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POLYNESIAN MEDICAL RESEARCHES.

by

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MEDICINAL SUBSTANCES.

AND LITERATURE.

Edinburgh
1899.
Medicinal Substances.

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INTRODUCTION.
Polynesian Medicinal Substance.

INTRODUCTION.

The precise extent and depth of the knowledge of these savages concerning the medicinal properties and healing virtues of their plants is unknown. Even such little information as we possess on this subject has been slow and difficult of acquisition, inasmuch as persons who have lived in a state of nature with them have not generally been distinguished either for their medical or botanical knowledge, and the civilised or semi-civilised natives often know little or nothing about their native medicinal plants. Their custom of secrecy has however been the greatest drawback to our enlightenment on these points. The native medicine-man discovers for himself, or learns from his father, the properties of the herbs and simples he employs; and he prepares his medicines in secret that none may discover the substances he uses, and thus supplant him in his profession. In consequence of this custom, doubtless much valuable information has been irretrievably lost.

The Maori possessed a remarkably extensive knowledge of the actions and value of the plants with which he was surrounded, and acquired considerable skill in compounding them. Astringents, both for
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internal and external applications, for wounds, or for looseness of the bowels and dysentery—accidents to which they were very subject—were perhaps the most widely used substances in New Zealand. On the whole their infusions and decoctions were given in reasonable doses, and were not too concentrated as in Hawaiian practice. The Medicated vapour-bath was a special feature of the Maoris. In Australia the aborigines were well acquainted with such of their plants as yielded substances suitable for the healing of wounds and ulcers, e.g., astringents, and antiseptics; they likewise discovered numerous narcotic plants which they used in a dried state as masticatories. But of the vast host of plants such as those of the natural orders Leguminosee and Myrtaceae etc., which must comprise many plants of great medicinal value, they seem to have been comparatively ignorant.

The Plants of Australia and Southern Polynesia represent a suitable field for much valuable therapeutic research, and in the coming century, doubtless a number of new active substances will be acquired from this source.

The greatest number and variety of vegetable medicinal substances were employed by the Hawaiians.
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in the North, and the Fijians in the South of Polynesia. The Sandwich Island Kahunas (medicine-men) are a scourge in the land, even at the present day, and they as freely use their drastic cathartics as did the old-time physician his instruments for bleeding, and with as deadly effect. The Hawaiian plants possessing purgative properties were all well-known to the Kahuna, and were the most prominent articles in his Pharmacopoeia. The Fijians had a most extensive knowledge of medicinal plants of all kinds, and used a greater variety than any other section of the race. Their neighbours the Samoans were almost totally devoid of such knowledge until in later years their pharmacopoeia was extended by intercourse with the Fijians, Tongans, Sandwich Islanders and Tahitians.

The following lists of Medicinal Plants are the only ones yet prepared having any claim to completeness, as far as our knowledge goes, or that are arranged in a systematic manner.
ORIGIN OF DRUGS.

A THEORY.
THE ORIGIN AND DEVELOPMENT OF THE
USE OF PLANTS IN PRIMITIVE MEDICINE.

Many Anthropologists, and others, have declared
with Tylor, that "where the world-wide doctrine of
disease-demons has held sway, mens' minds, full of
spells and ceremonies, have scarcely had room for
thought of drugs and regimen." (1) It will be my
endeavour in this section to show that this is a
fallacy, and that Animistic beliefs did, and such
alone could, lead primitive man to the great dis-
covery that herbs had healing virtues. The Poly-
nesians believe in disease-demons, and nowhere is
there a race of people more firmly or sincerely
convinced of the idea, that disease is due to evil
spirits. No People has spent more time and energy,
blood and life, in performing ceremonies to propiti-
ate these demons, or has more faithfully and regu-
larly learned and repeated the spells to avert dis-
ease, than the Polynesians. And we ask, have they
any drugs?; have they any knowledge of plants?; can
they cure or relieve any diseases with their
herbs? For an answer I refer the reader to the
lists of medicinal plants to be found in another
part of this thesis. Lists of which the out-
standing features are their incompleteness and
paucity of detail, shortcomings readily explained
(1) Tylor, Primitive Culture, 131.
by the great secrecy in which such knowledge was kept by the medicine-men, and almost equally to the painful lack of observation of the white pioneers.

If then in spite of their minds being "full of spells and ceremonies" they have for many centuries, employed herbs to combat disease, and introduce new ones from time to time as their knowledge advances, we have the problem to solve — How did they acquire their knowledge of such things? Primitive peoples who have no written history but only oral traditions and myths transfer the *fons et origo* of all important customs to the feet of the gods. Polynesian Medicine and the use of herbs are the gifts of their gods to men; the Hawaiians still remember the legend, and the native governor at Kairua, when asked by Ellis (1) the interesting question — what first induced them to employ herbs, &c., for the cure of diseases, said, that "many generations back, a man called Koreamoku obtained all their medicinal herbs from the gods, who also taught him the use of them: that after his death he was deified, and a wooden image of him placed in the large temple of Kairua, to which offerings of hogs, fish, and cocoa-nuts were frequently presented. Oronopuha and Makanui airono, two friends and disciples of Koreamoku, continued to practise (1) (32) I 335.
Origin of Drugs.

the art after the death of their master, and were also deified after death, chiefly because they were particularly successful in driving away the evil spirits by which the people were afflicted and threatened with death." Such is their story of the origin of medicinal plants. Let us now look at their traditions concerning the origin and attributes of plants generally and we will then briefly trace the steps from their ceremonial up to their medicinal uses, through certain definite stages of transition which I will endeavour to define, and justify by appropriate illustration.

(a) Origin and Attributes of Plants.

In many countries are found sacred flowers and shrubs, and they are emblematic of virtue and numerous other good and evil qualities, but few races go so far as to attribute to plants, similarity of origin, identity of ancestry, or the possession of souls capable of inflicting injury or bestowing benefits on man. To the Polynesian these things are true concerning the trees by which he is surrounded; he finds no difficulty in believing them, why should they not have souls as well as he?
Origin of Drugs.

In Maori mythology, Darkness was succeeded by Light, and from Chaos emerged Heaven and Earth, who were man and wife. The children of Rangi (Heaven) and Papa (Earth) were the ancestors of men, plants, animals, of all things. One son was named Tane-nui-a-Rangi,\(^{(1)}\) he had many wives whose offspring were plants; one child was the toetoe \(^{\Phi}\) (Arundo conspicua) another harakeke\(^{\Phi}\) (Phormium tenax), a third totara\(^{\Phi}\) (Podocarpus Totara). Other trees and herbs after their birth, or creation, assimilated portions of the body of a certain god or hero called Tuna-roa, or, according to some versions of the legend, they actually found their origin in the parts of this mythical personage. Tuna-roa\(^{(1)}\) was a wicked being, and was killed by the famous maori ancestor and hero Mani; when killed, his brains flew into the rito (pith of nikau, Areca sapida and the Koarere); his blood into tu-pakini or tutu (Coriaria ruscifolia\(^{\Phi}\)), the rimu (Dacrydium cupressimum\(^{\Phi}\)), the totara (podocarpus repanda \(^{\Phi}\)); the hairs of his head became the aka-creepers (Metrodioseros scandens), his heart entered into the ti-ore, the gall into ti, the backbone into miko, the ovaries\(^{(2)}\) into the taro. The Karcao

\(^{\Phi}\) Used medicinally in New Zealand.

(1) See (88) 184, p. 117, and (88) 45, p. 160.

(2) (88) 117 (In (88) 45 White speaks of Tuna, the son of Manga-wai-roa.)
Origin of Drugs.

(Rhipogonum Scandens), the raupo (Typha augustifolia) and the titoki (Alctyron excelsum) were also derived from Tuna. It is a remarkable fact that the majority of these plants were used medicinally and are to be found in the list of 'Maori Medicinal Plants.' Thus we have indicated the divine origin of plants and the fact that many trees were looked upon as the abode, or as having assimilated the person - hence the qualities and powers - of a god. Other famous examples are to be found in the poison trees of Hawaii, the abode of the god and goddess Karaipahoa and Pua, and those of Samoa, the "ironbark"trees, also the abode of powerful gods. But all the tree demons are not so powerful or so malignant as those, there are many minor spirits and ghosts of dead friends, especially of those recently dead, living in and amongst the trees of the bush. The Tasmanians and Australians dreaded the little demons who lived in the tree bark, who crawled out at night and approaching the sleepers around the camp fire, put disease into them. All the native races, in fact, with whom we are dealing, associated with plants certain good and evil spirits and ghosts, and this is a fundamental point in my argument. Let us now consider what was probably the first step towards their use in medicine, namely the Used Medicinally in New Zealand.
Origin of Drugs.

(b) Ceremonial Use of Plants.

Many ceremonials involved, as a primary factor, the employment of portions of plants, generally leafy boughs. I will not multiply examples but mainly confine my remarks to the tapu (taboo) customs. The fundamental idea of this law is that a portion of the sacred essence of an Atua (spirit), or a sacred person, is directly communicable to objects which they touch, and as this sacredness can be retransmitted, it is necessary that anything, or anyone, containing such sacred essence should be made tapu to protect it, or him, from exposing the spirit to any indignity. Now all newborn babes and their mothers, sick persons, chiefs, sorcerers, &c., and their household goods and other possessions were tapu, and it was in the ceremonies for removing this restriction and rendering them noa, for removing the spiritual essence which resided in them, that we find, I believe, the key, or one of them, which ultimately led to the discovery of plant powers in healing. A newborn child is tapu, how did the maori tohunga render it noa? The priest took a branch of Karamu, (Coprosma robusta, C. Arborea, or C. lucida), ake, (Dodonia viscosa), or mutu, (Ascarina lucida); the branch was tied round the child's waist,
and incantations having been performed, the ceremony was complete. In a somewhat similar manner a house or canoe is struck with leaves of the *Piper excelsum*, and the tapu thus dissipated. When a maori is ill, the medicine-man goes to a flax bush (*Phormuim tenax*) and pulls up a series of the long leaves until he discovers, by the curious wailing sound one emits, the path by which the spirit came from the lower world to the body of the sufferer. The Australian aboriginal uses branches of trees to discover the source of the bewitchment which has killed his fellow-tribesman. Similar instances might be given in great number and variety, but let us advance. At a later stage in the process of development the leafy branch was, as it is commonly to-day, used to stroke over the body of a sick person to aid in the extraction of the disease-demon; then, still progressing, leaves, "such as were known to have the proper qualities," were used to rub the patient with appropriate charms and incantations being repeated during the process. Later the Polynesian made a simple application of charmed leaves, as is daily done in cases of toothache, &c., and these being removed after a time, took away the disease-worker in the form of a small

*Leper's Island, &c.*
Origin of Drugs.

worm, &c., the incarnation of the spirit. The further stages in which bruised leaves (to allow the plant-spirit more readily to leave its abode and enter the sufferer), boiled and pounded leaves, bark and fruits, were successively introduced might with facility be illustrated, but the process is so natural and inevitable that further discussion is unnecessary. I may however point out that side by side with the above procedures would go on a process of natural selection of plants; the spirit of one plant will be found soothing that of another irritating, and suitable ones would be selected for application in various forms of disease.

The internal administration of drugs among the Polynesians was probably initiated with doses of pure water, or that of cocoa-nuts, which had been "charmed" by priestly incantation. Such water is used at the present day, both for internal and external application in Melanesia, &c., - it has mana to expel the disease ghost or spirit. Many centuries elapsed probably before the mind of these children of nature evolved the idea of transferring the plant spirit to water, thus enabling them to swallow the good atua or tindalo that he might fight with, and overcome, that evil genius ruthlessly employed in gnawing the victim's liver and
other internal parts. In Fiji, Hawaii, and New Zealand, the idea rapidly grew, but there are many parts of Oceania where, even to-day, internal remedies are by no means considered of value in sickness, however useful they may be as charms to prevent disease. In Timor for instance people carry herbs, that disease may not approach them, and when the medicine-man is called to see a patient he gazes intently upon him to endeavour to perceive what sorcerer is making him ill. Then returning to his hut he makes up some medicine, which the happy patient has not however to swallow, but the herbs having been packed by the doctor into a bundle with a small stone, are thrown away as far as possible from the sick man; the stone finds out the sorcerer and returns to the doctor, laden with magic power, and the patient wearing it round his neck soon recovers.

The Fijian *vu ni Kalou*, like the Australian *Railtchawa* or *Koraji* and the maori *Takata* or *Tohunga*, frequently is in league with a spirit residing in a certain tree, the leaves of which he makes into an infusion and in administering such, transmits to his patient the power of his familiar spirit. This is their theory of the action of internal medicine, and
necessarily different spirits will be found to have varying effects and those will be abandoned which produce undesired results. Anyone is at liberty to acquire a new medicine, and if it is successful at first it grows in favour - if on the other hand the first cases do not recover, the plant and its possess¬or lose favour and are abandoned. The nature of the medicine-man's medicines dies with him unless perchance he has a son to whom they might be transmitted, or there is someone willing to purchase his knowledge.

My conclusion briefly is, that among primitive races, those individuals who first employed herbs medici¬nally were what Paracelsus called Spirituales, they commanded the spirits of herbs and roots, and employed them in liberating disease. If plants had been considered by them as inanimate objects and not the abode of gods, spirits, and ghosts, they would have found no place in the Medicine of primitive man. In fact, Animism and Fetishism were the beliefs which naturally lead primitive folk to make their first essays into the domains of therapeutic research, to add to their stock of healing charms and incantations the material substances and juices of the Vegetable Kingdom.
POLYNESIAN PHARMACY.
POLYNESIAN PHARMACY.

It will be expedient, in the first place, to discuss generally the common aspects of the primitive pharmacy of the Polynesians, Maoris, and Australians, and then to point out the chief characteristics of each. It at once strikes one that the leading feature in their mode of preparing plants for medicinal use was extreme simplicity; commonly enough indeed the leaves or plants were taken and applied without being in any way manipulated, e.g. fresh leaves were directly applied as poultices to inflamed, bruised, or painful parts, but sometimes the plant or leaf was first boiled, or bruised, or even chewed and then applied; almost always it was the fresh green leaf that was employed, dried leaves very rarely being used. Fruits were often used as surgical and medical applications, being either bruised or roasted amongst the embers prior to use. The fresh juices of leaves, bark and roots were commonly administered and were obtained by bruising, squeezing, or chewing the substance; fresh or salt water was added and occasionally the juice of a cocoanut. Infusions and decoctions were universally administered, generally in large bulk and often very concentrated, they were made from leaves,
Pharmacy.

bark of stems and roots, whole plants, and occasionally from pounded seeds. Amongst such preparations are included the commonest Maori and Polynesian medicines, the Australians however did not employ infusions to any great extent. Oils of many kinds were employed, the commonest being cocoanut, Dilo, Kohia, &c., their methods of extracting these oils are described elsewhere. The natives are so expert in preparing the cocoanut and other oils that large quantities have for years been exported for use among the whites. They had no means of distilling volatile oils. Oil and animal fats (frequently human) often formed the basis of ointments and salves containing powdered herbs or ashes of plants often specially selected, but generally (particularly among the Australians) the fine ashes from a wood fire. The Maoris employed pills which in one instance were a compound of roots, bark, and leaves of trees, with certain shrubs burnt together, the ashes being kneaded into a paste with hog's lard. The Hawaiians also used pills (hualle) but I am not sure that they were known before the arrival of Europeans; I think, probably not. The Sandwich Islanders have so many terms for ointment (nini, oila, hinu, Haw.; muro, N. Z.) that possibly
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it was used before the whites arrived. They seem to attribute great power to unguents, for one day an aged native was discovered applying his ointment to some ugly scars on the surface of a polished oak chest. Linaments (vaimili Sam., milimili Tong., mili - to rub) were in great demand for rheumatism and were made from oils to which herbs were sometimes added. Plasters of gums, resins, leaves, &c., sometimes having blistering powers, more often astringent and antiseptic, were applied. Namunamu was a maori blistering plaster, inwai ecni inmacop was the Aneityumese name for plasters generally. Dusting powders such as wheerup (Red Ochre), animal fur, &c., fermented juices and plants, and medicated vapours were among the less commonly prepared appliances. That we can estimate, with any degree of accuracy, their dexterity or versatility in preparing and compounding drugs, is impossible owing to the great secrecy with which such manipulations were carried out. The tohunga pretended to be instructed by his god as to the herbs he should select, and the manner of combining them, and he did not wish others to participate in his knowledge - or his gains. As an example of a more complicated process than any we have yet described, may be mentioned a Maori method
of preparing a certain scent — they were very clever in such things — used for clothing kept in the carved houses of the head chiefs, and which is known by the name of tara-mea. (1) To make this compound the aromatic fern called Moki-moki (Doodia - candata), with the gum obtained from the ta-rata (Pittosporum eugendides) and the sweet-scented moss Kopuru (one of the Hepaticae obtained from humid rocks in the densest part of the forests), with the fragrant flowers and roots of the pa-to-tara (Leucopogon Frazeri), and the fragrant grass called Karetu (Heirochloe redolans), and the plant Kioi, are mixed into a compound with the gum of the Tara-mea (Aciphylla Colensoi), and the oil of the Nurio (podocarpus ferruginea), and subjected to heat for several days, until the roots and herbs are softened. Then it is strained through a layer of the flowers of the Kakaho (Arundo conspicua)." Whether they prepared their medicines by any such complicated process, we know not: they have no objections to divulging the mode of compounding a scent but refuse to give information concerning their medicines. Mention may also be made here of the fact that Maoris, Australians, &c., had acquired their wonderful knowledge of so treating very poisonous plants that they became fit for food. In Australia whole tribes chiefly live on certain vegetables, which in their raw state, (1) Armitage MS.
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or when simply roasted on the fire, are absolutely poisonous, and the system of treatment by which their bad qualities are got rid of is of so intricate a character that Dr. Leichardt, a scientific explorer who saw in the deserted camps the articles in question in every stage of their preparation, was, as he mentions, unable, even with the hints before him, to master the process and thus obtain food for his almost starving party. (1) These two instances serve, I think, to indicate our ignorance of their methods.

Concerning certain special features in the pharmacy, materia-medica, &c., of these races we may say that the Polynesians (including the Maoris) were in every way superior to the Melanesians and Australians. The Australian spent his ingenuity in devising plasters, ointments, and other preparations for his many wounds and skin complaints, heeding but little the needs of his disordered internal economy; his bowels were frequently, nay commonly, in a chronically inactive state and he did not, like the Hawaiian, regularly indulge in powerful purgatives. They used so little cathartic medicine, that one writer who knew them well believed that they were quite ignorant of drugs having such an action - this however is not strictly accurate. They had, as would be

(1) (88) I. 80.
expected, at least one plant credited with being a sure antidote for snake-poison.

The Maori must be considered as far surpassing the Australian aboriginal in his knowledge of, and ability to prepare and suitably administer, his simples. He had better and more numerous internal remedies, but his external applications, though efficient in many ways, must yield the palm to those of the Australian. The New Zealander's remedies were almost devoid of that active, powerful, drastic character of the Fijian and Hawaiian concoctions, and they seem to have been applied with more care, and were certainly given in far smaller doses. In certain parts of Polynesian, particularly Fiji and Hawaii, medicine taking seems to have developed almost into a mania, the Fijian was always inbibing quantities of medicines for diseases, real and imaginary, and to ward off their attacks. Pregnant women and mothers of recently born children also took medicine to great excess. At the Sandwich Islands such potent mixtures were commonly given and the result so often fatal, that it was customary to have the patients friends and relatives gathered together at the bedside, before administering
the potion which was to "kill or cure." No medicine was deemed worthy of a place in the Hawaiian Pharmacopoeia which was not a drastic purgative. Such remedies, I have almost accidentally discovered, were frequently given in the form of an enema (waiiki). A syringe (hano) made from a bottle gourd, is filled with a mixture made from the leaves of the gourd ipiawaawa, a powerful cathartic. The medicine is called waiki, (welo, pipa, kipa, ipuawahia, &c.) and in its dilute form, paipai or poepoe. Its administration is often followed by very severe symptoms, and its use in Polynesia appears to be quite restricted to the Sandwich Islands.
THERAPEUTICS.

The particular uses to which each medicinal substance is put, accompanies the lists of the native and botanical names of the Polynesian, &c., plants in another part of this section. I wish to enumerate here the various specific actions these natives were able, by the use of their drugs, to achieve. First maybe mentioned the cathartic (launaha, "Haw.) and the emetic. ("laaupii," "laauhoopii," laaulai," (Haw.); "faa-ruai," (Tah.); "whakaruaki" (N. Z.).) including a great variety of plants; some of those which were cathartic were also used as abortifacients ("Hoohanah" "Omilo" (Haw.); "Wai na Yava" Fiji.). Other common effects manifested by their simples were:-
styptic, rubefacient, astringent, antiseptic, vesicant tonic, stimulant, anodyne, carminative, caustic, diuretic, diaphoretic, antiparasitic, anthelmintic, and more rarely anaesthetic, aphrodisiae, hypnotic, galactagogue, &c. Thus they were possessed of powers which, if suitably directed, would result in relief in distress; that they often did administer their drugs in an efficient manner, several authorities assert, but commonly enough, in their zeal and impatience, as well as their ignorance, the cure was

Ø Native word for any cathartic; laau - a medicine.
Therapeutics.

worse than the disease, and patients, who would have recovered from the disease, rapidly succumbed to the preferred remedies.

NATIVE TERMS.

A medicine, or drug, or) Whaka-mahu, rongoa, (N.Z.); curative draught.

Laau, laaulapaau, laaupalupalu, (Haw.); Raau, rapaau, (Tah.); Rakau, (Mang.); Akau, (Tong.); Raaurapaumai, (Tah.); Rakauwaki, (Paum.);

Inwai emehe, inwai wii nemehe haumat mi, A tamb tyne, A betye, (Ancity);
Piango-ba, gurragaland, (N.S.W.); &c., &c.
(These terms translated mean, 'herb', 'water for sickness', 'healing water', 'preserved things', 'British water', &c.).

Narcotic, Hypnotic.

Faka-mohe (Tong.);
Laumooe, (Haw.);

Poison(s)

Nuien (N.Cal.);
Barlabural, (W.A.).

Doses, &c.

As would be expected, the blacks require greater doses of medicine than whites to produce similar results. And Mr. Bonney relates, than in N.S.W. he gave usually half a pint of more of castor oil - a medicine much relished by these people - for a dose. One man took 3 drops of Croton oil as an ordinary dose. Calvert states, that certain tribes eat quantities of the By-yu nut, which to Europeans
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proves so violent a cathartic, that some of the crew of Captain Cook's ship who ate some, nearly succumbed to its effects. They generally prefer the most nauseous medicines possible, believing such most efficacious in disgusting and expelling the disease-demon. This demon was sometimes induced to speak through the mouth of the patient, and on anyone bringing a bunch of strong-smelling leaves to drive him away, he would immediately perceive its presence; they would hide it and deny in vain that they had brought it in. The patient would then be seized struggling and howling, and the leaves put to his nose; he would seem to die, the ghost departed from him as the soul departs from a dying man. After a while his senses would return, and he would declare that he knew nothing that had happened since the onset of the illness. (1) The smoke of strongly smelling leaves was similarly used in Polynesia and Melanesia.

(1) (39) Ch. XIII.
MAORI MEDICINAL PLANTS.
MAORI MEDICINAL PLANTS

Magnoliaceae.

1. Drimys axillaris, Forst.
   (Syn. D. colorata, Raoul; Wintera axillaris Ford. Prodr.)
   "Pepper tree" of the Colonists.
   "Horopito" of the Maoris.
   The bark is a pungent aromatic, the stimulating tonic properties of which are little inferior to "Winter's Bark" (Drimys Winteri). It is used to allay inward pain.

Pittosporeae.

2. Pittosporum abcordatum, Raoul.
   "Kohu-Kohu"
   Dried in the sun and pounded into dust; then mixed with "hinu-kohia" oil (oil from passiflora tetrandra, q.v.) and used as a salve for itch, eczema of the scalp and other cutaneous diseases.

3. Pittosporum eugenioides, A. Cunn.
   (Syn. P. Elegens, Raoul; P. microcarpum, Patterlich).
   "Tarata"

(1) Arranged according to Hooker's Classification of N.Z. Flora.
Maori Medicinal Plants.

A resinous balsamic gum is obtained by cutting a groove in the bark lengthways up the tree. The bark is about three-quarters of an inch thick. The gum is used for foul breath.

Malvaceae.

4. Hoheria populnea, A. Cunn.
   "Hohere".

The leaves, bark, and flowers of this tree are used medicinally. The flowers are abundantly produced, are white in colour and have a glutinous taste like the mallow.

Geraniaceae.

5. Pelargonium australe, Willd., var cladestinum. (Syn. P. acugnaticum, Thouars; P. cladestinum, L'Her.; P. grossularioides, Aiton)
   "Kopata".

The Maoris use a lotion made from the bruised leaves to reduce inflammation in scalds and burns.

Rutaceae.

   "Wha-rangi".

The gum of this tree is chewed by the Maoris.
Maori Medicinal Plants.

for foul breath. Care has to be taken not to confuse this plant with "Wharangi-piro" (Olearia Cunninghamii), the gum of which is a deadly poison.

Meliaceae.

7.

Dysoxylum spectabile, Hook.

(Syn. Hartighsea spectabilis, A. Juss; Fl. N.Z.)

"Kohekohe".

The leaves and bark are used as a bitter tonic and stomachic; when macerated with water, used by women who have lost their infants to prevent the secretion of milk. The decoction is also used to allay an irritating cough.

Sapindaceae.

8.

Alectryon excelsum. DC.

"Titoki".

The fruit of this tree yields an oil of slightly green colour, which is put into the ears to relieve ear-ache. It is also applied to weak eyes, sore breasts, and the chafed skin of infants, as a dressing for wounds and sores that are healing, and for bruises and pains in the joints. Taken internally it is a laxative. The red pulp is very astringent and is taken by consumptive patients to relieve blood-spitting.
Maori Medicinal Plants.

The berries are beaten to a pulp and sewn up in a closely-woven mat and heated in the oven. The ends of the mat are then twisted with sticks, bringing pressure upon the beaten pulp, which causes the oil to exude.


Corynocarpus loevigata.

"Karaka"

Vide "Poisons."

10. Coriareae.

Coriaria ruscifolia, Linn.
(Syn. C. Sarmentosa, Forst.)

"Tua-tutu". "Tutu." "Tu-pakihi."

This plant possesses, apart from its medicinal properties, special interest on account of its poisonous properties, which are far more deadly than those of any other plant in the Colony. (Vide "Poisons") The fruit (so-called berries, really fleshy petals) hang in pendulous racemes, sometimes exceeding one foot in length and are of shining purplish-black colour, charged with purplish juice.
Maori Medicinal Plants.

The poisonous principle resides in all parts of the plant, but is most plentiful in the young shoots and in the seeds.

"In 1869 Mr. Skey, the Colonial Analyst, made a careful examination of the constituents of the plant, and so far as his experiments went, the poisonous principle appears to exist in a peculiar oil, if, indeed, it be not the oil itself. He characterises the oil as "somewhat viscid at common temp., but flowing freely at a little above this; colour, pale green; reaction, acid; taste, bland; burns away rapidly with much flame, scarcely volatile without decomposition, soluble in ether, alcohol, and strong acetic acid; insoluble in hydrochloric acid or nitric acid; also insoluble in water; does not dry when long exposed to the air. Mr. Skey adds: "If further experiments should confirm the accuracy of the news here stated, this case will, I conceive, become invested with an interest beyond that immediately under our notice, since it will afford another instance in which a non-nitrogenous oily principle is proved to affect the system like a neurotic poison; this class of poisons being almost always alkaloids, or at least nitrogenous substances."
Maori Medicinal Plants.

"Mr. Hughes obtained an extract from ground-shoots of tutu, which was found to possess very active properties; he took less than $\frac{1}{12}$ grain, which in five minutes time produced a most disagreeable irritating sensation in the throat, extending to the stomach, with pain across the region of the stomach, and accompanied by nausea. In a $\frac{1}{2}$ of an hour's time vomiting came on, which continued more or less for two hours. Very unpleasant sensations more or less for two hours longer, when, after great flushing in the face, with all but intolerable heat, the effects passed away."

Mr. Armitage informs me that the Maoris made use of this active plant in various diseased conditions. For instance, the leaf soaked in water for a short time makes a liquor useful in cases of dysentery. The juice obtained by bruising the pith of the tree is mixed with an equal quantity of water, and given to lunatics. He does not say whether, in the latter case the desired end is the death of the insane person, or, whether a powerful medicine is expected to expel a very puissant evil spirit. The juice of the so-called berries is put into calabashes with some sea-weed or Kelp called "Karengo" and the calabashes placed in pits in the soil where it ferments. This is taken to

counteract the effects of the costiveness caused by
eating totara, rimu or Karaka fruit or berry, and as a
relish and laxative with a diet of fern-root.

11. Rosaceae.

Rubus Fustialis.

(Syn. R. Australis, Forst; R. Parsonia, &c.)

"Tarata-moa."

"Bush-lawyer" of the colonists.
The bark of this climber is boiled and the liquor
taken as a purgative in severe cases of abdominal
pain. If it does not act quickly a decoction made
from the "towhero" is taken.


(Syn. Geum magellanicum, Commerson.)

"Kopata"
The leaves possess astringent properties and are
used with effect in diarrhoea, dysentery and inter-
mittent fevers. They are also chewed for foul breath.


(Syn. A. Anserineofolium, Forst; Ancistrum diandrum,
Forst.)

The leaves of this "prostrate herb" are medicinally
used by the natives of the Middle Island, Lyall.

1. F. L. Armitage, M.S.
2. (86) 25.
Maori Medicinal Plants.


Weinmannia, Forst.

(Syn. Leiospermum, Don.)

"Tawhero". "Towai."

The bark is taken off the west side of the tree, the outer rind scraped off, and the inner part made into a decoction with hot water. This is taken internally as a purgative in cases of abdominal or thoracic pains.

15. Haloragaceae.

Cercodia Erecta, Murr. (1)

(Syn. H. Alata, Jacq; C. Alternifolia, A. Gunn.)

'Toatao.'

A "stiff-growing herb" used medicinally by the Maoris.


Leptospermum scoparium, Forst.

"Manuka".

"Ti-tree" of the colonists.

A manna-like exudation, consisting of a white gum, called by the natives "pia-manuka," is emollient in its properties and is used for scalds and burns. It is also given to suckling infants when costive, and is taken by adults to allay coughing.

(1) (88) 244.
Maori Medicinal Plants.

17. Metrosideros tomentosa, A. Cunn.

"Pohutu-Kawa".

"Christmas Tree" of the Colonists.

The inner bark is rich in tannin and is used in dysentery. The honey in the flowers is collected in a calabash by tapping the flowers against its side, the honey afterwards being sucked through a reed by invalids suffering from sore throat.

18. Metrosideros robusta, A. Cunn.

(Syn. M. Florida, Hook.)

"Rata."

The bark is steeped in water and the liquor used as a lotion for ringworm and for venereal disease (when the bark of the "puka-tea" is taken inwardly. The flowers and bark are used generally in the same way as Pohutukawa.)
Maori Medicinal Plants.

Passiflorellae.

19. Passiflora tetrandra.
(Syn. Tetrapathoea Australis, Raoul.)
"Kohia."

The seeds are bruised into a pulp and heated in a native oven, the oil is then pressed out and used as a dressing for obstinate chronic wounds and sore breasts. This oil is called by the natives "hinukohia."

Compositae.

(Syn. Senecio Georgii, Endl.; S. Forsteri. Fl.W.L.; Cineraria repanda, Forst. Prod.)
"Rangiora."

The bark of this shrub and the tips of the branches of the west side of the tree are cut, and an aromatic gum exudes, which is chewed for foul breath, or is first dissolved in oil. It must be preserved in water to keep it soft.

Convolvulaceae.

"Kumara"

The Sweet Potato.
Maori Medicinal Plants.

This plant is taken, roots and all, and boiled, the liquor being used for ague, pimples and many cutaneous disorders.

Scrophularineae.

22. Veronica salicfolia, Forst. (Syn. V. Stricta, B. & S.; V. Lindleyana, Paxt.)

"Koromiko"
"Kokomiko"

This is perhaps the most generally diffused plant in New Zealand. It is also the best known medicinal plant, being used equally by maori and settler. Its well defined astringent properties render it a valuable drug in dysentery and diarrhoea. A few of the young leaves (fresh) are chewed and swallowed, or an infusion is taken for above mentioned diseases. Baber(1) found that an infusion of its dried leaves had little or no effect, but a decoction had, from this he supposed the active principle differed from tannin. The leaves and tender shoots, are used as a poultice for ulcers and venereal disease. Koromiko is used also in the native medicated steam or vapour bath.

Gesneriaceae.

23. Rhabdothamnus solandri.?

"Kai-Kai-aruhe."

(1) (88)49 - 268.
Maori Medicinal Plants.

The fresh leaves and twigs of "Kai-Kai-aruhe" are used in the vapour bath and are supposed to have medicinal properties.

Verbenaceae.

24. Myoporum loetum, Forst.
(Syn. Cytharexylon perforatum, Forst.)

The juice is expressed from the leaves and used as a preventative for mosquito and sandfly bites. The twigs and leaves are used in the steam bath.

Plantaginaceae.

25. Plantago major.

"Kopakopa."

This plantain closely resembles the European, but is indigenous and a valuable medicinal herb, well known to the maoris. The leaves when boiled are used as an application for ulcers. The upper side of the leaf "draws" and when the wound begins to heal the under side of the leaf is used on it. The liquor in which the leaves are boiled is also used for scalds and burns.

(1) (88)13 - 244.
Maori Medicinal Plants.

Monimiaceae.

(Syn. Laurelia Novae-Zealandiae, A. Cunn.)
"Pukatea."

The bark of this aromatic plant is removed and the outer rind scraped off, and steeped in water, and the liquor thus prepared is used as a lotion for tubercular and chronic ulcers. A decoction of the bark is taken internally and also used locally for syphilis. A very strong decoction held in the mouth for some time relieves tooth-ache.

27. Hedycarya dentata, Forst.
(Syn. H. Scabra, A. Cunn.; Zanthoxylon Novae-Zealandiae, A. Rich.)
"Kai-coheria."

Used in medicated steam bath.

Piperaceae.

28. Piper excelsum, Miquel. ©
(Syn. Macropiper excelsum.)

This small, very aromatic tree, closely resembles the Kava (P. Methysticum) of Polynesia, but its root does not possess similar narcotic powers. The leaves © "Kawa" "Kawa Kawa"
Maori Medicinal Plants.

and berries have a warm aromatic flavour and possess stimulating diuretic properties. The leaves are chewed for tooth-ache. A pulp of the leaves is applied to joints in Rheumatism. A decoction of the leaves and young shoots (macerated with water) is taken for abdominal pains and also continued for some days in cases of gonorrhoea. Kirk\(^1\) states that they "chew the root as a remedy for tooth-ache." The leaves are used in the steam-bath.\(^2\) The root was chewed for dysentery.

Coniferae.

29. **Podocarpus totara.**

The outer dry bark of this tree is used for splints in cases of fracture, in connection with the stiff root part of the flax-plant.

30. **Podocarpus ferruginea.**

"Miro."

"Black Pine" of the Colonists.

The drupes of this tree taste of turpentine, and the oil expressed from them, in the manner before described (vide Titoki) is given to patients recovering from fever. It is also besmeared on the body as an

\(^1\) (88)13–244
\(^2\) Armitage.
\(^3\) (88)45–60.
Maori Medicinal Plants.

insecticide. The gum which exudes from any cut in the bark has great healing properties and is applied to wounds and ulcers.

31. Dacrydium cupressimum.

"Rimu."

"Red Pine" of the Colonists.

The gum of this tree is excessively astringent. The bark of the young tree was used by the Maories as a styptic to stop the bleeding of wounds. (1) The inner bark, bruised into pulp, was applied to burns. It is interesting to note that the red wood of this tree is supposed, by the Maori, to have gained its colour thro' having absorbed the blood of the mythical Tuna-Roa. This may possibly account for them using it as a styptic.

Liliaceae.

32. Phormium Tenax, Forst.

"Hara-Keke"

"Flax" of the colonists and commerce.

The root is anthelmintic and cathartic, and is used for ring-worm and to prevent galling of the skin in infants. A decoction of the root mixed with an equal portion of the juice of the "Kohia" berry is taken

(1) Baber (88)49 -268
(2) (88)45-160.
Maori Medicinal Plants.

taken internally for flatuency. The roots roasted on a wood fire and beaten to a pulp, are used as a warm poultice for abscesses and swollen joints. The gum, in its chemical characters and physical properties resembles gum arabic. It has a distinct alkaline reaction. This substance which has been carefully examined by several chemists, is found at the bases of the long leaves. One analyst describes it as "colourless or pale yellow when pure, semi-solid and viscous --- it is unlike any gum or mucilage hitherto known." It is used in diarrhoea, and as a dressing for wounds and burns.

Palmeae.

33. Areca Sapida, Soland.
(Syn. A. Banksii, Martius.
"Nikau."

The pith of this palm is cooked and eaten for a few weeks by expectant mothers, it having the property of slightly relaxing the bowels and is reputed to relax the ligaments of the body. (pelvis).

Gramineae.

34. Hierochloe redolens. (1)
(Syn. H. Banksiana, Endl; H. Racemosa; H. Antarctica; Torresis redolens, A. Gunn. &c.)

This plant is used to medicate the vapour of the

(1) (88)63
Maori Medicinal Plants.

steam-bath. "Karetu." ^

35 "Tussac Grass". (1)

This is burnt and the ashes sprinkled on burns.

Filices.

36 Pteris aquilina, Linn., var. sculenta.
(Syn. P. Sculenta, Forst.)

"Marchi." "Takaka." "Rarahu." "Rahurahu."
"Rarahu." &c., &c.,

The root of this common fern is used as food for invalids and "it is always taken by persons going on a voyage as the best antidote for sea-sickness." (1)

Algae.

37 Laminaria sp.

"Rimu-roa"

A long marine alga which grows on the rocks on the sea-coast. Its tender end is roasted and eaten as a cure for the itch and intestinal worms.

38 Laminiaria sp.

"Karengo."

This seaweed, when fermented with the juice of the poisonous "Tutu," is used as an aperient.

(1) (85)7-379.
Maori Medicinal Plants.

Additional & Unclassified.

Liliaceae.

(Syn. R. Scandens, Forst.; Smilax, Rhipogonum, Forst.)
"Kareao."
"Supple-jack" of the colonists.
The long underground rootstocks are skinned and then beaten to a pulp and steeped in water and strained, the liquor being used.

40 "Pukates"

This plant (weed?) is boiled, roots and all, and applied hot as a poultice to cuts, bruises and wounds. A decoction of it is taken for looseness of the bowels or to allay abdominal pain. It is also used as a lotion for skin eruptions, and for scurf of childrens' scalps.

41 "Wac-riki."

This plant grows in shady places on the borders of forests: the leaf being not unlike clover. The whole plant is taken and bruised and the juice expressed from it. This juice is used for pains in the joints and rheumatism. The plant must not be handled
Maori Medicinal Plants.

with bare hands, nor must the juice be permitted to touch the skin, for wherever the juice is brought into contact with the human body it makes a blister like that caused by cantharides.

42 "Wild Cabbage." (1)

This plant (leaves?) was boiled and the water taken quite hot. It was considered a sure remedy for colic.

(1) (88)58 - Ch. IV.
AUSTRALIAN MEDICINAL PLANTS.
THE MEDICINAL PLANTS OF THE AUSTRALIAN ABORIGINALS.

1. **Capparideae.**

   *Polanisia viscosa*, D.C. **(1)**

   (Syn. *P. icosandra*, Linn.; *Cleome, flava*, Banks; *C. Viscosa*, Linn.)

   Used by the aborigines to relieve headache, to which they are very subject. (Mr. H. W. Stone, quoted by Mr. Bailey.)

   Note. This plant is extensively used in the medicine of India, Cochin China, United States of America and Europe.

2. **Malvaceae.**

   A poultice made from boiled wild marsh mallow was applied to boils. **(2)**

3. **Geraniaceae.**

   A decoction made from the fleshy-rooted geranium was used by the N. S. Wales blacks. **(3)**

4. **Leguminosae.**

   Mimosae.

   *Acacia hemalophylla* **(4)** A. Cunn.

   "Gidya". "Wong-arrah."

   "Spear-wood" of the colonists.

® Arr. according to the Classification in Seeman's "Flora Vitiensis" (slightly modified.)

(1) (88)53
(2) (87)29 I.264
(3) Vide P. 262
(4) (88)2 - 33-34.
Australian Medicinal Plants.

The plant (leaves) is infused in water and the infusion taken in cases of fever, malaria, &c.; it is doubtful if there is any virtue in the medicine.

5. Acacia falcata, Willd. (1)

(Syn. A. Plagiophylla, Spreng; Mimosa obliqua; Wendl.)

"Weetjellan" of the aborigines of N.S.W.
"Hickory" "Sally" "Lignum-Vitae" of the colonists.

The bark of this tree, which contains much tannin was used by certain of the N. S. W. blacks to make an embrocation for the cure of cutaneous diseases.

6. Acaciae, sp.

The bark of acacias or "wattles" was used by the Victorian blacks to make a lotion for application to boils. (2) The gum was in some places melted in water and made into a half-liquid jelly, which was taken as a tonic. (3) The natives of Victoria used a mixture of decoction of "wattle" bark and wheerup (red ochre) for the cure of the so-called itch which was so common amongst them, and which they called "bulburum." (4)

A strong decoction of the bark has been used by the

(1) (88)53
(2) (87)29.I.264.
(3) (88)142 XII.
(4) (87)29.I.264.
Australian Medicinal Plants.

Victorian aboriginal medicine-men, with considerable success in the treatment of syphilis.\(^1\) It is applied locally, and Thomas has seen very severe cases cured in this way.

7. Myrtaceae.

**Eucalyptus.**

This genus comprises about 150 species, all Australian except a few from the Indian Islands and New Guinea, none extending to New Zealand or New Caledonia. It would be strange indeed if the aborigines of Australia had remained ignorant of the healing properties of so widespread a plant. J.H. Maiden, in his work on "The Useful Native Plants of Australia," does not seem to have recognised the fact, that the Aborigines made frequent use of the various productions of these trees. I have endeavoured to gather sufficient evidence to prove, that they were acquainted with the healing virtues and medicinal properties, of all the chief substances associated with the Eucalyptus. They probably had a fairly efficient preparation of the oil in the "decoction of the leaves of the red gum tree."

\(^1\) ibid. 265.
Australian Medicinal Plants.

(E. Calophylla), used for a dressing in wounds. (1) The South Australian, Padthaway Tribe, "put hot ashes on the ground, spread gum leaves over them, and then lie on them well covered up." (2) It is not stated whether the object desired is a medicated vapour bath. The Mirkin Tribe of Palmer River is reported to employ "a drink .... made from the Eucalyptus tetradonta and water (as well as some other plants) for the cure of fever." (3) So much for the oil, which as it is somewhat soluble in water will enter into these watery preparations. The resin from one of the Eucalypts, is used by the medicine man of the Larrakie Tribe, to promote healing in wounds; (4) Kino is also used in the treatment of diarrhoea. Dr. Schomburgh (5) mentions a "much used medical appliance called by the natives "Gue-way-lah" probably procured from a Eucalyptus, which they apply as a plaster to wounds and old constitutional sores."

One species (Eucalyptus mannifera) secretes a peculiar substance called manna in the form of white flakes.

(1) Quoted by (89)5-648 from Ross. (Lancet 1891)
(2) (87)33-59.
(3) (88)56-396.
(4) (88)56-T:256

* The expressed oil of E. Calophylla dissolves in water to the extent of between 70% & 80% (89)63-18.
Australian Medicinal Plants.

resembling pieces of starch. In taste it is sweet and mucilaginous, to some it acts as an aperient. It is collected and eaten by the natives. Mr. E. Palmer refers to the so-called manna from the E. Terminalis, being used in sickness. Thus we see this valuable therapeutie agent employed in a crude, though efficient manner, by the autochthons.

Bruce. (contd.)

Its introduction into Europe and extensive application in modern medicine do not concern us here; nor, need we do more than mention the names of those who were instrumental in bringing the plant, and its valuable oil, from its obscurity to the prominent place it now holds. "The first discovery of Eucalyptus will ever remain memorable for Tasmania .... exactly a hundred years ago, the genus eucalyptus was founded by l'Héritier, on the ordinary string bark tree (E. Obliqua) of which he obtained branchlets gathered by Capt. Cook's officers during their third expedition, not far from where the city of Hobart was subsequently built." (2) "Introduced experimentally as regards its oil to notice already by the earliest medical officer of New South Wales, Surgeon-General John White, alluded to as a substitute for Cajaput.

(1) (89) 56.57.2.
(2) (88) 32 717.
Australian Medicinal Plants.

Oil in a departmental report of F. v. Mueller in 1853. to Mr. Bosisto is due the credit of rendering eucalyptus oil accessible in every hospital and pharmaceutical establishment of the globe."

8. Myrtaceae. (Contd.)

Melaleuca leucadendron Linn. (2)

"Mooda" of the aboriginals of Cloncurry River, and "Bulla-Bulla" of those of the Mitchell.

The leaves are used in infusion for headaches, colds, and general sickness.

@ The Cajaput Tree.

9. Barringtonia Racemosa, Gand. (3)

"Yakooro" of the aboriginals of the Mitchell River (N. Queensland)

The seeds and bark are used in native medicine; the latter is of a reddish colour, and is said to possess properties allied to the Cinchonas.

10. Ficoideae.

Mesembryanthemum aequilaterale.

Syn. "Kahubee" (Darling River)

"Pig Faces" of the colonists.

(1) (88) 44. 922. (Sir F. von Mueller)
(2) Palmer.
(3) (88) 53 159.
Australian Medicinal Plants.

The Tasmanian Blacks used the leaves as a Purgative. (1) Granular Conjunctivitis ("meeky-kollala") and another eye disease, "tillunggoomea" were cured by the juice of the "pig-face" (Darling River blacks) 2

11. Loranthaceae.

Loranthus quandong.

The leaves of the plant ("mistletoe") are infused in water and drunk in fevers and ague &c.

12. Compositae.

Myriogyne minuta, Less. ©
(Syn. M. Cunninghamii, DC.; Cotula minuta, Forst.) "Gukwonderuk" of the aborigines at L. Hindmarsh Station Vict. "Sneezeweed" of Southern N.S.W.

The Rev. Mr. Hartmann (3) says that this plant is used as a medicine by the aborigines of Lake Hindmarsh but he does not say for what complaint. It is very fragrant when bruised.

13. Pterocaulon glandulosus

14. Gnaphalium luteo-album are plants of this order reported to be used by the natives for medicine. The diseases for which they are used are not mentioned.

(1) (89) + 75
(2) (88) 46 + 207.
© (88) 56
(3) (87) 53 + 173.
15. Goodeniaceae.

Goodenia spp. (1)

A species of Goodenia is supposed to be used by the native Gins (women) to cause their young to sleep while on long journeys, but it is not clear which is used, or how it is administered. (Bailey.)


Olea spp. (2)

"Kour-rain."

This plant is used by the natives of King George's Sound. It is a sensitive plant, and when dying, assumes an unnatural pale yellow colour, and emits a smell like the most powerful garlic; in this state the natives use it in cases of headache, waving it under the nose of the patient. (Western Australia).

17. Asclepiadeae.

Sarcostemma Australe, R. Brown.

"Gaoloowwrrah" of the Northern Territory Natives.

The milky juice of the plant is used, states Schomburgh, (3) for skin diseases, either by breaking

(1) (88) 53 70.
(2) (84) 8 13.
(3) (88) 47 13.
off a piece of the plant and applying the juice as it oozes out to the sore, or by touching the sore all over in a similar way that caustic is applied, or they collect the sap in a small vessel. Mr. Foelsche states (1) that the natives around Port Darwin apply the white viscid juice as a local application to the ulcers produced by the pustules of Small-pox.


Heliotropum ovali folium. (2)

Uses not mentioned.

20. Solanaceae.

20 Duboisia Hopwoodii, F.v.M.,


These plants are used extensively as narcotics but not medicinally. (See narcotics).

Labiatae.

22. Plectranthus congestus &

23. Moschosma Polystachium.

are mentioned by Palmer, but their uses are not defined.


(2) (88) 2 33.
The leaves of this plant, says Mr. E. Palmer, are infused in water and drunk in sickness.

Santalaceae.

25. Exocarpus (cupressiformis?)

"Tchimmie-dillen" of some of the Queensland aborigines. "Coo-yie" "Ballot" & "Ballee" of the Victorian natives.

"Pul-loitch."

"Native Cherry."

"Australian Cherry."

"This tree was highly prized by the Yajowerongs from the fact that it was said the juice of its bark was a powerful and sure antidote for snake-bite, and they affirmed that in numberless cases the victims of snake-bite had been cured by an application of this juice." (1)

26. Santalum acuminatum.

"Quondong."

The pounded kernels mixed with grease and formed into a paste, which is applied by inunction as a sovereign remedy in a variety of complaints. (Central Australia.)

(1) (88) p. 160.
27. Euphorbiaceae.

Euphorbia Drummondii, Boiss. (1)

"Caustic Creeper" (Queens.)

"Milk Plant" & "Pox Plant" (N.S.W.)

In western N.S.W. the aborigines use an infusion or decoction of the plant in genital diseases, and use rather strong doses, but it is said that an over dose simply causes headache.

"(An alkaloid called drumine has been extracted in Australia from this plant. It is said to have the same local action as Cocaine. The so-called alkaloid has been examined in England, and found to consist mainly of Calcium oxalate! (Pharm. Journ. 7th Jan., 1888)"

28. Exaeccaria Agallocha, Linn. (2)

"River Poison Tree." "Milky Mangrove."

"Blind your Eyes."

The natives of eastern Australia, use its poisonous juice to cure certain chronic ulcerous diseases. Spear Poison of Port Curtis Blacks. (For fuller description see Polyn. Med. Plants.)

(1) (88) p.182.
(2) ibid.
Euphorbia spp.

It is stated that the natives of Northern Territory use the juice of a species of Euphorbia as a specific in small-pox. (1)

29. Casuarineae.

Casuarina - ? (2)

The South Australian Medicine-man dries and powders the "she-oak apple" and the fibre of a certain tree for sores and rheumatism.

30. Orchideae.

Cymbidium caniculatum.

This orchid, which affords mucilaginous food to the natives of the interior of tropical Australia, is used in some districts for the relief of dysentery and other bowel disorders. (3)

31. Cyperaceae.

The pootheri (doctor) of the Narrin yeri Tribe boiled the roots of the "Mallee" tree with rushes, and gave the liquor for internal diseases.

Fungi.

32. Lycoperdon:

The spores of the so-called "puff-balls" are

(1) (98)53 p. 182. (3) Mr. E. Palmer.
(2) (87)33 52. (4) (87)33 52.
Australian Medicinal Plants.
said to have been used with fat to form an ointment for wounds and sores.

ADDITIONAL, AND UNCLASSIFIED.
MEDICINAL SUBSTANCES.

33. Euphorbiaceae.

Exaescaria parviflora.

"Yil-leer" of the Queensland blacks.

"Gutta-percha tree."

The bark is bruised and an infusion made from it for external application. (1)

34. Myrtaceae.

Eugenia Myrtifolia, Sims.

(Syn. E. Australis, Wendl.; Zambosa Australis, DC.; Myrtus Australis, Hill. "Bush Cherry" "Red Myrtle."

A poultice of the fruit of this plant, roasted on the fire, was used by the Larrakia Tribe for Neuralgia. (2) Suppurations ("gatherings") in the ear, from which they suffer a good deal during the wet season, are treated with the juice of the fruit after being roasted.

35. Unclassified.

"Wild Mint."

(1) Mr. E. Palmer.
(2) (88) 56 T. 256.
Australian Medicinal Plants.

The Kamilaroi of the present day use, as a drink, water in which this plant has been steeped, for colds.\(^1\)

"Wild Lavender Tree."

The same tribe prepare from this bark, an aperient water.\(^2\)

"Kurrun Gum."

This is probably a Kino, it is used with excellent results in dysentery and diarrhoea, by some of the Victorian blacks.\(^3\)

\(^{1}\)-(\(^{2}\)) (88) 56 126.
\(^{2}\) (87) 29 126.
POLYNESIAN MEDICINAL PLANTS.
POLYNESIAN MEDICINAL PLANTS.

Portulaceae.

1. Portulacca lutea, Forst.
   "Aturi" (Tah.)
   This plant is used by the natives of New Caledonia as a vermifuge.

Guttiferae.

2. Calophyllum Inophyllum, Linn.
   "Dilo" (Fiji)
   "Tamanu" (Poly.) "Damanu" (Fiji)
   (Syn. Calophyllum Bingator, Roxb.; C.Blumei, Wight; C. Oralifolium; Balsamaria Mophyllum, Lour.; Bingator Maritima, Rumph.)
   This is one of the most important plants we have to consider in this section. From its seeds is expressed an oil which has been proved to have well defined therapeutic properties. "In order to extract the oil, the round fruit is allowed to drop in its outer fleshy covering and rot on the ground. The remaining portion, consisting of a shell (putamen) somewhat of the consistency of a hen's egg, and enclosing the kernel, is baked on hot stones, in the same way that Polynesian vegetables and meat are.

Dilo Oil.
Polynesian Medicinal Plants.

The shell is then broken, and the kernel pounded between stones. If the quantity be small, the macerated mass is placed in the fibres of the Vau (Hibiscus tiliaceus), and forced by the hand to yield up its oily contents; if large, a rude lever press is constructed by placing a boom horizontally between two cocoa-nut trees, and appending to this perpendicular fibres of the Vau. After the macerated kernels have been placed in the midst, a pole is made fast to the lower end of the fibres, and two men taking hold of its end, twist the contrivance round and round till the oil, collecting in a wooden bowl placed underneath, has been extracted.

The oil is of a greenish tinge, acrid, and never congeals in the ordinary temperature of Fiji. It is kept by the natives in gourd flasks. "The great reputation this oil enjoys throughout Polynesia rests upon its medicinal properties, as a linament in Rheumatism, pains in joints, and bruises. Its efficacy in this respect can hardly be exaggerated. Its use extends to New Caledonia and the East Indies."

(1) (86) 18
(2) (86) 18
Polynesian Medicinal Plants.

In India it is used and known under the name of "Cashumpa." It is applied with friction. Dr. Heckel has used it at the Noumea Hospital, in the treatment of ulcers. "The leaves are torn in small pieces, soaked in water for a night, and then used for washing inflamed eyes." (Storck).

Malvaceae.

3. Hibiscus diversifolius, Jacq.(1)
   (Syn. H. ficulneus, Diss. non Linn.);

   The native physicians of Fiji use the juice of the leaves to procure abortion.

   Abelmoschus moschatus, Moench. Meth.
   "Waki waki" "Vakeke." (Fiji)

   The leaves of this plant are similarly used to procure abortion.(2)

5. Hibiscus sp., "Lemon hibiscus."

   W. Wyatt Gill(3) reports that "recently the

(1) Seeman.
(2) (87) 32 69.
(3) (87) 32 69.

[References omitted for brevity]
Polynesian Medicinal Plants.

yellow flowers have been advantageously used as an outward application," by the natives of Mangaia.

6. **Hibiscus tiliaceus**, Linn.,
   "Vau dina" (Fiji) "Purau" (Tah.)
   "Burao" (New. Caled.)

The New Caledonians use this plant as an **emollient**. Legrand speaks of it as "un emollient de premier ordre". (1)

7. **Malva sp.**

The gismana (Dr.) in Bank's Islands uses fomentations and poultices of mallow leaves. (Codrington)

8. **Rutaceae.**

**Limonia minuta**, Forst. (3)

(Syn. **Micromelum minutum**, Seem.; **M. glabrescens**, Benth; **Glucosmis subvelutina**, F. Muell.)

"Qiqica" (Fiji)

"Tea of Lifou."

The New Caledonians make use of infusions of its strong smelling leaves.

9. **Citrus vulgaris**. (4)

"Moli Kurukuru" (Fiji)

"Bitter or Seville Orange."

(1) (89)102 (3) (89)103
(2) (89)74198 (4) (86)18
Polynesian Medicinal Plants.

The leaves, after being macerated, are used in Fiji to destroy the vermin of the head.

Rhamnaceae.

10. Pomaderris (Rhamnus) Ziziphoides. (1)

The bark of this plant is used in New Caledonia for the treatment of skin diseases.

11. Colubrina Asiatica, A. Brough., (Syn. Ceanothus Asiaticus, Linn.)

"Vuso" (foam, froth) and "Levu" (great, much).

It is used to destroy parasites in the hair. (Fiji)

Ampelideae.

12. Vitis saponis.

Cissus geniculata, A. Gray.

"Wa Roturotu."

The Fijians use this creeper for washing their hair to destroy vermin. It is probably also used to procure abortion. (2) The stem, especially the thicker part, is cut in pieces from a foot to eighteen inches long, cooked on hot stones, and when thus rendered quite soft, it provides with water a rich lather almost equal to that of soap. (2)

(1) (89) 103
(2) (86) 18

@ See abortion.
Polynesian Medicinal Plants.

Sapindaceae.

13 Dodonia viscosa. (1)

Used in New Caledonia.

Anacardiaceae.

14 Semecarpus atra, Vieill.

(Syn. Rhus atra, Forst)

"The poisonous Sumac tree."

"Nole."

This plant is probably more frequently employed in the "black magic" of the sorcerer, than in any rational manner; it has however certain properties worthy of note. Legrand (2) says it poisons the surrounding atmosphere, but it is the milky juice and the gum resin which come from it, that are most potent. This juice is a powerful vesicant and is used as a poison by the sorcerers and natives of New Caledonia. "People," writes Berthold Seemann (3) "who touch the Nole frequently suffer from cutaneous eruptions, difficult to heal. Experience has taught us that the most effective remedy is that of the New Caledonian natives, which consists in reducing charcoal to a powder, and applying a sufficiently thick

(1) (89) 102
(2) (89) 102    (3) (86) 18 51.
coating to the affected parts. On the twelfth or fifteenth day the scab falls off, and the skin, perfectly healed, presents no scar." Its application made over large surface may result in serious injury. (Hayes.)

Anacardium orientale. (1)

From the kernel, roasted under the ashes, is expressed a juice or oil, much used in potions of the New Caledonian sorcerer.

Leguminosae.

Acacia laurina & Desmodium Australe,
(Syn. D. umbellatum DC. prodr.; Hedysarum umbellatum Linn.; Ormocarpum oblongum, Desv.) Both used in the native medical practice of the New Caledonians. (2)

Pachyrizzus montanus. (3)

"Manianiä"

The bruised leaves are applied to the parts stung by black spiders. Also the tubercle, of which they are very fond, is supposed to augment lactation.

(1) (89) 102 59 (2) ibid. (3) ibid.
Cucurbitaceae.

Cucurbita lagenaria.

This, and other members of the same order, have been, and still are used with powerful and often fatal effect, in the daily practice of the Hawaiian tohungas (medicine-men); they, like other Polynesian native physicians have great faith in the disease-expelling virtues of drastic purgatives, the use of which are continued until the patient is reduced to a fearful state of collapse. He is then told he is cured. The disease has gone: nothing further is necessary to be done than to eat, and regain flesh. Often the patient dies from exhaustion following this treatment. Ellis, speaking of Hawaiian native medicines, says "Many of their applications, were powerful, especially a species of gourd, or wild cucumber. A preparation, in which milk of the pulp of cocoanut formed a principal ingredient, was sometimes followed by almost instant death."

Their name for this bitter calabash of gourd is nonolau. A medicine called "paipai" was also made from the leaves of a kind of gourd called ipiawaawa (2) (See p. 37)

(1) (85) 10 37
(2) (86) 24

@ Given in an enema.
Polynesian Medicinal Plants.

Hederaceae.

20. 

Notopanax fruticosum.

(Syn. Scutellaria tertia, Rumph. Amb.; Panax fruticosum, Linn.)

"Danidani."

Much cultivated by all Polynesian races. The root has an agreeable and strongly aromatic smell, tastes not unlike parsley, and is used as a diuretic. In Fiji the bark of this shrub is scraped off, and its juice taken for the relief of "macake," the thrush, ulcerated tongue and throat. This condition is very prevalent in Fiji.

Araliaceae.

21. 

Aralia triphylla.

(Syn. A. Excelsa, Reiss.; A. franguloides, Colubrina excelsa, Fenzl.; Zizyphus pomaderaoides, Fenzl. Ceanothus dealbatus, &c.)

"Doi" (Fiji) "Foi" (Tah)

To relieve pruritus, they crush the leaves of the plant and rub the affected parts with them. (New Caledonia).

Rubiaceae. (Subord. Coffeaceae.)

22. 

Morinda citrifolia, Linn.

(1) (89) 103'93
(2) (86) 18
Polynesian Medicinal Plants.

(Syn. M. Quadrangularis.)

"Kura". "Noni". "Nono"

The Fijians use the leaves medicinally.

Compositae.

23. Adenostemma viscosum, Forst.

This is employed in cases of sprains and contusions by the Tahitians. (Jeanneney.)

Apocynaeae.

24. Ochrosia parviflora, Hensl. (1)

(Syn. O. elliptica, Labill.; Gerbera parviflora, Forst.). "Vaoko."

Used with sea-water, like Phyllanthus virgatus, as a purgative. (New Caledonia) The effect is very rapid.


"Rewa" "Vasa" (Fiji.)

The Fijians use the root as a cathartic.

Convolvulaceae.

26. Ipomoea pes-caprae. (2)

(Syn. Convolvulus pes-caprae, Linn.; Ipomaea cernosa, R. Brown.)

"Lawere" (Fiji). "Marine bind-weed."

(1) (89) 103 125.

(2) (89) 103 124.
Polynesian Medicinal Plants.

The leaves boiled are applied to ulcers, in the form of a plaster or poultice. (New Caledonia)

27. **Ipomoea spp.**

Various members of the order are used in Hawaiian medicine. Wilkes(1) mentions the seeds of the "Castor-oil" nut, a species of *Ipomoea*. Andrews(2) draws attention to "Pohuehue," the root of a species of convolvulus growing on sand banks, which is used with the "Koali" as a cathartic.

28. **Ipomoea batatas.**

The "sweet potato" grated and mixed with the juice of the sugar cane, &c., is a Hawaiian cathartic.

**Verbenaceae.**

29. **Avicenna resinifera, Forst.**

(Syn. *A. officinalis, Linn.*).

A routine medicine among the New Caledonian medicine-men. (Legrand)

30. **Vitex agnus castus.**

The acrid juice of the fruit is employed to rub on in cases of rheumatism. (New Caledonia.)

(1) (84) 10 286 IV.
(2) (86) 24
Polynesian Medicinal Plants.

Labiatæ.

31. Plectranthus Forsteri, Benth.

(Syn. Ocimum pusillum, Forst.)

"Laea" (Fiji)

The leaves (of this weed) are aromatic, and in repute amongst the Fijians as a cure for "bad eyes" and headache; they are also recommended for coughs and colds. (Berthold Seemann)

Amaranthaceae.

32. Achirantes aspera. (1)

"Arhowhai" (Tah.)

Ulcers of the mouth are cured by applying the leaves. (New Caledonia).

Amaranthus gangeticus.

33. "Tubomaitetoe" (Tah.)

Used in New Caledonia. (Jemmeney)

Lauraceae.

34. Wickstroemia Vitiensis, A. Gray.

"Mate" Sam. "Sinu matiavi" Fiji.

The Fijian native physicians apply the root-bark externally to sores and ulcers, and give the leaves, and bark of the stem and branches for Coughs. (Flora Vitiensis.)

(1) (89) 103 978.
Polynesian Medicinal Plants.

**Euphorbiaceae.**

36. Excaecaria Agallocha, Linn.  
(Syn. Commia Cochinchinensis; Excaecaria affinis, Endl.  
Stillingia Agallocha Baill.;) "Sinu gaga" (i.e. poisonous sinu) Fiji.  "No-to" New Hebrides.  
"Milky Mangrove" "Blind-your-eyes" Austr.  
"It produces, by incision into the bark, an acrid, milky juice, which is so volatile that no one, however careful, can gather a quarter of a pint without being affected by it. The symptoms are an acrid, burning sensation in the throat, sore eyes, and headache. A single drop falling into the eyes will, it is believed, produce loss of sight. The natives of Eastern Australia® as well as those of New Guinea, &c., use its poisonous juice to cure certain ulcerous chronic diseases, e.g., leprosy, but in Fiji the patient is fumigated with the smoke of the burning wood." (1) (Seemann, Flora Vitiensio).  

The juice is used also as a spear poison by the Port Curtis blacks in Queensland, and in the process of preparing similar weapons, by the natives of Aurora, New Hebrides. The juice of "toi", and Euphorbia is used in Mota (N.H.) for poisoning spears.  
® The Australian aborigines probably did not use it for leprosy, a disease extremely rare amongst them.  
(1) See Leprosy, Page
Polynesian Medicinal Plants.

37. Melanthesa alotha, Forst. (1)

Steeped in sea-water and worked up, the leaves of this plant and those of Obylantthus persimilis (Mull.), give a purgative, emmenagogue juice, frequently employed by the natives of New Caledonia for procuring abortion. (Dr. Maurice Vincent.

38. "Dii" N. Caled.

All parts of this plant yield an irritant juice, called by the natives "dii;" it is used by the New Caledonians to procure abortion, and also for stupefying fish in the rivers. (2)

39. Ricinus communis, Linn.

"Bele ni papalagi" Fiji.

"Ongd'o" N. Caled.

The properties of castor-oil are well known to the takatas (sorcerers) and it is frequently used by them. (New Caled.) (Legrand).

40. Aleurites triloba, Forst.


"Tutui." "Lanci." and "Si Keci" Fiji.

"Cahuru" N. Caled. "Candle nut tree."

(1) (89)100 43
(2) (89)102
Polynesian Medicinal Plants.

The ground underneath the tree is always densely covered with "nuts" (albumen) which contain a great deal of oil. The oil has been called "Oil of Camari" and has well-marked purgative properties which are participated in by the New Caledonians, Hawaiians and other Polynesian races. The fresh fruit also plays an important part at the birth of the Fijian child, for no sooner is a baby born than the midwife rushes to the Lauci to gather a fruit fresh from the tree, which she squeezes over its mouth, with the result that the milky juice makes the infant vomit and thus clears its throat. The oil was prepared by "M. le pharmacien de la marine Garnault," and figured in 1862 at the London Exhibition.

Phyllanthus virgatus, Forst.
(Syn. P. simplex, Retz.; P. anceps, Vahl.; P. fructicosus, Seem.

Tah. "Moe-moe."

For purgation the natives of New Caledonia steep the leaves in sea-water, and roll them up into a small bundle, then, entering into the sea up to the level of their shoulders, they dip the bundle or roll, as though it were a sponge, into the sea, then squeeze it above the widely opened mouth. The desired result is speedily obtained. (1)
Polynesian Medicinal Plants.

Piperaceae.

41. Piper methysticum, Forst.

"Kava."

For a full description of the properties and uses of this important and interesting plant, see Kava, Ch.

42. Piper siriboa, Forst.

Syn., P. Austro-Caledonicum, De Condolle.

The leaves are chewed in New Caledonia for the relief of Bronchitis. (1)

Casuarineae.

43. Casuarina Equisetifolia, Forst.

(Syn., C. littorea, Rumph.; C. lateriflora, Lam.


This plant has astringent and abortive powers, and is used in New Caledonia. (Legrand).

Palmeae.

44. Cocos nucifera, Linn.

"Niu dina" Fiji.

"Coco-nut Palm."

This marvellous tree is found throughout Polynesia but nowhere in New Zealand or Australia. (2)

(1) ibid p. 102.
(2) A small sporadic clump was once found in Northern Australia.
Besides providing a commonly used intoxicating beverage, "Palm Toddy" (See Narcotics), it is at times the source of several medicinal preparations. The oil, pure, scented, or mixed with turmeric is used daily for anointing the skin, to preserve its softness and smoothness, also to prevent chills, and in the case of the sick, new-born children, and women after childbirth, the oil mixed with turmeric is supposed to have strengthening and other therapeutic properties; it is also used to facilitate the process of massage or lomi-lomi. Taken internally, the oil acts as a purgative, but its use in this direction is by no means general in Polynesia. Gill, writing in 1876, states "The modern practice of drinking pure cocoa-nut oil as a purgative has proved extremely fatal to the natives. No argument will prevent their resort to this favourite but dangerous remedy." The juice or water of the fresh cocoa-nut is frequently given to invalids and is used as a vehicle for medicines and poisons. A balsam compounded from the juice is applied to wounds. The oil has also been used as an emetic and applied locally to relieve inflammation and pain; the juice is considered a cure for headache. Professor Paresi, of Athens, discovered that the nut possesses vermifuge qualities in a high degree.

© Life in Southern Isles. (Hervey Group).
"When properly prepared and intelligently administered," so says the writer, "the cocoanut is equally efficacious with male fern oil, Kousso, pomegranate root, or turpentine, while it is as pleasant to the palate as they are offensive." (1) As the Polynesians are particularly subject to intestinal worms, the frequent use of cocoanut would doubtless prove beneficial. They were probably ignorant of its value as a vermicide. In Samoa a decoction of the husks was applied to the raw surface of the sores of the disease called ilamea, after the scabs had been rubbed off with the husk of the nut in its dry fibrous state. (Wilkes, U.S. Expl. Exp. 124). The shell of the 'oua' or young cocoanut, which is soft and white, is in some places used medicinally. A missionary, I believe, is responsible for the following statement:—"On first arriving in the islands we used the cocoanut freely, but subsequently preferred plain water, because we supposed the free use of it predisposed to certain dropsical complaints prevalent among the people." He probably referred to Elephantiasis. There is no evidence to show that the cocoanut has any such tendency. The dry spongy kernel was used to arrest haemorrhage.

(1) (38) 11 281
*Probably Yaws.*
Polynesian Medicinal Plants.

Palmeae.

45. Areca Catechu.

"Betel Nut"

"Mbuu" "Pinang" "Manu" &c., &c.

In New Guinea the natives look upon "Betel chewing" ("banilawanicany") as an antidote against malaria. Further north it is believed to preserve the teeth and to "mitigate the attacks of malarial fever." In New Britain it is taken to ward off the feeling of hunger. (See Narcotics).

Aroideae.

46. Arum costatum.(1)

(Syn. Alocasia macrorrhiza, Schlott.)

"Ape."

This plant affords a pungent, caustic juice, used by the native surgeons of the Society Islands for applying to wounds, the cut having first had its edges brought into apposition. The reason for this procedure is not very obvious; perhaps it was supposed to act as an antidote to the poison on the spear or other weapon causing the wound.

Scitamineae.

47. Curcuma longa. (2)

(1)  (85) 10 42.
(2)  (86) 18.

The natives of Fiji powder the rhizome and thus obtain the yellow powder called "rerega," which is turmeric. It is a "mildly stimulating and aromatic condiment; and it also has effects which indicate an antiseptic virtue and soothing quality." (1) They daub it over the women after child-birth, believing it to promote rapid recovery to usual health. It is also used, like rouge with us, as a cosmetic. The New Caledonians boil the root and apply it to contusions. (2) The Tongans apply the powder to tubercular ulcers.

Liliaceae.

48. Dianella ensifolia.

It is beneficial in the treatment of ulcers. (New Caledonia) (Jeanneney).

Gramineae.

49. *Andropogon schaenanthus, Linn.

An infusion in used in New Caledonia to arrest diarrhoea. (In Australia it is used by the whites in dysentery, and acts by reason of its tannin. Its essential oil is diaphoretic and stimulant.)

Filices.

(1) (89) 148
(2) (89) 103 73.
Filices.

50. Angiopteris evecta.

The pinnae ground up in cocoa-nut oil, impart to it a pleasant odour. The natives use it for rubbing on parts painful from rheumatism. (New Caledonia).

51. Polypodium phymatodes.

Used for the same purpose.

52. Acrostichum aurem.

Used medicinally (N. Caled.)

53. Mertensia dichotomum; Filix calmaria, Rumph; Gleichenia dichotoma, Sprêng.

This fern is used by the New Caledonians in inflammation of the urethra, (Jeanneney), and affections of the bladder. (Legrand).

54. Cenothrotheca lappacea.

Applied for the healing of wounds.

(N. Caled.).

55. Nephrodium exaltatum. (1)

The women of certain N. Caled. tribes use the bruised leaves of this fern to hasten the cicatrisation of the umbilicus in their new-born children.

Musaceae.

56. Musa sapientum. (2)

"Banana tree."

* (50 - 54) Legrand and Jeanneney.
1. (89) 102.
2. ibid. P. 61.
Polynesian Medicinal Plants.

56. **Musaceae.**

  *Musa sapientum.* (1)

  "Banana Tree".

  Wounds and sores were dressed with the delicate, unexpanded leaf, which was possessed of astringent properties. (New Caled.)

57. **Fabaceae.**

  *Hippocrepis?*

  "fer-a-cheval."

  Legrand states that "fer-a-cheval" is used by the New Caledonians for the treatment of boils and abscesses.

58. **Artocarpaceae.**

  *Artocarpus incisa.* (2)

  "Bread Fruit tree."

  In the treatment of yaws, the Fijians, after scraping away the scabs, apply a soft preparation of this plant.

Additional Plants.

59. "Chestnut tree." (3)

  The smoke of the burnt wood was blown into wounds of the scalp.

(1) ibid p. 61.  (3) (36)2 224.
(2) (84)10 124.
Polynesian Medicinal Plants.

Zingiberaceae.

60. Zingiber officinale. (1)

The Melanesians at Wango in San Cristoval often used this plant medicinally.

61. Nicotianum sp. (2)

The leaf used to kill pediculi. (Fiji).

Gramineae.

62. Saccharum officinarum. (3)

"Dovu" Fiji.

The juice used in cathartic mixture by Hawaiians.

(1) (39)\textsubscript{74} 193.
(2) (39)\textsubscript{148} 103.
(3) (81)\textsubscript{1} 234.
Polynesian Medicinal Plants.

Botanical Names not determined:—

Koko
The juice of this tree is called
akukapihe, and is used as a Cathartic.
(Haw.) sap or gum.

Awikiwiki.
A vine bearing black berries, about the
size of American black-berries; they
are used as a medicine; operating both
as an emetic and cathartic. (Hawaii.)

Ihi.
A plant growing on the mountains, the
root used in native medicine, slightly
cathartic. (Hawaii).

Kaeo or
Kaiee.
A fruit which resembles a bean, used as
a cathartic. (Hawaii.)

Hanoki.
A medicine given to women in labour,
similar to slippery Elm. (Hawaii).

Kalili.
A medicinal plant. (Hawaii).

Kiikea.
A medicine used to relieve pain; it is
a kind of bark. (Hawaii).

Milo.
The fruit of this tree contains seeds
which are used as a cathartic. (Hawaii)
v. Omiolo.

Moa.
An infusion of the leaves is cathartic
(Hawaii). (1)

or kuikui.

(1) These Hawaiian plants are referred to in
Polynesian Medicinal Plants.

Botanical Names not determined:

Kukui. The branches and fruit of this tree yield a medicine called piai-ki. (Haw.)

Popolo. A medicinal plant.

Panohiaka. A vine like the Koali; used as a cathartic. (Haw.)

Naule. From this plant is made a purgative medicine named Kuakala. (Haw.)

Kupukupuula. A plant used to scarify the skin. (Haw)

Puaioru. A fragrant medicinal herb. (Tah.)

Laqaigai. (2) Remedies discovered in Fiji for the "lila" disease. (See

Wavuwavu.)

Lewe ni sau. (3) A cataplasm made from this native simple was applied to the Yaws eruption. (Fiji).

Omilo. The name of a medicine used to procure abortion. (Haw.). (v. Milo).

Huahekili. A medicinal plant. (Haw.)

Nakoaga. Antidotes (1) for certain spear poisons, especially that made from the 1

Nakopisi.

Naromani.

Naliwointano.

Namata-ni-nasoe, milky-white juice of the Natoto Tataa (creepers)

Nakasara. plant also from the Nabukspoa, Wapopiri Navurivuri Kasui and the Namamakaru creeper.

(1) (37)24 126.
Polynesian Medicinal Plants.

Botanical Names not yet determined:

**Laukahi.** A plant, the seeds of which are given to infants to carry off the meconium (Haw.).

**Manena.** A medicinal Herb (Haw.).

**Manulaili.** A poisonous plant used to burn and scarify the skin. (Haw.).

**Vi.** An acid vegetable juice.

**Bawlo.** A bitter juice which, like vi, was dropped into the eye in inflammations of that organ. (Fiji).

**Wai-ni-lutu-vata.** ("Medicine for simultaneous birth") given during the later months of pregnancy with the object of conducing to an easy labour and to the descent of the placenta at the proper moment. (Fiji).

**Laaupa.** An ancient drug given to procure abortion. (Haw.).

**Ahipihehipe.** A remarkable remedy to cure langour and weakness, frequently used by the Tahitian women after confinement, and by persons of both sexes in chronic disorders. (ahi=fire)

(1) (81)1 250. (2) (89)148 131. Ø to prevent fecundation.
Polynesian Medicinal Plants.

Undefined medicinal preparations, &c.:—

<table>
<thead>
<tr>
<th>Plant</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pupuna</td>
<td>A beverage given by the tanas (priest physicians) to sick persons (Marq.)</td>
</tr>
<tr>
<td>Hehu</td>
<td>Name of a Hawaiian medicine.</td>
</tr>
<tr>
<td>Pilikai</td>
<td>A medicine consisting of some kind of seeds, one handful, beaten up and sifted and taken as a purgative. (Haw.)</td>
</tr>
<tr>
<td>Puailima</td>
<td>A cathartic medicine. (Haw.).</td>
</tr>
</tbody>
</table>
| Waiiki       | 1. A medicine used in the disease haikala. (Haw.).

2. A medicine made of ipu awaawa for rectal injections. (Haw.).

| Paalii       | A kind of medicine. (Haw.). |
| Paipai       | A medicine made of the leaves of the iipiawaawa, a kind of gourd; the waiiki diluted with water. (Haw.). |
| Wallhau      | Name of a medicine. (Haw.). |
| Welo         | Synonyms of Waiki. Wai-water, ki = to shoot, inject. |
| Ipu awahia   | |
| Pipa or kipa | |
| Kipa         | A medicine given to madmen. (Haw.). |
| Koheoheo     | A mixture containing a deadly poison; used by the sorcerers to kill with; used for suicide, or for the execution of criminals by the order of a chief. |

Various sources chiefly (86) and
Polynesian Medicinal Plants.

Undefined medicinal preparations:

**Kupele.** The name of a medicine given to soften the pou two or three days before the waiki or poepoe (Haw.).

**Lu or Kuakala.** A medicine; small seeds beaten up and mixed with some liquid for a purgative; the name of the plant is naule (see ante).

**Mawai.** A cathartic given to children to carry off the meconium. (Haw.).

Φ Fæcal concretions.
MINERAL MEDICINAL AGENTS.
MINERAL MEDICINAL AGENTS.

It has been erroneously stated that the Australian aborigines employed only herbs in the treatment of their sick; and the use of animal and mineral substances by Polynesians, and Australians, has not been fully recognised. It is true that several of these mineral compounds are of doubtful therapeutic value, others are used both as decorative and medicinal agents, several, such as sea water and the hot mineral springs of New Zealand, are of very considerable medicinal value. Finally, we will briefly discuss the use of earth, mud, and sand, and several drugs which have been acquired from Europeans.

1. Alum.

Certain Tasmanian tribes are reported to have made medicinal use of the natural deposits of alum found in their district.

2. Sea Water.

Salt, or sea water is used extensively by the Polynesians who reside on the sea coasts of many of the Pacific Islands. In the Sandwich Islands and some other groups, it is used regularly at meals, the food being dipped in it and then eaten. Its use as
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a medicine was both extensive and long practised. We are told that in Hawaii before the use of herbs became known, they had only two ways of treating disease, by lomi-lomi (massage) and sea water. The latter was used, especially by those who had gorged themselves with food, as a cathartic, and that is the common use for which it is employed at the present day in New Caledonia, Sandwich Islands, Loyalty Islands, &c. For this purpose large quantities are often taken, the New Caledonians often combining with it the juice of the leaves of various plants. The natives of Australia did not include it amongst their remedies, but in places inland 'salt and water' was used as an emetic occasionally.


See, Blood and Red Ochre.

4. Earth and Mud.

The employment of earth as a medicinal agent is one of the most distinctive features of Australian native surgical and medical practice. It is true that its chief use was apparently merely as a protective and haemostatic application to wounds and spear thrusts, no medicinal action being expected;
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at times, however, it was applied, mixed with herbs, or animal fur, to bleeding surfaces. That a curative, or strictly medicinal action was sometimes expected I think we may surmise from the fact that those who were sick covered their bodies with clay or mud. For wounds, earth, mud, clay, dust and dirt, according to various writers were the forms employed. Cunningham "observed a man who had a stump sticking in his foot, to dig a hole and bury the wounded member in the soft moist earth before extracting the foreign body, - a sort of sorry substitute for a poultice." An interesting description is given by John Fraser, he states that:-

"For severe colds they use the earth-bath. A deep hole is dug in some soft moist ground; the patient stands in it, and the earth or sand is filled in around him up to his neck; there he remains groaning and sweating profusely for two or three hours, all the time receiving only a few draughts of water."

Finally, it is recorded of the Maori god or hero Tawhaki that on meeting Wai-tiri "he took clay, and kneaded it with his spittle and rubbed it on her eyes, which restored her sight." And in Samoa mud is mixed up with water and used as an emetic.
Mineral Medicinal Substances.


Dr. Thomas Borthwick, in a thesis which gained for him the coveted distinction of M.D. of this University, mentioned that: "Among the interesting features of Central Australia (are) the "Mound Springs" conical hillocks occurring singly or in groups - some of them being warm and others impregnated with salts - the natives are said to use these springs for medicinal purposes." These hot springs are rare in Australia, and that they are used as described, I have no confirmatory evidence to offer.

The curative value of many of the famous hot springs of the New Zealand Hot Lakes District is well known, and it is interesting to note that the maoris\(^1\) made extensive use of them centuries before the arrival of Europeans. A certain number of pools have been so long tried by them that their beneficial results are well proven; and many sufferers - chiefly those afflicted with rheumatism - are carried there totally helpless; and, in most instances derive immense benefit from drinking and bathing in these mineral waters. It is unnecessary to give analysis of all the waters used by them, one or two examples will suffice. Dr. Ginders\(^2\) reports that at

\(\varnothing\) (89)\(^{54}\) 9.10.
(1) (88)\(^{39}\) 72.
(2) (89)\(^{26}\) 36; (89)\(^{29}\) 433.
Mineral Medicinal Agents.

Whakarewarewa, the Turekore, or "Spout Bath" is in great repute among the maoris for the cure of many cutaneous diseases, rheumatism, lumbago, sciatica, and kidney complaints, and that the water is of a sulphurous character, with faintly acid reaction, changing to alkaline on boiling. Temperature; 96° - 120° Fahr.

Analysis:

<table>
<thead>
<tr>
<th>Substance</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Silicate of Soda</td>
<td>16.32 gr.</td>
</tr>
<tr>
<td>Silicate of Lime</td>
<td>1.61 &quot;</td>
</tr>
<tr>
<td>Silicate of Magnesia</td>
<td>1.41 &quot;</td>
</tr>
<tr>
<td>Silicate of Iron</td>
<td>0.39 &quot;</td>
</tr>
<tr>
<td>Sulphate of Soda</td>
<td>13.47 &quot;</td>
</tr>
<tr>
<td>Chloride of Potassium</td>
<td>1.24 &quot;</td>
</tr>
<tr>
<td>Chloride of Sodium</td>
<td>53.61 &quot;</td>
</tr>
<tr>
<td>Phosphate of Alumina</td>
<td>Traces</td>
</tr>
<tr>
<td>Total</td>
<td>87.78 gr.</td>
</tr>
</tbody>
</table>

Another bath, much used for skin diseases, has a temperature of 96° - 120° Fahr, and contains the following substances:

<table>
<thead>
<tr>
<th>Substance</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Silica</td>
<td>13.63 gr.</td>
</tr>
<tr>
<td>Iron Oxide</td>
<td>.2 &quot;</td>
</tr>
<tr>
<td>Alumina</td>
<td>1.0 &quot;</td>
</tr>
<tr>
<td>Lime</td>
<td>.77 &quot;</td>
</tr>
<tr>
<td>Magnesia</td>
<td>.45 &quot;</td>
</tr>
<tr>
<td>Soda</td>
<td>39.94 &quot;</td>
</tr>
<tr>
<td>Potash</td>
<td>.81 &quot;</td>
</tr>
<tr>
<td>Sulphuric Acid</td>
<td>7.59 &quot;</td>
</tr>
<tr>
<td>Chlorine</td>
<td>33.18 &quot;</td>
</tr>
<tr>
<td>Sulphuretted Hydrogen</td>
<td>Traces</td>
</tr>
<tr>
<td>Total</td>
<td>96.48 grs.</td>
</tr>
</tbody>
</table>

Mineral Medicinal Agents.

In new Guinea (British), where Tokelau ringworm (Tinea desquamans) is so universally prevalent among the Papuans, the excellent sulphur deposits and fumaroles which are surrounded by vapours impregnated with sulphur, have not been used to relieve this disorder.


A strange, and I believe unique, development as far as Polynesia is concerned, is the wholesale use of European medicines by the Hawaiian tohunga lapaaus (Physicians). "They dabble in the potent drugs of our modern pharmacy, and handle the two-edged sword of mercury and potassium iodide; at the same time they are quite ignorant of their proper use," (1) "The worst cases," says Dr. Kimball, "of salivation or calomel sore throat I have ever seen have been produced by the administration of mercury by the Kahunas." (2)

(1) (83) 61 26.
(2) (89) 155 22.
MEDICINES DERIVED FROM ANIMALS.
MEDICINES DERIVED FROM ANIMALS &c.

1. Dugong Oil.

For many years it has been the custom of Australian blacks to resort to those parts of the Queensland coast where that peculiar animal the Dugong is to be found. The natives, when in a condition of emaciation from various ailments, and sometimes apparently due to tuberculous affections, time after gorging themselves for some with the flesh of this animal, called by them "yunyun," rallied and often became fat and hearty. The oil of this animal (Halicare Australis, of Cuvier, called by the colonists Dugong or Manatee), is said to be free from iodine, sweet and palatable and quite free from nauseous qualities. It was introduced into colonial medical practice by Dr. Hobbs, (1) of Brisbane, some years ago and proved so very excellent a substitute for Cod Liver Oil that its use became very popular. Later on shark oil and other obnoxious substitutes were sold as Dugong oil, and this proved so disastrous to its employment that Dugong oil fell into almost total disuse among the colonists.

(1) (38) 387.
Animal Substances.

(a) Blood.

Enormous quantities of human blood were employed by the Australian aborigines, the bulk of it in their religious and other ceremonies, but no small amount was used in the treatment of diseases, especially those of a chronic type. The exact nature of their reason for administering it is not known, but superstitious belief certainly entered largely into the custom. In Central Australia, Spencer and Gillen (1) relate that "A man suffering from continued weakness is sometimes supplied with fresh blood (vikna) drawn from the veins of the arm of one of his robuster brethren. The vein is opened with a stone knife, and the blood, received into a vessel, is drunk by the patient before it thoroughly cools. This practice, known as ilkaturka, is said to have a wonderful effect in cases of debility." The following curious custom is also practised by the blacks in cases of severe illness, when "the patient (male) is anointed all over with the blood obtained by puncturing the labia minora. Men, (1)

The men believe that a draught of woman's blood would kill the strongest man.
Animal Substances.

however, "have a great objection to this form of treatment, and will always try to avoid it if strong enough, and it is only practised when the patient becomes very weak and the railtchawa (medicine-man) has failed to effect an improvement. The patient, who is to be thus treated, is seized and held by several women while she, whose blood is to be used, rubs it in. When the whole body has been thus well rubbed a coating of grease is added, which is believed to assist the action of the blood." The drinking of warm blood, which is confined by no means to the central Australian blacks, often causes the patient to vomit, whether this is desired or not I cannot say. 

In South Australia a lotion of blood is applied to sore eyes (1) and the maoris have a remedy called Totokuri (dog's blood) consisting of blood taken from the ear of a dog and boiled. It is supposed to be a cure for spear-wounds, whether used internally or externally. (2)

(1) (87)52.
(2) (89)88
Animal Substances.

(b) Red Ochre ("Wilgey," &c.).

I have coupled Red Ochre with Blood because there seems to be some evidence that the Australians looked upon Red Ochre as a derivative of blood. Their tradition is to the effect that the deposits of red ochre which are found in various parts are associated with women's blood. Near to Stuart's Hole, on the Finke River, there is a red ochre pit which has evidently been used for a long time, and the natives say that in the Alcheringa (ancient times) two kangaroo (totem) women came from Ilpilla, and at this spot caused blood to flow from the vulva in large quantities, and so formed the deposits of red ochre. (1) Believing this tradition, and having faith in the curative effects of women's blood, we are not surprised to find an extensive use of red ochre, a use however which does not seem to be confined within the limits where the above tradition is still known and accepted. The Victorian blacks made frequent use of wheerup (red ochre), sometimes mixed with opossum fur, and powdered it on burns; in Central Australia imunction with a mixture of grease and red ochre is considered a sovereign remedy for a variety of complaints, and in all cases when a

(1) (89)_{156} 463.

\$\$ The surface is first dabbed over with melted fat.
Animal Substance.

man or woman feels ill, the first thing done is to rub red ochre over the body. The use of turmeric as an external application, so common in Polynesia, seems to be analogous in many respects to that of red ochre in Australia. The Maoris used red ochre ("Kokowai") for sore heads and wounds.

4. Ashes, soot, and carbon.

Ashes of plants, specially powdered and freed from hard particles, also the ashes, hot or cold, from an ordinary fire, or ashes mixed with herbs or fat, were all used in Australia and Polynesia as applications to wounds and ulcers. In some places similar applications were made to the lesions of Framboesia¹ and Herpes Zoster.² 'Ashes and water,' was an Australian native emetic.

5. Excreta.

In Australia, urine was credited with having curative properties and was applied externally, by South Australian tribes, for many disorders. The Larakia tribe steeped the bruised bark of a certain tree in it and applied the mass to wounds. A novel belief is held in Central Australia where, at Tempe Downs and neighbouring districts it is considered by

(1) (84)₁₀ 327.
(2) (85)₁₀ 38.
Animal Substances.

the aborigines that recently voided human urine is an antidote for strychnine poisoning, and as such is habitually administered not only to their dogs which have taken poisonous baits but also to members of the tribe who have become accidentally poisoned in the same manner. "I saw", writes Prof. Stirling, (1) "several dogs and one woman that had swallowed doses that ought to have been fatal. Doubtless the beneficial results which seem real are due solely to the emetic effects, and, indeed, I was told that in other districts ashes and water, or salt and water are given with the intention of bringing these about."

At Samoa, mud, and even the most unmentionable filth was mixed up and taken as an emetic draught.

An unusual and ingenious vegetable application is that mentioned by Prof. Stirling (2) as being employed in the north-eastern district of South Australia. "I observed," he writes, "a hairy caterpillar, that makes a (bag-like structure of a reddish-brown colour on the branches of various herbaceous shrubs, (and which contain accumulation of their excrement.) The excrement is non-irritating from the bags on one particular kind of bush and from that only, and is used both by whites and blacks to make an infusion or poultice for a local application to inflamed

(1) (89)\textsuperscript{149} 131 p.1 IV.
(2) \textit{ibid}, p. 131.
testicles, while the felt-like substance of the bags themselves is applied to syphilitic sores. This practice I was informed prevails Eastwards of Bunbourie as far as the N.S.W. Border and Northwards to the country about Cooper's Creek."

"In the northern and western Auranta and in the Ilpiria tribe, of Central Australia, for the purpose of strengthening a delicate woman, the administer a part of the internal reproductive organs (called ertoacha) of a young marsupial. The woman lies down on her back, and her husband placing the ertoacha upon the mons veneris, "sings" over it for a time after which the woman swallows it whole. In some cases the same part of the animal is taken by the man and half cooked, after which he coats it with grease, charms it by singing over it, and then presents it to his wife; she has to swallow it whole without having any idea of the nature of the object, which, in this case, is given as an aphorodisiac. Other Australian medicines were, boiled fish and for cuts an application of human milk.

6. Animal Fats.

These were much used, especially the fat of human corpses and of mutton birds. That from the former being a favourite application of the Australians during health and for the relief of disease. Mutton (1) 156 465.
Animal Substances.

bird fat was used in Rheumatism by the Tasmanians and applied to the skin of the Maoris. The New Zealand medicine-men discovered the benefit of fish-oil in tuberculous diseases, their great remedy being the constant use of the oily meat of the dog-fish (Young shark), which often proves beneficial at the earlier stages of the complaint. (Batty Tuke).

7. Ice was sometimes used as an anaesthetic by the Australian autochthons in the operation of nose-boring.

3. A very popular method of endeavouring to combat disease, resorted to by all the races at present under discussion, was bathing of different kinds. They had no method of artificially preparing a hot water bath, and had recourse therefore to use natural hot-springs. Sea Bathing and bathing in freshwater streams were the forms most commonly used but not infrequently they administered steam, hot-air and hot-sand baths. We will briefly indicate the uses to which these various baths were put. But in the first place we may say generally that heat was applied when the patient felt cold and in case of fever a plunge into cold water or even a prolonged immersion in the sea or stream was the custom. During many of the severe epidemics which have wrought

(1) (89)142 75.
(1) See Obstetrics.
such terrible havoc amongst these peoples, sea bathing, by those in a high fever from Measles or Influenza was carried to terrible excess and many died in the water. They prefer fresh water to salt for bathing, and regard both as good remedies against illness. Bathing is commonly indulged in by mothers with their newly-born children, and in the section on Diseases of Women is described the curious Fijian custom of Vakisilima, or, "taking the woman to water," for the cure of certain pelvic disorders. Patients in the last stages of a fatal disease were frequently bathed. The above remarks are true for Polynesia generally, but there are some marked exceptions; the Bank's Islanders (Melanesia) have an extreme distaste for bathing when ill, they dread a chill. The Australians owing to lack of facility, do not bathe much during sickness. Hot-air and steam baths were frequently resorted to in rheumatism and other complaints by Australians and Polynesians alike.

The Victorian aborigines\(^1\) make a platform with sticks, under which are placed hot stones, or a few live coals, a rug is wrapped round the sufferer who sits on the platform; then some water-weed called Pinggi is taken wet from the lake shore and put on the
Baths.

hot stones or fire and the steam allowed to ascend around the naked body, and a perspiration is produced from which relief is often times obtained. The Maoris (1) dug a long hole and heated stones in it, as in a native oven or umu, in fact their name for a vapour bath was umuroa; over the stones were placed leaves and twigs of the Kawa Kawa, Kai-wheria, Koromiko, Kai-Kai-Aruhe, Karetu and Ngaio(1) plants, to each of which was attributed some medicinal property. Over these were placed some new mats on the which the patient sat covered with rugs, a copious perspiration soon followed. After a time he was removed and kept warm. In the Society Islands however the patient having reached a stage of profuse perspiration would, even in severe illness, leave the vapour bath, and plunge into the sea, near which the oven was generally heated. Though the shock must have been great, they appeared to sustain no injury from this transition. The Hawaiians and natives of New Britain, &c., employed similar means. The latter people pour water over the stones and hold the patient down by force in the full volume of the escaping steam.(2)

(1) Armitage MS.
(2) (33) 682.
POISONS.

&

POISON MAKERS.
POISONS.

Their Conception of Poison.

The Polynesians, as we have previously stated, are thoroughly encompassed by the mists and darkness of animistic belief, and to them the souls of plants, or the spirits, ghosts, or gods which have taken up their abode in them, work either for the good or the evil of the people. Those plants used in medicine for the relief of pain and the cure of disease are naturally the abode of good spirits, or of spirits which are willing under certain circumstances to act beneficially. There are plants, on the other hand, which if eaten produce death, they are poisonous, they contain a malevolent spirit, a man-eating god.

We have two classes of such poisonous trees. Those into which the god has voluntarily entered and those which minor spirits, ghosts, demons, &c., have been induced to enter by the machinations of the sorcerer. Belonging to the former class are the famous, well-known poison trees of Hawaii. Tradition says that the god Kalaipahoa, with his sister, the goddess Pua, and their friend Kapo came from a foreign country and entered certain trees and rendered them poisonous. Being desirous, no doubt, of exerting their power, they decided to let the Hawaiians know of their presence.

And the ironbark trees of Tonga. vide Pua in (36) 24.
Poisons.

ence and deadly potency. Accordingly, they, or Kalaipahoa, through the medium of the tutelary deity of one Kaneakama, a resident of West Molokai, made known to him their place of abode. He was shown a tree on Mauna Loa (a certain volcanic mountain), and was directed to cut it down and make an idol of it, by means of which he could cause any one's death. This was accordingly made and is described by Ellis as, "a middling-sized wooden image, curiously carved; the arms were extended, the fingers spread out, the head was ornamented with human hair, and the widely extended mouth was armed with rows of sharks' teeth."

The wood of which the image was made was so poisonous that "the least particle of it mixed with anyone's food or drink, and accompanied with the proper incantation" (probably an exhortation to the god to exert his terrible powers,"was sure to cause death in less than twenty-four hours."(2) Needless to say such a powerful weapon was eagerly sought after, and several pieces of it were in the possession of different chiefs, who used it to get rid of persons who were obnoxious to them. King Kamehameha I. is said to have kept the principal image always near him.

(1) Polynes. Researches, IV. 91.
(2) (89)91 71.2.
Poisons.

Kaahumanu collected and burned all the fragments of it that could be found, not many years ago. It is still a disputed question whether it was really poisonous or not.

There were, on the other hand, plants well-known to the poison-makers, which could be rendered poisonous by having certain secret ceremonies and incantations performed over them. Spears and other weapons, and certain vegetable juices, &c., could be similarly rendered poisonous. A familiar spirit, ghost, or demon was supposed to enter the plant or object, which when swallowed or brought into contact with the person of the victim, became active. He became possessed of the malevolent spirit who speedily caused his death. In Melanesia, for instance, it is not sufficient that the victim be simply wounded by a poison arrow, for as Bishop Codrington states "Its fatal effect has to be aided and carried on by the same magic that has given supernatural power to the weapon. The treatment of the wounded man proceeds on the same principle. Shells, which have been made efficacious for the purpose by charms, are kept rattling above the house" (doubtless in hopes of scaring away the poison demon) "where the wounded man lies. In the same way the man who has inflicted
the wound has by no means done all he can do. He and his friends will drink hot and burning juices, and chew irritating leaves; pungent and bitter herbs will be burnt to make an irritating smoke; a bundle of leaves known to the shooter or bought from a wizard a gesis, will be held upon the bow that sent the arrow, to secure a fatal result; the arrow-head, if recovered, will be put into the fire; the bow will be kept near the fire to make the wound it has inflicted hot, or, as in Leper's Island, will be put into a cave haunted by a ghost; the bow-string will be kept taut and occasionally pulled, to bring on tension of the nerves and spasms to the wounded man."

This is their mode of 'poisoning'. The Australian aboriginal makes 'poison' in a somewhat similar manner. They have a weapon called the Murrawun or magical throwing stick, made of ironbark wood. The person who has learned how to make these, and to render them 'big fellow poison' (very poisonous) is called a Bungil Murrawun. He is believed to make it 'carry poison' by rubbing Kangaroo marrow on it, and, what is of greater importance, by 'singing' over it. The Murrawun is used to injure black fellows by pointing it at them, making a hissing noise at the same time. Thus the poison is transferred to the victim.
We find that they made no distinction whatever between 'poisoning' and 'black magic' in its most dreadful aspect. An object became poisonous by virtue of the supernatural essence, mana, or demoniacal presence imparted to it during the hideous and mysterious ceremonies of the sorcerer. In the process of manufacture certain active and even toxic vegetable juices were sometimes used, but this was in most cases merely a coincidence, these juices were intended to play the part merely of a vehicle. The incantations and their effects on the materials operated on were the potent factors in the business. That a plant could act as a medicine or a poison, by virtue of some inherent, definite substance, active principle, or visible, tangible material of any form, was quite beyond their powers of conception; it was always the invisible, spiritual, magic power which produced the results. This then was, generally speaking, the belief of the Polynesians, Melanesians and Australians. The Polynesians and Melanesians were well acquainted with such poisons and poison-makers but the Australians knew but little of such things, in fact some of the tribes, the Narrinigeri for instance, knew nothing of poisons in any form, they knew not that such things had ever existed or could be. On the other hand, in
Poisons.

places like Fiji and Hawaii, where the natives had acquired a relatively great knowledge of the properties of their herbs and plants, we find the sorcerer at times making a routine use of certain plants and vegetable juices, possessed of inherent dangerous and even poisonous properties; these properties however he still attributed to magic power. In other localities portions of the human body were used, bits of bone and objects saturated with the juices of decomposing corpses; the remains of the dead were recognised to be replete with the coveted supernatural essence, and portions of human bone suitably selected and 'charmed' formed by far the most potent form of poison with which they were cognisant. Here again the effect was due to the mana or spiritual power of the ghost of the dead man.

2. POISON-MAKERS.

Poison-making was restricted to a very select few, and, for the most part, the necessary knowledge was transmitted from father to son, and was kept profoundly secret. First and foremost among the essentials for the practice of the art, was a knowledge of the appropriate charms and incantations; some knowledge also of suitable plants and other technicalities of the profession were indispensable; finally, the

See Arrow Poisons.
Poisons.

sorcerer, tohunga, or poison-man must have sufficient influence over his fellow-tribesmen that they will fear his power, and dread his appearance and presence. The most primitive form of so-called poisoning, was much practised in some parts of Melanesia. In some tribes there were men who followed the profession, and "were hired to poison with maomao, made with the mana (supernatural) power of the tindalo ghosts, with whom they held communication, and mixed in the food of the man whose life was aimed at. The Savo people were great poisoners; Florida men who visited them were careful what they ate. The effect of the poison was that one who had taken it fell sick, vomited, and afterwards died. The practice of this art was dangerous to the poisoner; a known poisoner was put to death in Florida, and so were innocent persons suspected or accused. In the Bank's Islands to poison was to vaugau pal, to feed by stealth. The Ureparapara people in that group had the repute of being poisoners, others would get poison from thence; in Mota no one knew the art. In Lepers Island poison is called, by a parallel expression, aruwana. The poison used by these Melanesians, consisted chiefly of magically charged food. In Fiji, and the Sandwich Islands, the Chiefs had some- Codrington.
times some knowledge of poisoning, or had amongst their retinue professional poisoners who practised their art to serve the ambition or the revenge of their masters.

3. THE VEHICLE OF THE POISON.

In the most primitive forms such as are met with especially in Melanesia, the substance employed was merely a portion of food over which the charm had been muttered, or some magic-water or vegetable juice which was added to the drink of the victim. In Fiji and the Sandwich Islands, where there are medicine-men and sorcerers having a considerable knowledge of plants, we find an advance on these early practices and meet with powerful vegetable irritants in occasional use. The precise nature of these magic potions must forever remain a mystery, a few are known and maybe referred to here. In Hawaii, for instance a popular poison consisted of Kava, which throughout Polynesia frequently formed the basis of such mixtures, mixed with the leaves of Téphrosia pixatoria, Daphne indica, and the common Lagenaria. The Melanesians in Florida believed that the liver of a black snake dried in the sun or over a fire was a deadly poison, it was an important ingredient in their magic mixtures. The Australians,
Poisons.

Pastmasters in crystallogomancy, employed poison stones called by some of the blacks "Mau-ia" (1) and generally they were white in colour or transparent and crystalline. Some specimens were found to be magnesian limestone; there is little doubt that all such stones were quite inert, but as we have previously shown, they were traditionally associated with their so-called gods. When it is desired to give effect to these a fragment is placed on the end of a long stick or the blade of a spear and dropped on the face or feet of the sleeping victim. The natives at Alice Springs (Cen. Austr.) are very afraid of the powers of this substance. They will not handle it or even look at it. They themselves keep it wrapped up in abundant coverings of "paper-bark" rags. A small portion the size of a pea will be safely "insulated" by wrappings having the bulk of an ordinary pillow. In the Sandwich Islands, so noted for its black magic, there was a class of professional poisoners called Kuni (see medicine men) who practised 'sympathetic poisoning' by performing a ceremony with certain plants known to have irritating qualities. A fire-place was made, and four sticks with flags of white native cloth (Kapa) set up at the corners, surrounded by the plant called
Poisons.

Sorcery Poison-maker's Staff.
(Torres Straits Islands)
(Edge-Partington.)

Australian "poison" stones.
(Usually enclosed to many wrappings of cloth.
(Edge-Partington.)
Poisons.

auhulu, fish poison, and green gourds (powerfully cathartic). A fire was then kindled by rubbing the fire-stick aulinia on a stick of akia, a poisonous shrub, and a large quantity of wood was burned. The speedy death of the victim was expected. Marin(1) states that the Marquesans were acquainted with a violent poison called eva (N.O. Apocynaeae.), the grated nut was administered with the juice of the cocoanut. No mineral poisons were used by the natives in their days of unenlightenment, but contact with Europeans has taught them the use of several common drugs, especially Calomel and Arsenic. The Melanesians(2) who were taken to 'labour' in Queensland learnt the use of Arsenic, and on their return to their native land "used it with fatal effect in the same way which native poisoners used their own magical preparations, by mixing it with food; and it is more than probable that the certain and fatal effect was believed there to be due to the powerful magical and unnatural powers with which it was endued" Daville(3) who lived several years in the New Hebrides refers to a mineral poison used by the natives and resembling "ta-plombagine" (plumbago) in its external aspect; a vegetable poison composed of various plants amongst others certain euphorbiaceae, was also given.

(1) (89)104 241.  (2) (89)74 213.  (3) (89)106.
As a final and typical example, I may quote the following from Gaston Beaune:—(1) D'autrefois, on va cache, dans la hutte de l'ensorcelé ou sur le sentier qu'il doit traverser, un petit paquet d'herbes ren-fermant un os humain; non que cet os ait par lui-même quelque vertu magique, mais parce que la porosité s'en prête à l'absorption du philtre, qui est l'agent mystérieux du mal." The essence of the process, I repeat, in all of these cases is, that the vegetable or mineral substance employed plays merely the part of a medium for the introduction into the victim of magic or spiritual essence, mana, or what not; whether, in modern times, they have grasped the fact that poisoning can take place without the aid of the "poison incantations", is a question. I cannot answer; if they have made that advance in learning, it is only within recent times and in places much frequented by Europeans.

(1) (89) 110 223.
4. ARROW POISONS.

The poisoned arrows of the New Hebrides have long been notorious and bear an evil reputation unsurpassed even by the deadly darts of the African Bushmen. They are dreaded alike by white trader and black-fellow. These arrows are a special feature of the Melanesians; the Maoris were unacquainted with bows and arrows in their warfare; the Polynesians used arrows unpoisoned; poisoned spears and other weapons were frequently used by the Australian aborigines. The Melanesian arrow poison and that of the Australian spears, were essentially identical. In the manufacture of the poisoned arrow, the first, and one of the chief essentials, was the carefully selected and prepared cone of human bone, a substance saturated with mana or magic power. With the appropriate incantations this was fixed to the shaft of the weapon.
Poisons.

Melanesian Poisoned Arrows.
(Pentecost Island).

(a) Poisoned point of human bone.

The second stage consisted in applying to the bone tip certain vegetable juices and sometimes putrid or other animal matter. The thick juice of the widely known no-to (Excaercaria agallocha) was commonly used, but the technicalities connected with the application of this, and other substances need not be considered here: wrapping in leaves, dipping in sea-water, &c., although of extreme importance in the eyes of the savage are of less interest to us at present. A study of the ingredients of the reputed poisons yields interesting results. Some writers have asserted that the active body was allied to strychnine or curara and that a slight scratch of the arrow proved rapidly fatal; how far this is true we will presently see. I have gathered together, from various sources, descriptions of a number of vegetable and animal substances reputed to be used in making the poison, and these are as follows:

Ọ See Polynesian Medicinal Plants, p.
### Poisons.

#### A. VEGETABLE SUBSTANCES.

<table>
<thead>
<tr>
<th>Name</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. Excaecaria</strong></td>
<td>The thick, white, pungent, juice is applied to the bone point.</td>
</tr>
<tr>
<td><strong>Agallocha.</strong></td>
<td></td>
</tr>
<tr>
<td><strong>2. Natobo.</strong></td>
<td>The milky white juice of this plant is used in conjunction with 3.</td>
</tr>
<tr>
<td><strong>3. Nabukapoa</strong></td>
<td>A black substance coming from the heart of one or both of these trees is added after the juice of the excaecaria has dried. This black substance hardens directly it is exposed to the air. It is pulverised, and the powder is mixed with the juice squeezed from the boiled leaves of the Vavurivuri Kasin plant and the Namamakaru (a creeper) Nos. 2, 3, 4 &amp; 5 are mentioned by Capt. Braithwaite.</td>
</tr>
<tr>
<td>(or bad-smelling Nabrika)</td>
<td></td>
</tr>
<tr>
<td><strong>4. Wapipiri.</strong></td>
<td></td>
</tr>
<tr>
<td><strong>5. Vavurivuri.</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Kasin.</strong></td>
<td></td>
</tr>
<tr>
<td><strong>6. Namamakaru.</strong></td>
<td></td>
</tr>
<tr>
<td><strong>7. Croton.</strong></td>
<td></td>
</tr>
<tr>
<td><strong>8. Banian.</strong></td>
<td></td>
</tr>
<tr>
<td><strong>9. Loki.</strong></td>
<td>They take the root of this creeper strip off the bark and scrape the inner fibre into a leaf; and that, wrapped in another leaf, is put into the fire. When it is cooked it is wrapped in the web from the spathe of a coca-nut, and squeezed in the leaf of the nettle tree. (The Loki is supposed to act like strychnine).</td>
</tr>
<tr>
<td><strong>10. Nettle Tree</strong></td>
<td></td>
</tr>
<tr>
<td><strong>11. Toi.</strong></td>
<td></td>
</tr>
<tr>
<td><strong>(4)</strong></td>
<td></td>
</tr>
</tbody>
</table>

Φ Believed to be exceedingly potent.

(1) (87)24 126.
(2) (89)106 69.70.
(3)(4) (89)74 312.
Poisons.

B. Animal Substances.

1. Decomposed human or animal flesh was, it is alleged by several writers, the source of the toxic agent, or the bone tip of the arrow was buried for a time in the marae, the sacred place where human sacrifices were offered; the ground here was saturated with the juices from the decomposing dead bodies, and was declared to be swarming with tetanus bacilli. Bishop Codrington, one of the foremost authorities on the Melanesians, makes the following statement:— "If it be asked how the very common belief has arisen that their arrows are poisoned with putrefying flesh, if the preparation be wholly vegetable, I can but conjecture that natives answered "dead men" to early traders' enquiries. The natives meant that the deadly qualities of the weapon came from the dead man of whose bone the head was made; the European, thinking of poison, not magic, supposed that the poison was from a corpse." Doubt exists, therefore, as to whether the juices of putrid bodies, were or were not employed.

2. Grab's dung.

"In the island of Whitsuntide," says Codrington, "they finish off with stuff found on the rocks.

Dr. E. Daville, Wawn, &c.

(1) Gaston Beaune. (89)110.
(2) (89)74 312.
of the shore, thought by them to be the dung of crabs, and believed to have much magic power."

**Green Earth.** In Aurora (N. Heb.) after certain vegetable substances have been applied, a green earth, which is only found in one place, is finally painted on.

Thus a variety of substances are applied, all accompanied by suitable 'poison songs' known to the priest; and now we ask, what is the result following a wound by such a weapon. The answers vary, "one scratch," says Wawn, "from a poisoned arrow is sufficient to cause death almost invariably." This is not the generally accepted belief now. It is not denied that in many cases death has followed after a person has been struck with such an arrow, but death is not the inevitable result, by any means. The native considers the arrow to be charged with, mana, magic or "poison" and if he is wounded with one he generally dies either from fear, or tetanus, or from injury of a vital organ, or from sepsis.

**Tetanus,** which so frequently follows wounds in the tropics, is more likely to follow a spear wound because the weapon is so made that the spear point is readily detached, and remains often buried deeply in a wound; suppuration and tetanus result. If this
does not happen, it still remains that the man has been wounded with a 'bone' or 'magic' spear, a weapon full of poison, made under the influence of the powerful mana charms, and smeared with stuff hot and burning, as the wound is meant to be. To these people, peculiarly susceptible to mental and superstitious influences, this is overwhelming, they are bound to die, and they rapidly succumb to melancholia. Professor Halford(1) of Melbourne University, several years ago made experiments on dogs and pigeons with the material from the points of a number of the arrows chiefly from the Solomon Islands; none of the animals died or were affected by it. Dr. E. Daville(1) had under his care two Europeans with 'poisoned' spear wounds. The wounds were simply washed with alcohol and water and neither exhibited any serious symptoms. Several French and English medical officers, have carefully examined the reputed poison, and all concluded that it was not poisonous. Dr. Messer, who has studied the subject carefully, concludes:-

"That no recorded instances are known of poisonous effects following (those spear wounds); that tetanus has followed in comparatively few cases, and not more frequently than it does after similar wounds

(1) An enquiry in the Reputed Poisonous Nature of the Arrows of the S. Sea Islanders, A.B. Messer, M.D., R.W.
Poisons.

in like condition, where no question of poison had existed; the arrows are not in any way dangerous beyond the severity of their wounds and the conditions under which they are received." This should prove welcome information to persons likely to come into contact with these savages, but it should not deter us from thoroughly investigating the reputed poisonous vegetable substances used in preparing the weapons.

5. ON CERTAIN POISONOUS PLANTS.

(a) **Coriara Ruscifolia** (Linn.).

This plant called by maoris Tupa-Kihi, Tutu, or Puhou, is an example of these exceedingly poisonous plants which the natives, by some simple means they have discovered, can render innocuous and suitable for consumption. An elephant has died three hours after partaking of it, from the effects of the poison; rabbits are said to be proof against its poison. The natives were occasionally poisoned by it and, it is said, were able to successfully treat those so affected. The symptoms\(^1\) are, partial paralysis of certain of the cerebral centres, rigidity of the vertebral muscles and those of the neck, fixity of the eyes, discoloration of the face, general tremor, convulsions

\(^\odot\) See Maori Medicinal Plants.

\(^1\) (33) 49 268.
Poisons.

delirium, death. Antidotes recommended, are, emetics, cathartics, dilute acids, lime water.

From the so-called fruit, the maori made a beverage of which they were extremely fond, they called it Kawa.

(B) CORONOCARPUS LAEVIGATA.

The "Karaka" tree so well known throughout New Zealand was extensively employed in the maori household. The Kernel of the orange-coloured fruit called Kōpi and Koroi contains an active poisonous substance, "Karakine." The symptoms resulting from eating the raw kernel, are, violent spasms and general convulsions, in which the limbs are stretched violently and rigidly out, great flushings of heat, protrusion of the eyes and tongue, and gnashing of the jaws, rapid death. The natives gave internal remedies and had recourse to certain novel procedures, to prevent permanent distortion of the limbs. A pit was quickly dug, into which the child (children were most commonly the sufferers from this form of poisoning) was placed in a standing posture with its legs and arms bound in their natural position, and the mouth gagged with a piece of wood to prevent
biting of the tongue; the child was left, buried up to its chin, until the spasms abated. Before burying, the patient was sometimes induced to vomit by being repeatedly ducked in the sea, a common maori method of inducing vomiting. If great care be not taken permanent distortion of the limbs with muscular rigidity ensues. A writer thus describes a boy whom he saw distorted in this way:— "He was now a curious spectacle, reminding me of the instrument called a caltrops more than anything else. One leg was curved up behind his loins, and the other bent up in front with the foot outwards; one arm inclined behind his shoulder, and the other slightly bent and extended forwards; and all, as to muscles, inflexibly rigid. He could do nothing, not even turn himself as he lay, nor drive off the sand flies (which were there in legions) from feasting on his naked body, nor put any food into his mouth." (1)

("Karakine") according to Skey, consists of, or is contained in, an essential oil, which is intensely bitter, and which, under treatment, crystallizes out in radiating acicular forms).

(1) (87) 15 173.
Poisons.

TREATMENT.

The methods of combatting poisons was mainly by incantations in Polynesia, and by emetics in New Zealand. At Mangaia, in the Hervey Group, for instance, when a man had been wounded by a 'poison' spear made from the iron-wood tree, the medicine-men laved the wound with water while chanting the following *mau*, or "charm:--"

"This is the *infallible* cure;
In the presence of Great Vatea,
Staunch, O wound, lest the sufferer faint,
Staunch quickly, lest he faint and die!
Here is water from the swamp to cure thee.
Wound, heal quickly!
Here is water from the valleys to cure thee.
Wound, heal speedily!
Here is water bubbling up out of the Earth to cure thee.
Wound, heal speedily!
Here is water from the running stream to cure thee.
Wound, heal speedily!
Here is water from the Taro plantation to cure thee!
Wound, heal speedily!
Here is water out of the mountain's side to cure thee.

Be healed in the name of Rongo & TutaVake
Poison of the iron-wood, arise, depart!"

The last line should be uttered with tremendous emphasis, as if addressed to an invisible spirit, the Tongan poison-demon incarnate in the iron-wood tree. This charm is of great antiquity. It is
the only formula of the healing art strictly belonging to the island. At a comparative date a similar charm was introduced from Rarotonga, called "The Prayer of Tangiia." 

In cases of poisoning occurring among the Maoris, their remedy is to plunge the victim into the sea or stream, keeping his head below the water till he is nearly drowned, and then to roll his body on the shore till vomiting is produced sufficient to eject the contents of the stomach. This practice, though rough, is rational, and the best they could adopt under the circumstances. Sometimes he is afterwards taken to a fire and held feet up and head down, in the smoke, this also to produce vomiting. A steam-bath may follow, after which the sufferer is kept warm, and given light diet, consisting of gruel made from the root of the convolvulus or Kumara (Sweet Potato).

(1) (87)32 68.
(2) Armitage MS. & (83)5 193
NARCOTICS.
Narcotics, &c.,

From a very early period in the history of these races some sort of stimulant or narcotic has been in use. The national narcotic of Polynesia is **Kava** (made from the root of *Piper Methysticum*) of very ancient origin; it was used especially in the southern and eastern islands, not extending to New Zealand or Melanesia. It was much used at the Sandwich Islands and has been making progress westwards through Melanesia to New Guinea. The Sandwich Islanders also indulged freely in the **Awa** made from the root of **Ti** (*Dracoena terminalis*).

The **Betel Nut** coming from the west has found great favour in New Guinea and neighbouring islands. The chief narcotic of the Australian aborigines is **Pitchery** (*Duboisia Hopwoodii*); the Tasmanians had a cider-like beverage called **way-a-linah**; the **Maori** seems to have formed a remarkable exception - for I know of no narcotic in general use among them, unless the **Kawa** made from (*Coriaria ruscifolia*) be mentioned, it however was not in general use, and I am not sure that it had any narcotic property. Since the advent of the whitemen the natives have acquired the desire for **Alcohol**, **tobacco**, **opium**, and other stimulants and narcotics. We will now consider briefly the nature of each of these substances. **Kava** is described at
Narcotics.

length elsewhere and will not be mentioned in this connection, we will first discuss

(a) Dracaena terminalis. (1)

"Ti" Plant.

The use of this plant as an intoxicant seems to have originated amongst the Hawaiians and they introduced it into Tahiti. The ti plant is common in all the Polynesian Islands. The drink sometimes called *ava* (must not be confused with *kava*), is made from the root, which is large, woody, fusiform, hard and fibrous, of a light yellow colour and almost tasteless. After baking in underground ovens, its appearance is quite changed, being yellowish brown in colour, soft, though fibrous, and saturated with a highly saccharine juice. In this state it is bruised, and steeped in water in the bottom of an old canoe, till the mass ferments. The liquor is then drawn off and drunk, but on the arrival of the white-man they learned how to distil this fermented substance, and sometimes whole districts united to erect a public still. It was a rude affair, yet it answered well the purpose for which it was made. It generally consisted of a large piece of rock, hollowed out in a rough manner, and fixed firmly upon a solid pile of stones, leaving

(1) (85)g; (82)l; (85)g.
Narcotics.

a space underneath for a fire. The butt-end of a tree was then hollowed out, and placed upon the rough stone retort for a cap. The fermented mass of Ti root having first been introduced. The fire was then lighted, and the mass heated, the vapours evolved were conducted thro' a long bamboo rod or tube, placed in a trough of cold water, and the condensed spirit collected in a calabash, or cocoanut shell. When the materials were prepared the men and boys of the district assembled in a kind of temporary hut, erected over the still, in order drink the ava, as they called the spirit. The first that issued from the still being the strongest, they call it ao; it was carefully received, and given to the chiefs: that subsequently procured was drunk by the people in general. In this employment they were sometimes engaged for several days together, drinking the spirit as it issued from the still, sinking into a state of indescribable wretchedness, and often practising the most ferocious barbarities. Ellis when touring through Hawaii early in this century, found about two-thirds of the people in many of the villages, in a state of intoxication, induced by spirit distilled by them from the Ti root and also from fermented sugar-cane juice, and sweet potatoes. He says "sometimes in a deserted
Narcotics.

still-house, might be seen fragments of the rude boiler, and the appendages of the still, scattered in confusion on the ground; and among them the dead and mangled bodies of those who had been murdered with axes and billets of wood in the quarrels that had terminated their debauch."

Such were the effects of the *ava* or *okolehas* prepared and offered at the shrine of *Ulaulakeahi* the god of the distillers of Hawaii.

![Ava Distillery (Hawaii)](image)

(b) **Betel Chewing.**

The *Areca* or *Betel-nut*, or *Pinang*, &c., is the seed of the *Areca Catechu*, and its use as a narcotic has spread downwards from India through the Malays and is slowly spreading thro' Melanesia, being universally used in New Guinea, Solomon Islands, New Britain, and Santa Cruz but has not passed further east than Tikopia. The Betel nut is about the size $\phi \ (89)_{78}; \ (39)_{74}; \ (89)_{84}; \ (88)_{27} \ &c.$
Narcotics.

Betel Nut.

of a cherry, slightly pear-shaped, very hard, and externally not unlike a nutmeg of inferior quality. It is chewed along with the leaf of the betel-pepper and a little quick-lime. The betel-pepper, "betel-pepper-stick," or Chavica, is a liana of climbing habit, and great lengths of it are obtained in the forest. The modus operandi is as follows. A piece of betel-nut is placed in the mouth and partially masticated, this is supplemented by a leaf of the pepper (and sometimes the stem apparently) plant and when the two are amalgated, a little lime is added by drawing the stick from the chunam box and inserting the same several times in the mouth.

Betel chewing promotes the flow of saliva, and lessens perspiration. It tinges the saliva red; so that when spat out, it falls on the earth like blood. It gives a red colour to the mouth and renders the teeth black. It imparts an agreeable odour to the breath, and is supposed to fasten and preserve the teeth, cleanse the gums, and cool the mouth. Taste and appetite are said by some to remain unaffected, other natives claim that hunger is warded off. The Papuans believe it wards off or mitigates attacks of malaria. Its effects are thus described by Mr.

\[\text{For full details see, "Ueber Areca Catechu"}
\text{Dr. L. Lewin, Stuttgart, 1889.}\]
Narcotics.

Harmann: (1) "In a few minutes I became quite giddy, almost semi-unconscious after a little while, with frothy copious saliva collecting in the mouth, a feeling of nausea, and pressure on the brain, and my eyes swimming. A perspiration broke out all over me, and I soon fell into a dead motionless sleep, in

Betel-nut chewer's Chunam Box (Solomon Isls.)

which I remained till late in the morning, waking with an oppressive headache." On those who are accustomed to use it, however, the betel produces weak but continuous and sustained exhilarating effects. And that these are of a most agreeable kind, may be inferred from the very extended area over which the chewing of betel prevails.

◊ From Edge-Partington's Album.
(1) (93)54 XXXII - 414. "Mr. Harmann in New Guinea."
Narcotics.

(c) "Pituri"

The *Duboisia* Pituri.


"Pituri;" also spelt "Pitchiri;" Pitchery, "Pedgery," "Bedgery;" "Pitbery;"

This small, stiff, shrub usually about four or five feet high with coriaceous, lanceolate leaves, grows on the sandhills of Central Australia, in a district which may be roughly defined as west of Eyre's Creek, north of Lake Eyre, and east of the trans-continental telegraph line; it is carried in a dried state for several hundred miles from its habitat, and eagerly traded for by members of other tribes. The tops and leaves are gathered during the month of August when the plant is in flower, and are dried in the sun, and also under a layer of fine sand sometimes. When dry they are powdered and then packed in bags or skins for transport. The leaves are both chewed and smoked, generally the former; the blacks at Cooper's Creek first chew the leaves into a mass, then mix it with the ashes of gum-tree leaves, making a paste ball, which is kept in the mouth for some time. They also prepare the twigs of a dwarf acacia, which grows on the sandhills, by drying them in hot ashes, then, breaking them up,
Pituri.

mix a little pituri with them and chew the mixture. Ashes of gidea leaf are similarly used. Pituri is frequently chewed in company, the "quid" resembling a silkworm's cocoon, being handed round from one native to another, and when they have had sufficient, one politely plasters it behind his ear, where it remains until again required. Mixed with ashes, and moistened, then rolled into the shape of a cigar, it forms a mass which may be either smoked or chewed. The saliva is swallowed. The effects are those of a powerful stimulant and narcotic, assuaging hunger, and enabling them to make long journeys without fatigue, and with but little food. It is taken before battle to inspire courage and bravery. Sometimes a decoction is made for the purpose of stupefying and then catching the emu; the fluid is put in a wooden vessel where the animal is likely to come across it, and after drinking it the animal becomes so stupefied that it falls an easy victim to the black fellows spear.

Europeans suffer from severe headache after using it. The infusion, which does not appear to be taken by the blacks themselves, has, according to Dr. Bancroft of Queensland the following effects:

\[ \text{(88)52} \]
Narcotics.

1. "Period of preliminary excitement with apparent loss of inhibitory power of the cerebrum, accompanied by rapid respiration; in cats and dogs with vomiting and profuse salivation.
2. Irregular muscular action, followed by general convulsions.
3. Paralysis of respiratory centres of the medulla.
4. Death, or
5. Sighing respiration at long intervals.
6. Rapid respiration and returning consciousness.
7. Normal respiration and general torpidity, not unattended with danger to life."

The Active Principle.

In September 1878, Mr. A. W. Gerrard (1) found an alkaloid "pituria" which was not fully described. Mr. A. Petit, (2) declared the alkaloid to be nicotine. In 1880, Professor Liversidge, (3) of Sydney University, made known the results of his minute researches into its nature, and described it as a brown, liquid, acrid alkaloid, distinct from nicotine, which he calls piturine.

(1. Pharm. Jour. (3) IX., 251.
(2. ibid p. 819.
(3. Proc. R.S., N.S.W., 1880, 123.)
Narcotics.

Such is Pituri, the most important, but not the sole, masticatory of the Australian aborigines. It is often confused, at any rate, in name with the following also a narcotic plant of the same Natural Order.

(d) "Ngmoo" or "Orungurabie."

This plant is the Duboisia myoporoides $ R. \text{Br.}$, (Syn. Noteloea liquistrnea, Sieb).

Called by the Colonists "Corkwood" and "Elm."

The Australian blacks make holes in the trunk and put some fluid in them, which when drunk on the following morning produces stupor. Branches of the shrub thrown into water render fish intoxicated and easy to capture. This plant yields 

\textbf{duboisine}, an alkaloid resembling \textbf{atropine} in its physiological effects - it is identical with \textbf{daturine} and \textbf{hyocyamine}, also obtained from Solanaceous plants. Other plants of this Order are used as narcotics by the aborigines, e.g.

(e) \textbf{Nicotianum suaveolens}.

This native tobacco is sometimes preferred to "Pituri." They simply roll a few of the leaves together and then suck, or chew them, or they cut up

$ (88)^47 \text{13; (89)^55; (88)^53 \&c.} \$

$^\#$ Source of the valuable 53 mydriatic 

\textbf{duboisine}.
Narcotics.

the leaves and mix them with ashes obtained by burning the leaves and twigs of a bush, preferably a Cassia. The leaves are made up into little plugs, which are held when sucked so as to protrude thro' the lips. (1) When this plant cannot be obtained the native sometimes use the leaves of a small species of

(f) *Eugenia*—(2)

which are smoked, when made up in the form of a cigar.

(g) *Adriana acerfolia* (3) Hook.

According to Mr. G. Hedley, they also occasionally used the leaves of this Euphorbiaceous plant, for smoking purposes.

(h) *Nicotiana Tabacum*.

This Solanaceous plant is a native of certain of the Polynesian and Melanesian islands, but its narcotic effects were not fully appreciated. The Fijians used infusions of the leaf as an insecticide, but it was not used for smoking until they learnt the habit from the sailors of a Manilla ship, at the commencement of this century. The custom soon became universal in those islands and soon spread to neighbouring islands and later to Melanesia.

(1) (89)156; (89)149 II. - 82.
(2) (88)61 32.
(3) (88)51 161.
Narcotics.

Tobacco. Tobacco was introduced independently into Australia and New Zealand by the early traders, and the natives, young and old, men and women, soon became inveterate smokers. Infants often refuse the mother's breast and cry for the pipe till they receive it; and dying natives "draw their last breath through a pipe." Tobacco is used as well as Betel nut in New Guinea, and has become the custom in Northern New Hebrides and Bank's Island quite recently. Smoking was universal in the Solomons, Florida, Isabela, San Cristobal, thirty years ago. In Florida, the native-grown tobacco vavuru, is now discarded for the stronger tambaika. The effects of this excessive indulgence in the use of tobacco by these various natives must be very great though difficult to estimate; some further mention is made of these effects in the section on Obstetrics and Gynaecology.

(i) Opium.

The use of opium amongst the blacks in Queensland, Sandwich Islands, Marquesas Islands, Fiji, &c., is chiefly the result of Chinese immigration, and has become quite fascinating to the autochthons of these places. That the Chinese are not the only offenders in introducing the practice we shall shortly demonstrate.
Narcotic.

In the Sandwich Islands\(^{1}\) where the evil is growing, it has been found to spread from certain centres; "wherever there is a Chinese camp and a native camp near to each other, a good number of natives are sure to form the habit." Concerning its use in the Marquesas Islands I find the following statements; M.Aylic Marin\(^{2}\) writes - "Ce poison exerce des ravages aussi affreux sur la population de (ces) iles que l'abus des boissons fertes sur les habitants des iles Tahiti et Tubuai; les enfants y fument ou mangent l'opium." M.Paul Claverie\(^{3}\) confirms this, and adds:- "L'opium absolument interdit à tous autres quelques chinois, qui sont strictement rationnes, les Marquisiens, le mangeaient et, malgré le prix exorbitant auquel il était vendu plus ou monis falsifié, ils en absorbai-ent des quantités effrayantes; tous en mangeaient, même les enfants." In Queensland things are probably in a worse condition, in 1876 it was stated in the Rockhampton Bulletin\(^{4}\) that:- "Wages and clothes are no longer in request; the charms of rum, beer, and tobacco, are cast into the background, and the constant demand is for opium. When one of the blacks ob-

\(^{1}\) (88) 32.
\(^{2}\) (89) 104 159.
\(^{3}\) (89) 187 - 88.
\(^{4}\) (87) 152.
Narcotics.

Opium.

tains a piece his life is not safe until he has consented to divide it amongst his party. They make their own pipes, using ink or other small bottles for a bowl, and a reed for a stem, and the effect upon them is described as almost instantaneous. They dance, sing, shout, and fight, until at last they sink down in a state of exhaustion and stupor, and dream the blissful dreams, which give the drug this influence and charm. Again concerning these same tribes Mr. Beardmore of Tooloombah writes, "that half the blacks near Rockhampton (Queensland) were dying out from the use of the drug, and in fact did nothing but smoke until their supply was exhausted. One black told Mr. Norton, that he was the only member of his tribe who did not smoke opium. It was stated that the Coast settlers kept opium because the blacks would work for nothing else. The marsupial scalp hunters found opium in return for scalps the only thing that would keep their mob of blacks together. All who spoke with personal knowledge deplored the moral degradation caused by this drug. The Premier, Sir. S. W. Griffith, said, the wholesale way in which the blacks were being killed off by opium was a scandal."

(1) (88)49 178.
Narcotics.

It is important to state that the various governments have taken steps, in Fiji, Queensland, &c., to mitigate these unfortunate circumstances; whether with any great degree of success, may be doubted. I have quoted somewhat fully on this subject because it is an important one, affecting as it does so intimately the welfare of these decaying races, their vices are already so numerous that steps should be taken to dispel this one, the mere presence of which amongst the blacks is hardly known to many of the Australian or Polynesian Colonists themselves.

(j) "Way-a-linah."

This beverage of the Tasmanian Aborigines was prepared in a similar manner to the Orungarabic of the Australian black, but from a different tree. In this case it was from the "Cider Tree" (Eucalyptus resinifera), and was collected in the form of a slightly saccharine liquor, resembling treacle, from holes bored into the root of the tree, at certain seasons of the year. The holes were kept covered over with a flat stone. When allowed to remain any length of time, the juice or sap ferments and settles into a kind of coarse wine or cider, rather intoxicating when drunk to excess.

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