the juice of leaves into the ears and nose of the patient. Steamed leaves and their vapors are inhaled to treat headaches and are used to treat hemorrhoids and serious wounds. New shoots are used to remedy colds in children and the stem bark is employed in a remedy for fractured bones. (Weiner 1984:102)

Futuna(east): The tree is called **lala**. Leaves are chewed with orange tree leaves and held against a sore tooth to relieve pain. (Biggs 1985:127)

Samoa: The tree is called **namulega**. The leaves are used for internal illness and inflammation. (Cox 1989:494)(Cox 1993) An infusion of the leaves or bark is administered for fevers and **sela** (respiratory problems.) Burned leaves may have formerly been used as a mosquito repellant. (Whistler 1992:211)

Tonga: The tree is called **lala** or **lala tahi**. The tree is employed in treatment of inflammations and various other ailments. (Whistler 1992:212) The leaves are indicated for **pala nifo** (sore or ulcerated gums or teeth), **nifo kona** (teething problems), **pala 'elelo** (sores on the tongue), **pala kula** (redness around a child's nose), **pala ngutu** (sores in the mouth, especially in children), use in a bath for **'avea** (spirit induced illness.) The bark is used for constipation. (O'Rourke-George 1989:176-7)

Comments on additional medicinal species

Other research work on Rotuma has produced brief references to several species of plants which were used medicinally in the past. I attempted through this fieldwork to verify the species and their usages as recorded by the earlier authors but with very little success. Gardiner (1897:492) reported that "native poultices are made of the leaves of the taro and hibiscus crushed up; I was also informed by Marafu (chief of Noatau district) that they used to be made of dried arrowroot and the dried seed of the Tahitian chestnut, and that a certain amount of turmeric was always mixed with these." Of these species, taro (**papula** Colocasia esculenta (L.) Schott), arrowroot (**mara** Tacca leontopetaloides (L.) Kuntze) and the Tahitian chestnut (**ifi** Inocarpus fagifer (Parkinson) Fosb.) are not presently used as medicinal plants. Rotumans when questioned about this reference felt that their ancestors had played a joke on Dr. Gardiner. Hibiscus (**kauta** Hibiscus rosa-sinensis L.) and the turmeric (**mena** Curcuma longa L.) are currently recognized as medicinal.

St.John in his 1938 field work on the Rotuman flora noted several species as having medicinal value. His field work has not been published but some of the herbarium vouchers may be found in the Bishop Museum Herbarium in Honolulu. In my field work I attempted to verify his findings. Only seven of the species he identified could be verified, Acalypha grandis Benth., Centella asiatica (L.) Urban, Cerbera manghas L., Cyclosorus unitus (L.) Ching, Thespesia populnea (L.) Soland. ex Correa, Terminalia catappa L., and Vigna marina (Burm.) Merr. St.John additionally records seven other species as medicinal. These species are recorded below with Churchward's results.

Churchward within his Rotuman dictionary (1940), described many of the medicinal plants used on Rotuma during his tenure. Among these, some species such as **giagia** Cerbera manghas L., and **virviri** Jatropha cucas L. were found to be used in an identically as described by Churchward, others such as **pup ne rano** and **sea** were identified but never indicated as medicinal and yet other plants, **asi**, **kapniko**, **mula**, **mulaje** and **rimi** could not even be identified as known species among the current Rotumans who were questioned. Below are listed the medicinal plant entries from Churchward's Rotuman dictionary which could not be verified along with his description/definition.

asi : A tall rush-like grass which grows in thick clumps and whose root is used for scenting purposes. (Possibly Cymbopogon coloratus (Hook.f.) Stapf. (Poaceae))

kapniko : A plant used for medicinal purposes.

mula : A bush bearing large berries, singly, at junction of leaf-stalk with stem. A medicine for dysentery is made from the root. St.John (1938:voucher 19652) identifies **mula** as Ficus scabra Forst.f. (Moraceae) but gives no indication that it was used medicinally.

mu'laje : A tree somewhat resembling the **sa`a** (Macaranga

sp..) From its inner bark is made a medicine for pulmonary tuberculosis (**a'riri`aki**.)

pul : Scaevola taccada (Gaertn.) Roxb. (Goodeniaceae), St.John (1938:voucher 18993) states that the tree is used "medicinally: juice from the fruit is used for sore eyes."

pup ne rano : Swamp grass: The leaves are used to treat inflamed eyes. (Possibly Ludwigia octovalvis (Jacq.) R.Br. (Onagraceae.)

raumatori : Unidentified plant parts are used medicinally (St.John 1938:vouchers 19476, 19416) Nasturtium sarmentosum (DC) Schinz & Guillaumin (Brassicaceae.)

rimi : A grey lichen found on tree trunks, usually coconuts, used for making medicine used in treating high fevers and/or convulsions.

sea : A tree bearing yellowish-brown fruit, roughly elliptical, with very uneven surface and soft skin. The flesh cuts and smells like an over-ripe apple. Fruit edible but used mostly for scenting oil and giving odour to garlands (**tifui**), (traditional ceremonial necklaces.) (Possibly Parinari insularum A.Gray. (Chrysobalinaceae) identified by St.John (1938:voucher 19301) as "**sea.**"

sere : Achyranthes aspera L. (Amaranthaceae) St.John (1938: voucher 19303) reports this species being used medicinally as a "decoction of stems taken for colds." Additionally I identified this species (voucher: WCM529) from the forest near the village of Juju. The are in which it was found is recognized as a location in which the healers of the village have traditionally maintained their herbal supplies. The healer with whom I was working at the time, recognized the species and indicated that it was a medicinal plant but that the healer who had used it was dead.

sere : Leaves are chewed and the resulting juice put in a bloody eye. St.John (1938:voucher 19091) identified the species as Oplismenus hirtellus (L.) Beauv. (Poaceae.)

totoro : Wedelia biflora (L.) DC (Asteraceae), St.John (1938: voucher 19152) stated simply that the plant is used medicinally.

Additionally St.John identified:
-Ficus sp. (Moraceae)(1938:voucher 19046) as "medicinal",
-Glochidion ramiflorum J.R.Forst. & G.Forst. (Euphorbiaceae)(1938:voucher 19255) as "medicine, the leaves are chewed as a remedy for cough.

Comparison with other Polynesian healing systems

In comparing Rotuman healers to other Polynesian healers, some interesting similariites and dichotomies may be seen. Rotuman healers pass their knowledge and healing power only to members of the same clan, whereas in Tonga, Samoa and Hawaii, although the apprentice is likely to be a relative, it is not required (O'Rourke-George 1989) (Gutmanis 1991:14.) Rotuman healers are in relatively large ratios to the overall population, but have low numbers of treatments per healer. Samoan and Tongan healers are in low ratios to their populations and each healer has a large number of treatments. The healers throughout Polynesia are typically female with even lower percentages of men than are found practicing on Rotuma. Rotuman treatments traditionally were kept as clan secrets whereas other Polynesians are open with their information. Rotuman healers will usually receive some type of compensation for their services which is an outstanding difference from the position of other Polynesian healers who receive no compensation. Despite this compensational difference, the Rotuman healers do hold a similar social position (or lack thereof) as do their neighboring Polynesian counterparts.

Since the Rotumans claim to be descended from Samoan colonists, a comparison with that culture is appropriate. The Samoans like the Rotumans recognize healing specialties. Cox (1990:125-6) reported that the Samoans have four healing specialties : **fofogau** (bone setters), **fa'atosaga** (midwives), **fofo** (those who practice massage) and **taulasea** (herbalists.) The first two categories correlate well with the Rotuman specialty types but the later two are much more specific. Rotumans appear to have a blend of the massage and herbal type traditions which are subsequantly divided into many sub-specialties.

Samoan, as Rotuma healers may receive gifts for their services. But, Macpherson (1985:10) states that "they (the Samoans) strenuously resist the suggestion that gifts are in fact payment for services." The Samoans will resist accepting gifts and feel that their God given gift of healing may be lost if they abuse their talent for gain. The Rotumans, while feeling that they may also loose their ability for similar reasons, accept gifts because they are seen as a necessary aspect of the healing process.

The Samoan healing system appears to have a more complex disease classification system than the Rotuman. The Samoans (as many other Polynesians) use a binomial system to classify their diseases (Cox 1991:152-3.) Although the Rotumans use binomials to describe some illnesses, they have relatively few examples of this approach. Samoan binomials appear to unite at least in terminology, diseases which have no apparent relationships to each other. For example **ila fa`au tama** (birthmarks), and **ila mea** (unexplained crying), along with several other diseases use the same binomial (generic) modifier **ila**. Rotuman binomials such as **ru** (pain, painful) followed by a body part or location (for example **faliga**, ear) indicate diseases which although not strictly related, do share symptomologies such as pain, etc.

The Rotumans have had their most recent large scale contacts with Tonga. In spite of this contact (domination) there are many aspects of the two systems which diverge. This may be due to contact and political rivalry between the islands occurring among the men of each culture with the healing authority in each largely lying in the women. Rotuman healers, unlike their Tongan counterparts, **faito`o**, do not appear to have had their origins amongst the commoners, but rather are represented in all levels of society. The Rotumans do appear to have had a priest healer as did the Tongans in the

person of the **ape`aitu**, who as described by Gardiner (1898:468) was a special priest or priestess who could call on and be possessed by a clan spirit. These healers were imbibed with the ability to treat those possessed by spirits either to calm them while possessed or to cause the spirit to depart. The similarity with Tonga may continue in that the word **ape`aitu**, sounds very similar to the Tongan **api `aitu** meaning a home for a god. It is possible that this priest healer is a cultural relic from the era of Tongan domination. None who claim to be an **ape`aitu** are still alive today, the last having died less than 10 years ago. The current population of Rotumans interviewed did not feel that the **ape`aitu** were of particularly special political rank, although the differences between royalty and commoner are much less clear in Rotuma's small population, than in a larger populace such as is in Tonga. The Rotumans like the Tongans and Fijians, formerly practiced burning or applying hot treatments which scarred the skin (Gardiner 1897:492)(O`Rourke George 1989:12.) These aspects may deal more with the ancient religion and indicate religious rather than medicinal aspects of similarity between the cultures (although the spiritual was highly interlocked with the medicinal system on Rotuma.)

Two healing traditions on Rotuma were identified as originating on ``Uvea island. `Uvea and Futuna, which are only 120 miles from each other sharing closely related cultures. The medicinal system of `Uvea has not yet been characterized, but is probably similar to the Futunan traditional medicinal system. The Futunans term their healers **faito`o** as the Tongans do. The Futunan healers like the Rotumans, consider many diseases to be caused by spiritual activity or social errors of the afflicted individual. "Practitioners generally claim to specialize in the use of one or a few medicines, and are called on when it is thought that their expertise is appropriate." (Biggs 1985:113) Herbal remedies are commonly employed with species used and their uses overlapping with Rotuman usage. For instance Laportea interrupta (L.) Chew, on both islands is used to treat irritations/swellings. Hibiscus rosa-sinensis L. leaves are consumed by pregnant women in both cultures in preparation for delivery of the child. (Biggs 1985:122)

Futunans place great emphasis on the proper herbal treatment with reduced emphasis on identification of disease symptoms.

> "There is general difficulty in getting detailed descriptions of symptoms which might determine the nature of a sickness, but there is great willingness on the part of Futunans to talk about the medicines themselves." (Biggs 1985:117)

This is not the case on Rotuma where there is more of a balance between disease identification and determination of the cause of an illness and selection of a treatment. Biggs also reports that the Futunans disproportionately are concerned with the category of **kita** (relapse illness.) The Rotumans although recognizing a category of relapse illness, **tui**, did not report this group of diseases very often, and do not have an excessive number of treatments for them.

The islands of Anuta and Tikopia are the closest Polynesian outliers to the west of Rotuma. Historically there was a great deal of contact between these islands. Anuta is closer to Rotuma and has had its medicinal system studied so may be used for comparison of Rotuma to an outlier system.

Anutan (Feinberg 1979:5-7) concepts of spirits, spirit caused diseases and the authority of chiefs over spirits parallels the Rotuman view of the spiritual world. Furthermore the Anutan chiefs were thought to hold the power to procure protection from catastrophes and disease much as Rotuman chiefs could. The power to deal with the spirits could also be used to direct spiritual activity, and thus disease against those who were socially out of line.

Anutan and Rotuman concepts of the sources of spiritual power have both shifted strongly in the Christian era to beliefs that power is supplied by God (in a Christian sense) rather than the older gods. Spirits of the ancestors though, still play roles in providing healing powers and inspiration as well as being causal in disease processes (Feinberg 1979:11-13.) Anutan disease terminology in some respects parallels Rotuman. For example, **te rapa** describes the same skin disease as the Rotuman term **kapkapa** which may be a cognate of an older unifying term.

Feinberg indicates that the Anutans as the Rotumans, feel that the power to heal resides in certain individuals. Herbal treatments although "superficially,...quite simple and straight forward" (1979:18) are considered to only be effective when applied by a healer. Feinberg (1979:17) states, "such remedies, however, do not rely upon medicinal properties inherent in the plants themselves, but on powers vested in them by a social transaction of some sort." Concerning herbal treatments, two different approaches appear to be in effect on Anuta. First, one which resembles the Rotuman approach: A specialist selects and prepares specific herbs which are used in a prescribed way.

The second approach varies dramatically from the Rotuman view of herbology: An individual (non-specialist) is instructed to randomly select leaves which appeal to them and to prepare a water infusion from their collection. The water infusion is prayed over and applied externally. This external application is apparently not a type of massage. Anutan therapy may or may not use massage as an aspect of treatment. Massage is so central to Rotuman concepts of healing that it seems likely that if it held the same therapeutic value to the Anutans, Feinberg would have noted its usage. This non-specific herbal tradition without massage, which is very different from what I have found on Rotuma is further clarified by Feinberg:

> "I discovered no true herbal medicines, said to work by virtue of the properties intrinsic to the plants, themselves. Perhaps in former days Anutans may have used such remedies, but if so they have been dropped since the introduction of Western medicine and the coming of the Church. The absence of herbal medicines on Tikopia even at a time when paganism was still flourishing and Western medications were virtually unknown (see Firth 1959:135), however, makes it seem unlikely that plants of proven pharmocological value were ever used by the Anutans. Massage was practiced by Tikopians (Firth 1959:133-135), leading me to speculate that it was in use on Anuta also, but I never witnessed this

procedure in the course of my investigation." (Feinberg 1979:18)

Rotuman healers hold many more aspects in common with their Polynesian cousins. The terms **sarao** and **vai** are also used in Tonga, Samoa and East Futuna. The same plants are often used (although the floras overlap and there may be little choice in some cases) with specific uses often identical (e.g. Euodia hortensis Forst.f. for treatment of spiritual ailments). These plant species, even those only used medicinally will often have the same name or a cognate of the same name on each island. Aspects of healers characterized as being loving and concerned with their fellows and taken from all aspects of society with no special roles or honors being given are also held in common with Polynesia as a whole. In general the role of the healer in Polynesia is as a unifying force in their communities which is certainly their primary role on Rotuma.

Conclusions

The Rotuman system of medicine is a complex integration of traditional cosmological thought, physical experiences with the tropical island environment, and information gleaned from other islands and European cultures. The Rotuman healers are the last bastions of traditional culture and have much of the remaining knowledge of prehistorical thought kept with themselves as oral traditions. Their system of healing has withstood the onslaught of western culture through integration and sometimes compliance with the ideas which conflicted with the traditional view of the world. Ideals and practices which have not been in conflict with western medicine or religion have persisted to continue meeting the needs of the society.

Traditionally the medicinal system and the healer have played important roles in social integration, resolution of conflicts, and promotion of health care. This system, which once stood in isolation, has now become part of a larger system of health care which is available to Rotuma. Some healers, such as the midwives, have all but been forced out of practice due to pressure from western medicine. Others such as those who treat spiritual illnesses have continued due to the lack of spiritual treatments in western medicine. Rotuman treatments for topical maladies have survived and continue to play important roles while western medicine is working to improve its poor state of tropical medicine, particularly for topical diseases.

The Rotuman medicinal plants identified from this study will be tested in western pharmacological screens to determine there efficacy. If, as has been found with the herbal treatments from other Polynesian islands (Cox et al 1989:487-497), these are found to be effective, it will serve to strengthen the traditional view of health care on Rotuma. The medicinal plants may also potentially provide new drug leads and/or mechanisms of pharmacological action for western medicine (Cox 1990b)(Balick 1990.)

This study has served many purposes; documentation of a little studied culture, documentation of potentially new and different uses of medicinal plants, and preparation of an indigenous plant and terminology vocabulary list. Each of these aspects is considered to be crucial in verifying the Rotuman traditional herbal medicine as efficacious. These results are also valuable for comparing Rotuman tradition to other medicinal systems in order to identify common and probably effective uses of the species involved (Akerele 1990:12-3.) Lastly a study such as this, provides positive cultural confirmation which is rarely given in support of non-western cultures. I hope that because of this work, the Rotuman healers continue their tradition and the younger generations build a restored pride in the paths of their ancestors.

Appendix I Herbarium Voucher Specimens

Rotuman	Latin	Part used	Voucher
`Ai ne Tane	Cassia alata	leaves	M070
`Ai raurau	Mikania micrantha	stems/leaves	M109
`Ai sun	Capsicum fruitenscens	leaves	M079
Alo	Aloe vera	leaves	none
`Am`ama	Syzygium sp.	leaves/fruits/bark	M130
Armea	Pipturus argeneus	bark	M316,543
Esu	Carica papaya	roots	M190,271
Fai kau	Clidemia hirtia	leaves	M155
Fao	Pometia pinnata	leaves	M570
Finak ne puak	Sida rhombifolia	stems	M098,563
Fui	Dioscorea bulbifera	stems/leaves	M225
Ga`a	Pueraria lobata	leaves	M132,404
Giagia	Cerbera manghas	leaves	M308
Hahi`a	Syzygium samaragense	bark, leaves	M369
Hahi`a ramram	Syzygium inophylloides	bark	M231,307
Hana	Guettardia speciosa	flowers/pollen	M166,232,562
Hefau	Calophyllum inophyllum	leaves/fruits	M095
Rotuman	**Latin**	**Part used**	**Voucher**
Hufu	Barringtonia asiatica	bark/fruits	M167,228
Joan ne pija	Triumfetta rhomboidae	leaves	M218,387,413,526
Johea	Ipomoea litoralis	leaves	M551,556,558
Jou ne atua	Zehneria mucronata	leaves	M534
Julia ne moa	Microlepia scaberula	immature fronds	M419
Kao	Piper methysticum	leaves	M522,523
Kapui Rotuam	Alpinia sp.	young shoots/stems	M389,549
Karere	Vigna marina	leaves/stems	M066,362
Karposi	Acalypha grandis	leaves	M113,573
Kauta	Hibiscus rosa-sinensis	leaves/stems	M398,566
Ker mia	Syzygium gracilipes	fruits	M355,359
Koao	Psidium guajava	leaves	M178,365
Lamane	Citrus limona	leaves	M349,370
Majila	Chamaesyce atoto	sap/leaves	M530
Majila	Exocaria agallocha	leaves	M409,550
Maragi	Trema cannabina	leaves/bark	M410
Mori	Citrus aurantium	leaves/bark	M103,250
Moskoi	Cananga odorata	flowers	M071
Niu `uta	Cocos nucifera	fruit	M533
Ortea	Clerodendrom inerme	leaves	M521
Par mea	Musa paradisica	leaves/shoots	M497
Par Rotuam	Musa paradisica	leaves	M572
Pen kunei	Lanatana aculeata	leaves	M076,519
Pinau	Thespesia populnea	bark/fruits	M129,273
Pipi	Atuna racemosa	fruits	M358
Ponap Rotuam	Ananas cosmosus	leaves	M510
Puak vai	Pisonia grandis	leaves	M403
Puka	Ipomoea pes-caprae	leaves	M062,368
Pup	Eleusine indica	fruits	M175,532
Pup reag lolo	Polygala paniculata	roots	M208,412
Raga	Cucurma longa	rhizomes	M392,560
Rag`apua	Zingiber zerumbet	rhizomes/stems	M203,392,418
Ragkori `Uvea	Aglaia samoensis	Bark?	M160,353,414
Ratua	Erythrina variegata	bark/leaves	M186,233,236,541
Rauji	Cordyline terminalis	stem	M102,146,147
Rauvaru	Epipremnum pinnatum	leaves	M093,235,330

Sakoto	Cyclosorus unitus	fronds	M371
Sasa	Piper insectifugum	roots/leaves	M100,384,513,546
Saurag	Centosteca lappacea	leaves	M372
Sia`vao	Vitex trifolia	leaves	M527
Sesei	Phymatosorus scolopendrium	fronds/rhizomes	M073
Soro	Amorphophallus campanulatus	stems	M375
Tamor	Ocimum basilicum	leaves	M390,407
Tar fai	Micromelum minutum	bark/leaves	M238,415
Ti togo	Geophila repens	leaves	M557
Ti togo	Centella asiatica	leaves	M169
Tiere	Gardenia vitiensis	leaves	M084,177,229,399
Toa	Casurina equisetifolia	bark	M194
Tog oi	Terminalia glabrata	bark	M388
U`apea	Ficus tinctoria	leaves	M161,220
`Ulu	Artocarpus altilis	leaves	M165
`Ura	Morinda citrifolia	fruits/leaves/bark/roots	M096
`Urmoa	Physalis angulata	roots/leaves	M078
Usi	Euodia hortensis	leaves/stems	M569
Usogo	Laportea interupta	entire plant/roots	M561
Varvara	Premna taitensis	leaves/bark	M274,408
Vi	Spondius dulcis	bark/leaves	M192
Virviri	Jatropha cucas	fruits	M156

Appendix II Enumeration of Rotuman Diseases

The following list of indications are Rotuman disease symptomatologies and when applicable western equivalent indications. Since the ethnographer has had only limited training as a pharmacist and no formal training in differential diagnosis, the terminology may be less than a physician might desire. Terms for social interactions which lead to disease states are included because these are occasionally referred to as disease states.

The terms have been compiled from field work in 1991-91 and from the Rotuman dictionary compiled by the Reverend M. Churchward (1940.)

`af`af ne fatmanava: Pain in the chest, difficulty in breathing, difficulty in performing physical tasks, orthostatic hypotension, may lead to a coronary infarction if untreated, possibly heart disease, angina.

a`mara: To cause bad events to happen to your family by avoiding social obligations.

a'riri`aki: Pulmonary tuberculosis?; cough sometimes with blood or dark matter, cracking in chest when breathing sometimes, sweating, weight loss, flushing of the cheeks during part of each day accompanied by a fever.

a'ru: Generalized term for pain or a painful event.

a`salaga: Weakened physically or spiritually.

`atua mur: Swelling and redness in the thighs and legs accompanied with fever and diagnosed by the presence of sensitivity in two areas on the lower back (kidneys?) called **is kapu** and **is muri**. The disease is caused by spiritual activity.

`atua mur soro: Filariasis in the nates.

`efmafua: Pregnant

`efe: Internal illness, or stomach illness in a general sense.

fakina: Thick tongue, constipation, headaches, pale complexion, and lack of appetite.

fea`fe`a: Light colored patches on the skin.

filo`u: Headaches

fiva: Malarial fever. Probably from English, fever.

fua ma mon: Boils in the edges of the nostrils.

fufuaki: A boil/abscess that reforms after being treated and appearing to have resolved.

ga kau: Hernia.

hiaj ne to': Bone fractures or dislocations.

huhula: Swelling.

hun ha: Upper leg and sometimes lower abdominal pain.

hununuak: Breathlessness, possibly asthma.

hurapu: Mumps.

husa: Pus emission from a sore.

ialila: Birthmarks, mottling or discolorations. These may occur seasonally or due to some other rhythmic cycle. For instance some birthmarks are only seen "when the sea is dry" (very low tides) and thus are dry birthmarks which are said to be the result of there being no moon. Other recurrent birthmarks will occur at certain times of the year or during certain harvests, etc.

ila: Blotch or patch of color on the skin, birthmark.

is karu: Rhinitis.

joan ne he`e: A carbuncle.

joan ne pija: Warts or yaws protrusions.

jona: Yaws.

jua: A very bad case of filariases of the testicles.

kaiforo: A recurring illness, constantly sick.

kapkapa: Scabies or another itching skin diseases with large irritated patches.

kapu hu hual: Swollen thighs, spiritual in cause.
ka`u: Yaws of the mouth.
kia oar ru: A sore throat with lesions and sometimes exudate in the throat.
kiria: Leprosy.
koh kou: Whooping cough. This may refer to something older than this introduced disease as it refers to an overwhelming type of cough.
koh ta: Cough.
koho: To cough or have a cough.
koi mosran: Stonefish spine poisoning.
koso: A glandular swelling commonly in the neck.
kovi: A disease described as similar to **kiria**.
kovkovi: A disease described as similar to western chronic fatigue syndrome.
kur mog: Itching of the scalp, sometimes with red peeling skin, seborrhea.
la he': Lameness of a limb.
la noh mou: To miscarry a pregnancy, a miscarriage.
lao `e sui: Fish bones lodged in the throat.
li ne uaf: A badly infected cut.
maf jiol: Crossed eyes.
maf pirpir: Literally "yellow eyes", jaundice with lack of appetite, **ar u'u matit** (cold palms), and a general state of ill health.
mamala: Itchy, to itch.
mamasa: Itching.
mamosa: 1.Indigestion.
2.Loss of appetite, dry cracked tongue (occasionally is reported to be white or filmy), lethargy, and a variety of other symptoms which are not consistently reported.
mamosa tamor: Lethargy, chest pain, fever, sweating, and a tendency to cough up scaly material.
masa' hua: Septicemia accompanied by fever, probably systemic in nature.
masa' hula: A deep boil or hard lump due to disease.
masa`i: An epidemic or disease, physical ailment.
mase falinga: Earaches.
mase hu hual: Swelling and redness sometimes over the entire body, but with no fever. The cause is said to be spiritual in nature. Differentiated from **mase mi`a**, by the absence of fever.
mase mi`a: Red thighs and joints of hips with fever. Spiritually caused. Differentiated from **mase hu hual** by the presence of fever.
mase nuj: A swollen mouth or jaw.
mase susu: Breast tissue lumps or pain, sometimes representing infections.

mase `uf: Redness of the extremities which spreads toward the trunk and is considered to be potentially fatal. May cause impotence in men if it spreads to the genitals.
masmasa: Itchy, stinging.
masori: Hiccups.
matiti: A fever in which the patient himself feels cold
mea: A skin disease which affects the palms of the hands and soles of the feet. Tinea pedis?
mea ta kai: A skin disease which consists of odd shaped red patches on the skin and may occur anywhere on the body. The disease is said to rapidly spread over the body and may lead to death if untreated. Possibly fungal.
mir ta koi: Systemic or at least wide spread skin infection which may lead to death if untreated. This may be the same as **mea ta koi**, with a different pronunciation from a different healer.
mou huga: Constipation.
mumufa: Vomiting, to vomit.
nao: Tinea capitis, tinea pedis, tinea corporis, although tinea cruris was never reported.
navi: Fungal infection (ringworm) which is resistant to nystatin, miconazole, tolnaftate, terconazole and gentian violet, but not to traditional treatments with Cassia alata L.
niumonia: Pneumonia.
nuj ka`u: Having the mouth distorted by yaws.
nuj ko': Canker sores, other sores in the mouth.
`oar sui: To have bone pain. Possibly rheumatoid arthritis.
`ole: A skin disease resulting from excessive kava drinking in which the skin dries out usually along the arms or legs and peels off in white scabs or flakes.
pa mafa: An eye injury.
paho: To have yaws on the nates.
pal te: A skin ulcer.
pa`u: An intestinal worm.
pefa`e: Inflammation of the eyes.
po`o: Skin blisters.
pu: Filariasis.
pu soksok: Filariasis throughout the body.
puag kirkiri: An abscess under the arm.
puag roro: An abscess between the legs.
puga: Boils (abscess) under the armpit.
puek te: Extreme shivering seen in a case of filariasis or malarial fever.
puga: An abscess.
puna, **puna`i**: A boil or tumor.
ra': Wounded or cut.
rafa: Possibly a systemic fungal infection which may affect the whole body at once.
ra' la loga: Literally "cuts on the inside", chest pain, possibly angina or dropsy.
ra`o: An internal hemorrhage, (to be wounded inside.)
ra`oga: A wound
re: Inflammation of the eyes.
ru: A generalized pain, although sometimes refering to pain localized in the thorax.
ru al: Toothache.
ru ef: Stomach ache.
ru filo: Headaches, also see **filo'u**.
ru huag: Shortness of breath, pressure in the chest cavity, sometimes with noisy breathing.
san: Diarrhea with stomach cramping, sometimes is very

severe with weight loss, lack of appetite and occasionally is fatal. Possibly dysentery. In animals the term will also refer to stomach bloating.

siki: A carbuncle.

siki`efe: 1.A carbuncle on the stomach (abdomen.)

siki eji: Boils (or a carbuncle) on the back of the neck.

siki fa: A boil on the back.

sikifa`u: A carbuncle on the back.

sikivakvaka: A carbuncle on the side.

suki: An inflamed patch on the foot, leathery to the touch, very painful, very heat sensitive, but accompanied by very little swelling and no discharge.

susun: Topical burns.

tagi: Convulsions, seizures, to convulse.

tairi: Nausea from eating too much fat.

tane: Possibly tinea versicolor: Described as white patches around the mouth and face; commonly considered to be caused by the sun or very low tides.

taptapu: Disease which produces blisters.

tasi: To have a mild case of filariasis in the testicles.

tausun: Fevers that may cause seizures.

te hual: Boils.

totona: Heartburn.

tuga: An exposed nerve in a tooth, to have the nerve exposed.

tui: 1) An infection, (lit. to be attacked by disease.) 2) a recurrent disease.

tui huhual: Spiritual pain, swollen thighs, red over the entire body, feverish, and may eventually affect the entire lower torso. Failure to seek treatment may lead to **maf jiol** (crossed eyes), **li he'** (lameness of a limb) or **mou huag** (constipation.) This is a form of **`atua mur** which is differentiated from **`atua mur sol**.

tu kiog: Difficulty in maintaining a menstrual period.

tu kiga: Possibly a tumor in the female reproductive organs. This is per Churchward (1940), my research does not confirm this but repeatedly points to the information given with **tu kiog**, which is the same term.

tu`u: A cataract in the eye.

viliena: An hernia.

Appendix III Terminology related to Traditional Health Care

The terminology listed below was in part initially documented by Churchward (1940), with the majority being verified during this field study. The vast majority of anatomical terms were identified by the bone setters.

`a: To have consumed medicine.
af: Liver.
`ai: A plant, stick or branch.
`aitu: God (in the Christian sense) or a god.
`ala: Teeth.
alele: Tongue.
a'mauri: To make healthy or to bring back to a state of social well being.
a'maurlelei: To make strong again.
a'mose: To cause to fall asleep.
a`pata: To macerate or crush by pounding.
apirta: The pancreas.
a'ru: Painful, pain.
ar u'u matit: cold palms.
as`aki: To experiment or try a new healing technique, usually on the basis of previous experience with similar disease states. This does not refer to new treatments acquired through dreams.
asoa: A pair of leaves, twigs, etc., to prepare in pairs.
at gagaja: To provide for the chief.
`ate: To eat.
ati (**at**): To provide for someone.
`atua: A spirit, ghost, ancestor who is present.
efe: The abdominal cavity.
efef: Kidneys.
`efmafua: To be pregnant.
esfu: Elbow or knee.
fa' parafa: To place in a splint.
faiak se `ea: Thank you, hello, or good bye. Possibly more intimate than **noaia** which has the same meanings of hello and goodbye.
fakperperu: Calling on the gods (God) for inspiration.
faksoge: To abstain from food.
faliga: Ear.
fan tanua: To douche or give an enema.
fat manava: The heart.
fatfata: The chest, sternum.
fatu: The abdominal muscle.
filo`u: The head, cranium.
fine pup mea'mea': The small intestine.
fine pupte: The large intestine and colon.
foh`aki: To prescribe or direct how to use a medicine.
fufi: A knot tied over a wound or a wound that has been tied together.
fune`iga: A cut made to let out pus or to perform some other healing process.
fup: The point on the top of the head where the hair parts at a point.
fupi: A branch of a bush or tree.
fupuga: The top of the head.
gao: Cheeks.
ha': Forbidden, sacred.
ha'a: To forbid or prohibit or to declare as sacred.
hanisi: Sympathy, sorrow, love, compassion toward others, giving selflessly.
hapagsu: A feast given to someone who has just recovered from a very serious illness.
hara: A mature coconut.
has: Gall bladder.
has mafa: Eyebrow.
hasu: Swollen eyes which protrude out.
holi: To transmit a disease to someone else.
hua: 1.Labor pain in giving birth.
2.To shred.
huag hug: 1) The soft spot at the crown of a child's head.
2) To breath.
hual: A fruit/seed.
huas: A flower.
hula: Swollen.
huhula: To swell.
huni: Cleaned rhizomes of Curcuma longa L.
husa: Pus emission.
i`om: A cork made of pandanus leaves which is placed in containers of **tahroro**, while they are fermenting.
is fuhe: Patella.
is kapu: One of two areas on the lower back used diagnostically in determining the disease state **`atua mur**.
is muri: One of two areas on the lower back used diagnostically in determining the disease state **`atua mur**.
isu: Nose.
itoke: Saliva.
jarau: The color green.
kakae: Fingers.
kakae lahapa: Toes.
kapu: A scab over a wound or to cover a sore with a poultice.
karara`aki: To gargle with a medicine.
karkaru: Any gelatinous substance coming from the nose.
kele: The color black.
kia: The front of the neck.
kiora: Throat.
koa: Phlegm.
kohmu: To cough up something.
kohmu koa: Cough up phlegm.
kohmu tot: Cough up blood.
koua: A traditional earthen oven.
kum kum: Chin.
kum kum leau: Whiskers/beard.
kumu: To hold liquid in the mouth and rinse with it without swallowing.
kum`aki: To spit liquid from one persons mouth to another persons mouth. This is a way that medicine can be given to babies.
kutu: To noisily pass gas.
lag mafa: The inside of the eye.
lahapa: Leg.
lekleki: Eyelash.

leva: Hair.
lol: Coconut oil, prepared from the heated extract of mature endosperm.
mafa: Eye.
majau: Anyone who can heal. (also refers to a carpenter)
mak sul maf: Orthostatic hypotension.
ma'ma': Lungs.
mana: Rotumans have told me that this is an introduced word although Churchward records it as if it is a Rotuman word. Churchward's definition: "supernatural, miraculous possessed of or manifesting superhuman power or extraordinary efficacy" If used in this sense this would refer to the power to heal which is passed from healer to healer.
mate: To forbid or prohibit, to place a prohibition on some act.
matega: Prohibition, restraint, prevention.
mea: The side of the head. (also see diseases for **mea**)
men`u: Fingernail.
mi'a: The color red.
moa: A fern crozier.
mor tara: The forehead.
na: To give.
noaia: Thank you, hello, and goodbye. More formal than **faiak se `ea**, which has the same meanings.
nuj leau: Mustache.
nuju: Mouth.
`ona: Bitter or poisonous (also means the lower part of the abdomen.)
`oro: A piece of cloth or string used to form a bandage or covering for a wound or infection.
parafa: The midrib of a coconut leaf which is used to form a splint for broken bones.
peinuku: A single fiber from a coconut husk
pel uat: Scalp.
pep nuju: Lip.
pof rau: Ankle bone.
puek te: Extreme shivering seen in a case of filariasis or malaria fever.
pufa: The umbilicus.
pul: Milky plant latex.
pupu: To rinse out the mouth.
ra': Wounded or cut.
ra`oga: A wound.
rau: Leaves.
re`ai: To practice magic or sorcery by use of leaves.
re`atua: To have dealings with spirits of dead persons, to practice necromancy.
refu: Unhealthy or sickly.
reh pak rau: Coconut endocarps.
revai`aki: To use as or to make into medicine.
riot: An eyeball.
ro`aitu: Prayer.
sakoto: 1)To strain a liquid.
2)Plants or other materials used as strainers.
sarao: To stroke or rub with the hand; to massage.
sarao`aki: To rub with or massage with the hands or oil.
sarao lau: The act of recieving spiritual insight while performing a healing act.
siu hapa: Hand.
suas ne niu: A very immature coconut fruit.
sui: A bone.
sui fone la: Carpal bones.
sui fuma futa: Spine/vertebrae.
sui ma fuita: The spinal column.
sui ne gao: Facial bones and the jaws.
sui ne isu: Nasal bones.
sui ne kapu: Pelvic bones.
sui ne ka'kae': The hand bones as a group.
sui ne ke'ke': Phalanges.
sui ne la: Tibia.
sui ne saga: Femur.
sui ne uam heta: The scapula and humerus.
sui ne uhapa: Radius and ulna.
sui vak vaka: Rib bones.
sur `atua**: To be possessed. Said of a person into whom an **`atua (spirit of a dead person) has entered. The individual is influenced by the spirit in such a way that they take on mannerisms, appearance and the voice of the dead person. This is a painful process so the body is rubbed with a poultice of Euodia hortensis Forst.f., leaves to relieve the pain.
sur`atuet: A person who is possessed repeatedly; a spiritual medium.
sur`atuet tae**: A spiritualistic seance to draw an **`atua to an individual so that others may question the spirit regarding lost knowledge such as cures which have been lost.
tag heta: The stomach.
Tagroa: An ancient deity to which a male child could be dedicated by the **majau a`su te** by tossing the child into the air.
takai: To smear with grease, to paint with oil, to anoint.
tama: A pole which is tightly wrapped with coconut husk fibers. This devise is used to shred plant products by rubbing the plant over the tight bands of fiber.
tamim: Urinary bladder.
tahroro: A fermented condiment of coconut meat, capsicum and salt water.
tau`a: A yellow solution formed during the extraction and filtration of **mena** from Curcuma longa L rhizomes.
te fuap: Umbilical cord.
tekae: A red streak appearing on the arm or elsewhere in the early stages of filariasis.
tifui: Traditional ceremonial necklaces made of flowers, palms, and other plant parts which are usually strongly scented.
to `ak `aitu: God speaks to a special person. To utter messages coming from the spirit of a deceased person. In this the **`atua** is supposed to visit the person uttering the messages, but not to enter her as in **sur`atua**.
tot lahlaha: Dark dirty-looking blood, possibly veinous.
tot ma`a: Bright red arterial blood.
turu: To wash or bathe a wound, sore eyes, etc with an oil or ointment (external application) almost the opposite of

vai.
tur'aki: To apply an external medicinal treatment.
`u hapa: Arm.
ui ne la: Heal bone.
`uli** (**`ul): Skin or bark.
uma: Shoulder.

ununu: A fiberous mesh of vascular tissues from the base of a coconut leaf petiole. The mesh resembles course cheese cloth. Used as a straining devise, as a sack for carrying herbs and for various other purposes in the preparation of herbal remedies.
urju: The back of the neck.
va`a: Roots.
vai: 1)Medicine usually for internal use.
2)Herbal medicine which is extracted in or added to water.
vai `ai: Medicinal bark which has been removed from the plant.
vai ne asu vau haina: Medicine which promotes easy child delivery.
vai ne koho: Cough medicine.
vai ne mamosa: Medicine for indigestion/stomach ailments.
vai rau: Medicinal leaves.
vih nau: Coconut mesocarp fibers.

Appendix IV Survey of Rotuman Healers

Each of the following healers was identified during the 1991-1992 fieldwork survey on Rotuma. The healers recorded here represent all that I could identify on the island in June of 1992. Healers with whom extended interviews were conducted are identified with an asterisk. Rotuma is divided into seven administrative districts which reflect former political divisions. The healers are grouped by district, which to a limited extent reflects heritage. After each healers name is her age and sex. Since the Rotumans consider the healers as being specialists, the healers are recorded by treatment specialty. Listed after some of the treatment specialties, is a number which represents the number of different remedies recorded within that specialty. Treatments which are not followed by a number indicate either only one remedy was documented for that healer under the particular specialty or that the healer was only briefly interviewed without documentation of her full range of applications in each treatment. See appendix V for a description in English of each treatment specialty.

Two healers were interviewed with their treatments placed in the pharmacopoeia, but are not listed here. One was a bone setter who left the island between the last two field trips while the other treated stone fish poisoning and several other minor treatments. The later healer was the last to be interviewed before leaving in December 1991. Due to travel constraints the interviews with her were not completed. Prior to my return to Rotuma in June of 1992, she passed away. She had not passed on her knowledge so I could not record the remainder of her treatments. Both of these healers, although participating in this study, were not present on Rotuma through the end of the study and thus are not listed here as part of the record of healers present in June 1992.

District	**Healer**	**Age/Sex**	**Treatments specialty**
Itu'muta	Akanita	63f	**Sarao tokofutu**
	Gagaj Urakmaf	51m	**Sarao tu'**
	Forate Raete	42m	**Mase`uf**
	Isabete	44f	**Sarao `atua mur**
	Makarite	46f	**Sarao `atua mur**
	Makarite Marsio	33f	**Sarao ru faliag**
	Paurino	67m	**Sarao hiaj**
	Suma Safu	58m	**Sarao fumu**
	Tausau	68f	**Sarao maf pirpir**
	Uajini	48m	**Sarao jiajia**

	Vataiki*	63f	**Sarao filo'u**
Itu'ti'u	Aisake*	73m	**Sarao tu'** **Sarao afaf ne fatmanava** **Sarao mamosa**

District	Healer	Age/Sex	Treatments
Itu'ti'u (cont.)	Ana Stevens* (Managreve)	46f	**Sarao koho** **Sarao mea ta koi** **Sarao pa mafa** **Sarao mamosa** **Sarao atua mur** **-tui huhual** **-atua mur sol** **Sarao mou huag** **Sarao siki** X2 **Sarao tu kiog** **Sarao nuj ko'** **Sarao hununuak** **Sarao kur mog**
	Atalifo	67f	**Sarao susun** **Sarao hiaj**
	Faga*	59f	**Sarao hununuak**
	Fa'oro	45m	**Sarao afaf ne fatmaneva**
	Fuata	58m	**Sarao faliag**
	Gagaj Kono*	62m	**Sarao ru faliag** **Sarao pa mafa** **Sarao mamosa** **Sarao Atua mur** **-tui huhual** **-atua mur sol** **Sarao mou huag** **Sarao siki** X3 **Sarao koho** **Sarao ru al**
	Gagaj Takses*	69m	**Majau haina le`ek lelea'** **Sarao te hual**
	Gagaj Tigarea	62m	**Sarao hiaj**
	Garsau	80f	**Majau haina la`ek lelea'**
	Korototo	45f	**Mase ha'**
	Luise Peni*	41f	**Sarau soa** **Mase susu**
	Makarite Faga	50f	**Sarao tu'**
	Makrau Kitioni*	42f	**Mase faliag** **Mase nuj**
	Merea	29f	**Sarao `atua mur**
	Mereana	77f	**Sarao maf**
	Ravai	38f	**Sarao hiaj**
	Rejieli	37f	**Mase `uf**
	Saga itu	68f	**Sarao la'riri**
	Sarote	40f	**Sarao fumu**
	Sarote*	54f	**Sarau hununuak** **Majau haina le`ek lelea'** **Sarao fu ia he**
	Soga itu	62f	**Sarao hiaj**
	Sukafa	58f	**Sarao `atua mur**
	Varea	69f	**Sarao tu'**
Juju	Keti*	41f	**Sarao ti hu** **Mase susu** **Sarao koi mosran**

District	Healer	Age/Sex	Treatments
Juju (cont.)	Ketisoana* (Managreve)	74f	**Sarao maf jiol** **Sarao ru faliag** **Sarao mea ta koi** **Sarao pa mafa** **Sarao mamosa** X4 **Sarao `atua mur -tui huhual** **-atua mur sol** X2 **Sarao mou huag** **Sarao siki** X5 **Sarao tu kiog** **Sarao nuj ko'** **Sarao hununuak** **Sarao koi mosran** **Sarao koho** **Majau haina le'ek lelea'** X6 **Sarao kur mog** **Sarao ru ef** **Sarao ru al** **Sarao filo`u**
	Mar Susana	55f	**Sarao `atua mur**
	Liue*	65f	**Sarao `atua mur** **Sarao tau `ek gakau vili**
	Mario*	63m	**Sarao hiaj** **Sarao li ne uaf**
Malhaha	Aisea	59m	**Sarao puag roro**
	Akesa	65f	**Sarao haniahos**
	Fakavai	62f	**Sarao fumu**
	Jioj	54f	**Sarao tu'**
	Jiojeroe	44m	**Saroa lao `e sui**
	Mareta	26f	**Sarao fumu**
	Marseo	65m	**Sarao hiaj**
	Moe	36f	**Sarao hiaj** **Sarao maf**
	Tifanua	51m	**Sarao hiaj**
	Tivaknoa	64f	**Sarao puag roro**
	Vamarosi	48f	**Sarao `atua mur**
Noatau	Kanag sau	46f	**Sarao hehual** **Sarao tu'** **Majau haina la`ek lelea'**
	Lalo	66f	**Sarao uaua** **Sarao jijia**
	Luise	32f	**Sarao hiaj**
	Marseu Mani	38f	**Sarao fuarla**
	Sarote	56m	**Mase ha'**
	Susau Manauele	76f	**Sarao hiaj** **Majau a`su te**
	Toga*	74m	**Sarao mamosa** **Sarau maf pirpir**
Oinafa			
	Akata	63f	**Sarao tu'**
	Hare	21m	**Sarao `atua mur** **Sarao hiaj**
	Sefeti	58m	**Sarao hiaj**

District	Healer	Age/Sex	Treatments
	Selini	66f	**Sarao lao `e sui**
Oinafa (Cont.)	Susau	50f	**Sarao tu'**
	Tiu	37f	**Sarao `atua mur**
	Vamarosi	63f	**Sarao `atua mur**
	Vamarosi	63f	**Majau haina la`ek lelea'**
Pepjei	Jope	52m	**Sarao hiaj**
	Maria	32f	**Sarao piaj mul**
	Satieki*	55m	**Sarao lao `e sui**
			Sarao mamosa tamor

Appendix V: Rotuman Treatment Specialties

The survey of Rotuman healers identified each healer and their treatment specialties. Below are listed only the specialties which where reported to still be in use. Many others were known to have existed in the past and others may have been forgotten about by current healers due to lack of use of a particular treatment. Prior to each specialty is a number which indicates the number of healers identified who have a given specialty. This does not imply the number of treatments a healer may have within that specialty. Many times a healer will have several different treatments for the same disease or variations of a disease. Although the abortionists were not included in the study, they are listed here since they were found to be in existence today.

Number of identified practitioners/Specialty		Ailments treated/specialty
(1)	Majau a'su te:	Midwife.
(6)	Majau haina la`ek lelea':	One who promotes pregnancy.
(A)	Majau la'ak lelea':	Abortionist/ pregnancy prevention.
(2)	Mase ha':	One who treats spiritual diseases with a red rash on the extremities which moves inward.
(2)	Mase susu:	One who treats lumps in the breast tissue.
(2)	Mase 'uf:	One who treats a disease with a red rash on the arms/legs which moves towards the extremities (hands/feet.)
(2)	Sarao afaf ne fatmaneva:	One who treats dropsy or other related heart difficulties.
(13)	Sarao `atua mur:	One who treats spiritual diseases.
(3)	-tui huhual:	Disease only on the lower body, with swelling, fever, and no external blistering.
(3)	-`atua mur sol:	As in tui huhual except affecting the entire body.
(4)	Sarao faliga:	One who treats ear ailments.
(2)	-ru faliag:	Ear pain.
(2)	Sarao filo'u:	One who treats headaches and flu-like symptoms.
(1)	Sarao fu ia he:	One who treats pain in the heal which has no outward signs.
(1)	Sarao fuar la:	One who treats boils on the bottom of the feet.
(4)	Sarao fu mu:	One who treats boils on the patella.
(1)	Sarao haniahos:	One who treats "thick injuries" which have pus.
(1)	Sarao he hual:	Spiritual disease the entire body swollen and erythremic, but no fever present.
(14)	Sarao hiaj ne to'	One who sets bones, sprains, dislocations and fractures.
(4)	Sarao hununuak:	One who treats breathlessness (asthma?)
(2)	Sarao jiajia:	One who treats "boils on the eye", styes.
(3)	Sarao koho:	One who treats coughs.
(2)	Sarao koi mosran:	One who treats stone fish spine poisoning/wounds.
(2)	Sarao kur mog:	One who treats scalp irritations such as kapkapa.
(1)	Sarao la' riri:	One who treats fever in children which is due to excessive playing.
(3)	Sarao lao 'e sui:	One who removes fish bones which are lodged in the throat.
(1)	Sarao li ne uaf:	One who treats badly infected cuts.
(8)	Sarao mafa:	One who treats eye ailments.
(1)	-maf jiol:	Crossed eyes.
(2)	-maf pirpir:	Lit. "yellow eyes", jaundice.
(3)	-pa mafa:	Eye injuries.
(6)	Sarao mamosa:	One who treats illness characterized by lethargy, dry cracked lips and tongue, lack of appetite, sometimes with white film forming on the tongue.

Number of identified practitioners/Specialty		Ailments treated/specialty
(1)	Sarao mamosa tamor	One who treats a disease characterized by chest pain, fever, sweating, and the victim expectorates scaly material.
(2)	Sarao mea ta koi:	One who treats a skin disease which causes reddish spots which expand, spread over the entire body and may be fatal.
(3)	Sarao mou huag:	One who treats constipation.
(3)	Sarao nuj:	One who treats mouth ailments.
(2)	-nuj ko'	Sores around the mouth.
(1)	Sarao piaj mul:	One who treats sore shoulders/stiff neck.
(2)	Sarao puag roro:	One who treats boils which occur under the genitalia.
(2)	Sarao ru al:	One who treats toothaches.
(1)	Sarao ru ef:	One who treats stomach aches/disorders.
(3)	Sarao siki:	One who treats any kind of boil.
(1)	Sarao soa:	One who treats illness (usually boils) from a distance.
(1)	Sarao susun:	One who treats topical burns.
(1)	Sarao tau ek ga kau vili:	One who treats hernias.
(1)	Sarao te hual:	One who treats recurrent boils.
(1)	Sarao ti hu:	One who treats breast infections.
(1)	Sarao tokofut:	One who treats deep bruises/wounds on the bottom of the foot which exude pus but have few external signs.
(7)	Sarao tu':	One who treats spine and joint ailments, "bubbles between the vertebrae."
(2)	Sarao tu kiog:	One who promotes menstruation when it is difficult to maintain a menstrual cycle.
(1)	Sarao uaua:	One who treats stiff muscles.

Index of Species According to Rotuman Name

Index of Species According to Latin Name

References

Abbott, Isabella A. 1991. Polynesian Uses of Seaweed. in Islands, plants and Polynesians: an introduction to Polynesian ethnobotany Edited by Paul A. Cox and Sandra A. Banack., Dioscorides Press, Portland, Oregon.

Akerele, Olayiwola, 1990. Medicinal Plants in Traditional Medicine. in Economic and Medicinal Plant Research: Plants and Traditional Medicine Vol. 4, edited by H. Wagner and N.R. Farnsworth, Academic Press, London.

Allardyce, W.L., 1885-6. Rotuma and the Rotumans. Proceedings of the Queensland Branch of the Geographical Society of Australasia. 1885-6, pp 130-44.

Allen, William, 1895. Rotuma. Report of the Australian Association for Advancement of Science. Sixth meeting. Jan. pp 556-79.

Balick, Michael J., 1990. Ethnobotany and the identification of therapeutic agents from the rainforest. in Bioactive Compounds from Plants (Ciba Foundation Symposium 154) Wiley, Chichester, pp 22-39.

Bartram, Edwin Bunting, 1943. Pacific Outpost Mosses. The Bryologist Vol. 48, pp 14-22.

Bennett, George, 1831. A recent visit to several of the Polynesian islands. United Services Journal Number 33 pp 198-202, 473-482.

-----1832a. Notices on the native plants of the island of Rotuma, Southern Pacific Ocean. Magazine of Natural History, Volume 5, pp 92-97.

-----1832b. The Island of Rotuma. The Mirror of Literature, Amusement and Institution Dec. 8th, 1832 pp376-9.

Biggs, Bruce Grandison, 1959. Rotuman Vowels and their History. Te Reo (Proceedings of the Linguistic Society of New Zealand. Vol. 2 August 10th 1959.

-----1965. Direct and Indirect Inheritance in Rotuman. Lingua Vol. 14 pp383-445.

-----1985. Contemporary healing practices in east Futuna. in Healing practices in the South Pacific, Parsons, CDF editor, Institute for Polynesian Studies, Laie, Hawai'i, pp 108-128.

Birgham, Franz, 1881. Die Sudsee Inseln Rotumah Aus Allen Welttheilen Vol. 11 Num. 8.

Bloomfield, Sosiane F., 1986. "It is health we want": A conceptual view of traditional and non-traditional health care practice in Tonga with special emphasis on maternal child health and family planning M.A. Thesis in Sociology. The University of the South Pacific School of Social Economic Development, Suva, Fiji.

Brooker, S.G., R.C. Cambie, and R.C. Cooper, 1981. New Zealand Medicinal Plants Heinemann Publishers, Auckland

Bryant, Jennifer Joy, 1974. Rotumans living in Fiji P.G.D.A. Thesis, University of Otago.

Capell, Arthur, 1962. Oceanic Linguistics Today. Current Anthropology Num. 3 pp 371-428.

Christophersen, E., 1935. Flowering plants of Samoa: I. Bishop Museum Bulletin Num. 128 pp 1-221.

Churchward, Clerk Maxwell, 1928. Jipear Fo'ou ma Rogrog 'on Jona ma Te Tu 'e 'on Rerege Methodist Mission Press, Suva, Fiji.

-----1929a. Definiteness and indefiniteness in Rotuman Journal of the Polynesian Society Num. 38 pp 281-4.

-----1929b. Him ne Rot Uesli Specialty Press Ltd., Melbourne, Austrailia.

-----1930. Faeag Haiporakiag Fo'ou The British and Foreign Bible Society, London.

-----1937a. Rotuman Legends. The Story of the Founding of Rotuma. Oceania Vol. 8 pp 104-116.

-----1937b. Rotuman Legends. The Story of the Tongan Invasion. Oceania vol. 8 pp 255-260.

-----1938a. History of Rotuma as Reflected in the Language. Mankind Vol. 2 pp 134-5.

-----1938b. Story of Rotuma. Australasian Methodist Historical Society, Journal and Proceedings Number 6 pp 299-309.

-----1938-1939. The History of Rotuma as Reflected in its Language. Oceania, Vol. 9 pp 79-88.

-----1939a. Tales of a lonely Isle, Rotuman legends Foreward by A.P.Elkin, Australian National Research Council, Oceania Monographs Num. 4.

-----1939b. 100 years of Christian Work in Rotuma. Missionary Review Sydney, August 5th 1939.

-----1939c. Rotuman legends Oceania Vol. 9 pp 109-126, 326-339, 462-473.

-----1940. Rotuman Grammar and Dictionary. Sydney, Australian Medical Publishing Co. Ltd for the Methodist Church of Australasia, Department of Overseas Missions.

Clark, Ross, 1979. Language. in The Prehistory of Polynesia edited by Jesse D. Jennings. Cambridge: Harvard University Press.

Cox, Paul Alan, 1980. Masi and tanu`eli: ancient Polynesian technologies for the preservation and concealment of food. Pacific Tropical Botanical Garden Bulletin, 10:81-93.

-----,L. Rebecca Sperry, Mervi Tuominen, and Lars Bohlin, 1989. Pharmacological Activity of the Samoan Ethnopharmacopoeia. Economic Botany Vol. 43, Num. 4, pp 487-497.

-----1990a. Samoan Ethnopharmacology. in Economic and Medicinal Plant Research, Volume 4 Plants and Traditional Medicine Academic Press Ltd.

-----1990b. Ethnopharmacology and the search for new drugs. in Bioactive Compounds from Plants. (Ciba Foundation Symposium 154) Wiley, Chichester, pp 40-55.

-----1991. Polynesian Herbal Medicine. in Islands, plants and Polynesians: an introduction to Polynesian ethnobotany Edited by Paul A. Cox and Sandra A. Banack., Dioscorides Press, Portland, Oregon.

-----1993(in press). Saving the ethnopharmacological heritage of Samoa. Journal of Ethnopharmacology Vol. 38.

Croft, Kevin D. and Peaua Tu'ipulotu, 1980. A survey of Tongan medicinal plants. South Pacific Journal of Natural Science Vol.1 pp45-57.

Cronquist, Arthur John, 1981. An integrated system of classification of flowering plants. Columbia University Press.

Duckworth, Wynfrid Laurence Henry, 1900. On crania collected by Mr. J. Stanley Gardiner in his Expedition to Rotuma Journal of the Royal Anthropological Institute Num. 30 pg 37.

-----and Taylor, A.E., 1902. The craniology of the natives of Rotuma. Journal of the Royal Anthropological Institute Num. 32 pp 432-44.

Eason, William John Eric, 1951. A Short History of Rotuma Government Printers, Suva, Fiji.

-----1953. Rotuma and Rotumans Transactions of the Fijian Society of Science and Industry 1945-7 Num. 3 pp 145-51.

Fatiaki, Anselmo, 1966. A short historical development of education in Rotuma Dip.Ed. Thesis, University of Auckland.

-----1991. An Introduction and Geography (of Rotuma). in Rotuma: Hanua Pumue (Formerly under the title Rotuma: Split Island edited by Chris Plant, 1977) Institute of Pacific Studies, University of the South Pacific, Suva, Fiji.

Fatiaki, Daniel, 1976. Legal aspects of Rotuman land tenure LL.B. Thesis, University of Auckland.

-----1991. Legal Aspects of Rotuman Land Tenure. in Rotuma: Hanua Pumue (Formerly under the title Rotuma: Split Island edited by Chris Plant, 1977) Institute of Pacific Studies, University of the South Pacific, Suva, Fiji.

Feinberg, Richard, 1979. Anutan Concepts of Disease: A Polynesian Study The Institute for Polynesian Studies. Laie, Hawai'i.

-----1981. Anuta: Social Structure of a Polynesian Island. The Institute for Polynesian Studies, Provo, Utah: Brigham Young University Press.

Forbes, Litton, 1875. Two years in Fiji London: Longmans, Green, and Co.

Forsyth, M.A., 1925. The island of Rotuma. Agricultural Circula Vol. 5 Num. 2 pp 51-2.

Gadow, H., 1898. List of the birds of the Island of Rotumah Ibis January 1898.

Gardiner, John Stanley, 1897. Native of Rotuma. Journal of the proceedings of the Royal Anthropological Institute Vol. 27, pp 395-435, 457-524.

-----1898. The Geology of Rotuma. Quarterly Journal of the Geological Society of London, Volume 54, pp 1-11.

Gifford, Edward W., 1929. Tongan Society Bernice P. Bishop Museum Bulletin Num. 61. Honolulu, Hawai'i.

Green, Roger C., 1979. Lapita. in The Prehistory of Polynesia edited by Jesse D. Jennings. Cambridge: Harvard University Press.

Grepin, F. and M. Grepin, 1980. La Medecine Tahitienne Traditionnelle Societe Nouvelle des Editions du Pacifique, Papeete.

Gutmanis, June, 1991. Kahuna La`au Lapa`au, Island Heritage Publishing, Aiea, Hawaii.

Hassell, Joseph, 1825. Rotumah Australien pp 623-4.

Haudricourt, Andre-Georges, 1957-8. La Phonologie des Voyelles en Rotumien (Oceanie) Bulletin de la Society de Linguistique Paris, Num. 53 pp 268-72.

Hocart, Arthur Maurice, 1914. The Disappearance of a Useful Art in Rotuma Man Vol. 14 Article 82.

-----1915a. Rotuman Conceptions of Death Man Vol. 15 Article 5.

-----1915b. On the Meaning of the Rotuman word "atua" Man Vol. 15 Article 75.

-----1919. Notes on Rotuman grammer Journal of the Royal Anthropological Institute Num. 49 pp 252-64.

Hodge, C.W., 1937. Rotuma- Gem of the Pacific. Walkabout Vol. 3 Num. 4 February pp 44-46.

Hope, G.W., 1867. Anchorages at Rotumah Nautical Magazine February pp 106-7.

Howard, Stuart Alan, 1961. Rotuma as a Hinterland Community Journal of the Polynesian Society Vol. 70 Num. 3 September pp 271-99.

-----1962. Change and Stability in the Rotuman System of Land Tenure. Doctoral Dissertation, Stanford University.

-----1963a. Conservatism and Non-traditional leadership in Rotuma Journal of the Polynesian Society Vol. 72 Num. 2 June pp 65-77.

-----1963b. Land, Activity Systems and Decision-Making Models in Rotuma Ethnology Vol. 2 Num. 4 pp 407-40.

-----1964. Land tenure and social change in Rotuma Journal of the Polynesian Society Vol. 73 pp 26-52.

-----1966. The Rotuman District Chief; A study in Changing Patterns of Authority Journal of Pacific History Vol. 1 pp 63-78.

-----1970. Learning to be Rotuman Columbia University, Columbia Teachers College Press, New York.

-----1979. The Power to Heal in Colonial Rotuma. journal of the Polynesian Society Vol. 88 pp 243-75.

-----1985. History, Myth and Polynesian Chieftainship: The Case of Rotuman Kings. in Transformations of Polynesian Culture edited by A. Hooper and J. Huntsman, The Polynesian Society, Auckland.

-----1990. The First Rotumans. from The Humbled Anthropologist, Tales from the Pacific edited by Philip R. DeVita, Wadsworth Publishing Company, Belmont, California pp 8-11.

-----1991. Reflections on Change in Rotuma. in Rotuma: Hanua Pumue Institute of Pacific Studies, University of the South Pacific, Suva, Fiji.

Howard, Irwin and Alan Howard, 1964. Premarital Sex and Social Control among the Rotumans. American Anthropologist Vol. 66 Num. 2 April pp 266-83.

Irava, Ieli, 1991. Kinship, Reciprocity and Society. in Rotuma: Hanua Pumue (Formerly under the title Rotuma: Split Island edited by Chris Plant, 1977) Institute of Pacific Studies, University of the South Pacific, Suva, Fiji.

Itautoka, Mamatuki, 1991. Decision-Making in Rotuma. in Rotuma: Hanua Pumue (Formerly under the title Rotuma: Split Island edited by Chris Plant, 1977) Institute of Pacific Studies, University of the South Pacific, Suva, Fiji.

Kaurasi, Lavenia, 1976. Acculturation in the Pacific: A Rotuman Case Study Topics in Cultural Learning Vol. 4 East-West Center, Honolulu

-----1991. Rotuman Communities in Fiji: Raiwai, Raiwaqa and Lomaivuna. in Rotuma: Hanua Pumue (Formerly under the title Rotuma: Split Island edited by Chris Plant, 1977) Institute of Pacific Studies, University of the South Pacific, Suva, Fiji.

Kaurasi, Mosese, 1991. Rotuman Chants, Sports and Pastimes. in Rotuma: Hanua Pumue (Formerly under the title Rotuma: Split Island edited by Chris Plant, 1977)Institute of Pacific Studies, University of the South Pacific, Suva, Fiji.

Kirch, Patrick V. 1984. The evolution of the Polynesian chiefdom. Cambridge: Cambridge University Press.

Kress, W.J., 1990. The taxonomy of Old World Heliconia (Heliconiaceae). Allertonia Vol. 6 pp 1-58.

LaFranca, Amy A. 1992. An ethnobotanical survey of expatriate Tongans. unpublished manuscript, Brigham Young University Department of Botany and Range Science. Provo, Utah.

Lambert, S.M., 1929. Health survey of Rotumah The Medical Journal of Australia Vol. 1 pp 45-50.

Langi, Jione, 1971. The history of the Church in its Rotuman setting: an introductory outline B.D. Thesis, Pacific Theological College.

Lesson, Rene P., 1838-9. Voyage medical autour du monde execute sur la corvette du roi La Coquille, commandee par M.L.I. Duperrey pendent les annes 1822, 1823, 1824 et 1825 Paris, Roret Librairie.

Lindner,1914. Rotumah. Australien pp 443-4.

Lucatt, Edward, 1851. Rovings in the Pacific, from 1837 to 1849: with a glance at California by a merchant long resident in Tahiti. Vol. 1, London: Longman, Brown, Green, and Longman.

MacDonald, Hugh, 1918a. The Sacred Stones of Rotuma. Transactions of the Fijian Society 1917 pp 47-8.

-----1918b. Maori Immigrants in Rotuma Transactions of the Fijian Society 1917 pp 48-9.

-----1918c. Rotuma Transactions of the Fijian Society 1917 pp 51-4.

-----1918d. The So-Called Sacred Stones of Rotuma Transactions of the Fijian Society 1917 pp 54-55.

MacGregor, Gordon, 1932. Field notes on culture and physical anthropology from Rotuma. Manuscript in the the Bernice P. Bishop Museum, Honolulu, Hawai'i.

-----1932-3. Physical anthropology; Notes from Rotuma, Tokalau, Sikaiana, and Malaita. Manuscript in the Bernice P. Bishop Museum, Honolulu, Hawai'i.

-----1933. Ethnological survey of Rotuma and Tokelau Islands. Bernice P. Bishop Museum Annual Report for 1932 pp 34-7.

Malo, Tiu, 1991. Rotuman Marriage. in Rotuma: Hanua Pumue (Formerly under the title Rotuma: Split Island edited by Chris Plant, 1977) Institute of Pacific Studies, University of the South Pacific, Suva, Fiji.

Managreve, Mamao, 1958. A Critical Examination of Education in Rotuma (with special reference to reading and arithmetic) Masters Thesis, University of New Zealand, Auckland.

Marseu, Fesaitu, 1986. The Rotuman Mamasa Ceremony. in Pacific Rituals, Living or Dying. Edited by Gweneth and Bruce Deverell, Suva, Institute of Pacific Studies of the University of the South Pacific, Fiji Times Ltd.

McClatchey, Will and Paul A. Cox, 1992. Use of the Sago Palm Metroxylon Warburgii in the Polynesian Island, Rotuma. Economic Botany Vol. 46 pp. 305-9.

McCuddin, C.R., 1974. Samoan medicinal plants and their usage. Office of Comprehensive Health Planning, Department of Medical Services, Government of American Samoa.

Nadeaud, J., 1864. Plantes usuelles des Tahitiens J.Martel, Montpellier, France.

Neal, M.C. 1934. Plants used medicinally. in Outline of Hawaiian physical therapeutics., E.S.C. Handy, M.K. Pukui and K. Livermore, Bernice P. Bishop Museum Bulletin, Honolulu, Num. 126 pp 39-49

Nilsen, Aileen, 1991. The Mamasa Ceremony. in Rotuma: Hanua Pumue (Formerly under the title Rotuma: Split Island edited by Chris Plant, 1977) Institute of Pacific Studies, University of the South Pacific, Suva, Fiji.

O'Rourke-George, Lisa, 1989. An Ethnobotanical Study of Traditional Medicine in Tonga, Thesis. Brigham Young University, Provo, Utah.

Parham, Bayard Eugene Vincent, 1941. Dalo Varieties from Rotuma Island (Colocasia esculenta (L.) Schott) The Agricultural Journal Vol. 12, Num. 2 pp 51-2.

Parke, Aubrey Lawrence, 1964. Rotuma: a Brief Anthropological Survey. Journal of the Polynesian Society Vol. 73 Num. 4 December pp 436-7.

-----1971. Rotuman idioms Auckland, Linguistic Society of New Zealand.

Parkinson, Richard, 1907. Dreissig Jahre in der Sudsee Verlag von Streker and Schroder, Stuttgart.

Parsons, Claire D.F., 1981. Sickness, Experience and Language: Aspects of Tongan and Western Accounting Vol. 1 and 2. Doctoral Dissertation, University of Waikato, New Zealand.

-----1983. Developments in the Role of the Tongan Healer. Journal of the Polynesian Society Vol. 92 pp 31-50.

-----1985. Healing Practices in the South Pacific edited by Parsons, C. The Institute of Polynesian Studies, Laie, Hawai'i.

Petard, P., 1972. Raau Tahiti: The use of Polynesian medicinal plants in Tahitian medicine. So.Pac.Tech.Paper 167 pp. 1-66.

Plant, Chris, 1977. editor of Rotuma: Split Island The Institute of Pacific Studies, University of the South Pacific, Suva, Fiji.

-----1991. The Development Dilemma. in Rotuma: Hanua Pumue Institute of Pacific Studies, University of the South Pacific, Suva, Fiji.

Ray, Sidney Herbert, 1922. Les Langues Polynesiennes en Melanesie Bulletin Societe Etud. Oceanien Num. 6 September pp 10-22.

Rensel, Jan, 1991. Housing and Social Relationships on Rotuma. in Rotuma: Hanua Pumue Institute of Pacific Studies, University of the South Pacific, Suva, Fiji.

Robinson, Gaden S. 1974. Macrolepidoptera of Fiji and Rotuma: a taxonomic and bio-geographic study Ph.D Dissertation, University of Durham.

Roget, Henry H., 1939. Early Days of Rotuma Missionary Review August 5th, 1939.

Rosser, W.H., 1881. Rotumah Island: South West Pacific Nautical Magazine pp 136-9.

Russell, M., 1849. Polynesia: A History of the South Sea Islands, including New Zealand: with Narrative of the Introduction of Christianity, Thomas Nelson, Paternoster Row; London.

Russell, W.E., 1942. Rotuma, Its History, Traditions and Customs. Journal of the Polynesian Society, Volume 51, Number 3, pp 229-225.

Simmons, Hubert Walter, 1938. The absence of tuberculosis amongst Rotuman cattle Agricultural Journal Vol. 9 Num. 2 pg 29.

Singh, Yadhu N., Talita Ikahihifo, Monalisa Panuve, and Claire Slatter. 1984. Folk Medicine in Tonga. A study on the use of herbal medicines for obstetric and gynaecological conditions and disorders. Journal of Ethnopharmacology Vol. 12 pp 305-329.

Smith, Albert C. 1979-92. Flora Vitiensis Nova: A New Flora of Fiji. Volumes I-V. Pacific Tropical Botanical Gardens, Lawai, Kauai, Hawaii.

Spencer, Dorothy M., 1941. Disease, Religion and Society in the Fiji Islands, University of Washington Press, Seattle, Washington.

Spradley, James P., 1980. Participant observation Holt, Rinehart and Winston, New York.

St.John, Harold, 1938. Herbaium vouchers from the Bernice P. Bishop Museum, Herbarium, Honolulu.

-----1954. Ferns of Rotuma, a descriptive manual. Occasional Papers of the Bernice P. Bishop Museum Honolulu, Hawaii, Vol. 9 Num. 21 pp 161-208.

-----1970. A new species Dendrocnide pruritivus from the island of Rotuma. Pacific Science Vol. 24 pp. 136-138.

Tanu, John, 1991. Mission Influence on Secular Life. in Rotuma: Hanua Pumue (Formerly under the title Rotuma: Split Island edited by Chris Plant, 1977) Institute of Pacific Studies, University of the South Pacific, Suva, Fiji.

Taukave, F., M.P. Faktaufon, J.E. Rigamoto, A.K. Wiliame, V.H. Rigamoto, H.Pene, A Fatiaki, F.Panapasa, A.M. Fatiaki, M.Samisoni, M.Riganoto, S.Pene, H.Katafono, F.Williame, S.Erasito and K.Mosese, 1981. Fau Tarau; Rotuma 1881-1981. The Anniversary Committee, Suva, Fiji.

Tausie-Hereniko, Vilsoni, 1991. Dance as a Reflection of Rotuman Culture. in Rotuma: Hanua Pumue (Formerly under the title Rotuma: Split Island edited by Chris Plant, 1977) Institute of Pacific Studies, University of the South Pacific, Suva, Fiji.

Thompson, Basil, 1915. Voyage of H.M.S. Pandora London, Francis Edwards.

Tromelin, L.de, 1829. Visite de i`Ile Rotumah Journal des Voyages Vol. 13.

Uhe, G., 1974. Medicinal plants of Samoa: a preliminary survey of the use of plants for medicinal purposes in the Samoan Islands. Economic Botany Vol 28 pp 1-39.

Verne, R.P., 1848. Lettre sur Rotuma Annales de l'Association de la foi Vol. 20 pp 352-3.

Vilsoni, Maniue, 1991. Reflections on Family Life: A Fond Farewell. in Rotuma: Hanua Pumue Institute of Pacific Studies, University of the South Pacific, Suva, Fiji.

Weiner, Michael A., 1970. Medicinal Plants of Tonga Masters Thesis, University of Hawai'i, Honolulu.

-----1984. Secrets of Fijian Medicine. Publisher not stated.

West, Thomas, 1865. Ten Years in South Central Polynesia James Nisbet and Co., London.

Westcott-Jones, K., 1951. Rotumah Fortnightly London 1002 April pp 238-44.

Whistler, W. Arthur, 1992. Polynesian Herbal Medicine National Tropical Botanical Garden Lawai, Kauai, Hawai`i.

Whitcombe, J.D., 1930. Notes on Tongan Ethnology. Bernice P. Bishop Museum Occational Papers Vol. 9 Num. 9.

Williams, John, 1838. A Narrative of Missionary Enterprises in the South Sea Islands; with remarks upon the natural history of the islands origin, languages, traditions, and usages of the inhabitants. John Snow, London.

Wood, W.W., 1877. On the Tombs in the Island of Rotuma Journal of the Royal Anthropological Institute Num. 6 pp 5-8.

Yuncker, T.G., 1943. The flora of Niue Island. Bernice P. Bishop Museum Bulletin Num. 220 pp 1-283.

Zepernick, B., 1972. Arneipflanzen der Polynesier Verlag von Dietrich Reimer, Berlin.

Zimmerman, Elwood Curtin, 1943. Some Curculionidae from Rotuma Island (Coleoptera) Occational Papers of the Bernice P. Bishop Museum Honolulu, Hawai'i Vol. 14 Num. 17 pp 183-9.