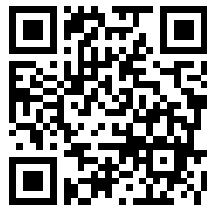


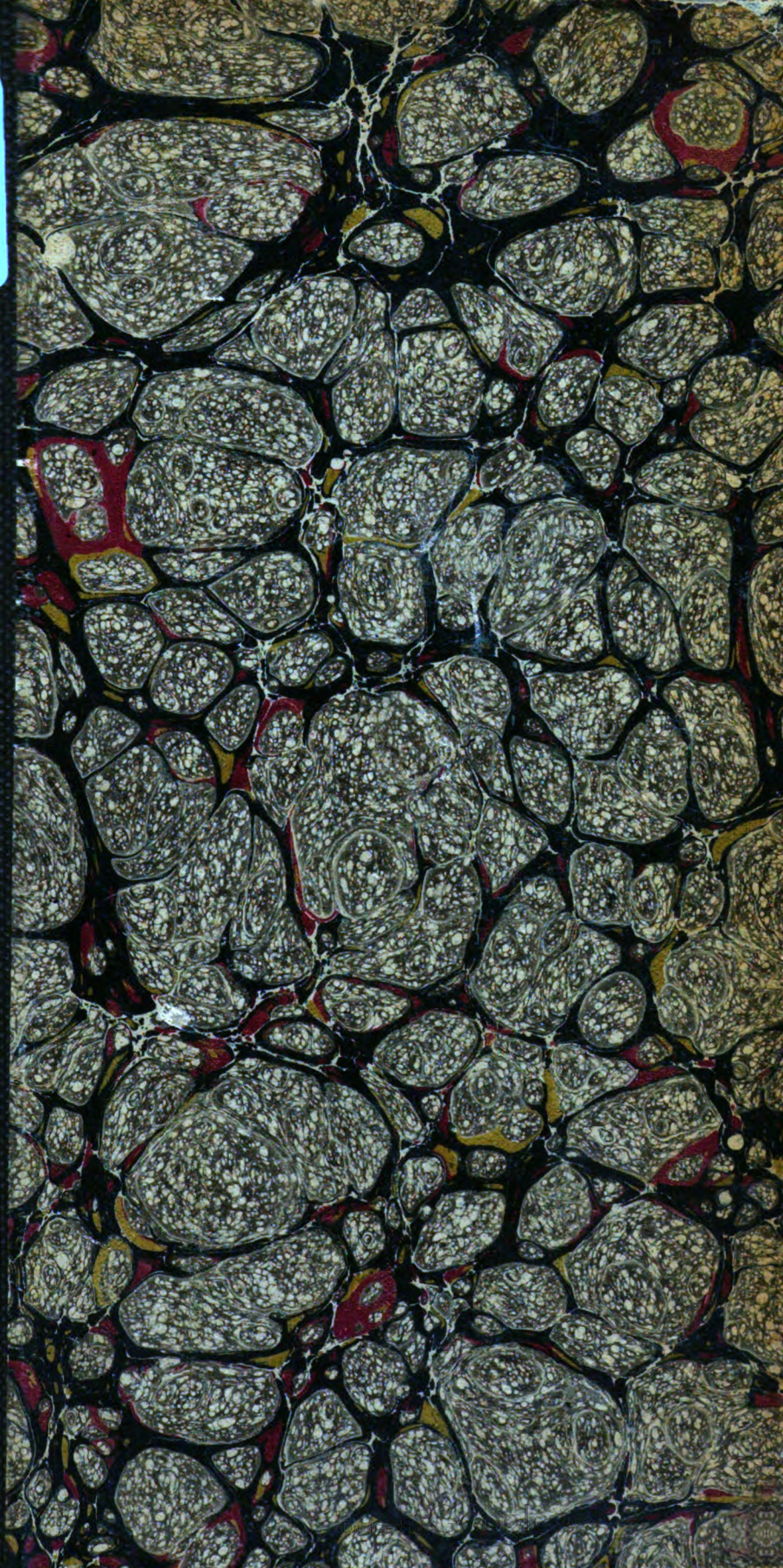
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STRAITS BRANCH  
ROYAL ASIATIC SOCIETY

[No. 45]

**JOURNAL**

June, 1906

Agents of the Society

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**JOURNAL**

of the

**Straits Branch**

of the

**Royal Asiatic Society**

**JUNE 1906**

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•YOUNG, H. S.	Bau, Sarawak.



## Annual Report for the year 1905.

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The Committee have again to report that the affairs of the Society are financially in a satisfactory condition.

During the year three numbers of the Journal, have been published Nos. 42, 43, 44 and two others are at present being printed. The supply of interesting material for the Journal has increased considerably during the last year as has the number of contributors. Some important Malay manuscripts have been obtained by Mr. Maxwell, and Mr. Laidlaw has been assiduously collecting Folk-lore tales of Malaya. Mr. Shelford's illustrated catalogue of Dyak personal ornaments formed volume 43 of the Journal. We have additional Folk tales of Borneo from Mr. Gomes, and papers on Malay lace making and basket making by Mrs. Bland, on the Perak Sakais by Mr. Cerruti, and other Ethnographical papers are being printed, Natural History papers have been furnished by Mr. Shelford, Cameron, Kloss, Hewitt, Robinson and Ridley. Illustrations from photographs supplied by the authors have been prepared by the firm of Carl Henschel and are a great improvement to the Journal. One of the old numbers (No. 25) being quite out of print was reprinted.

During the year His Excellency Sir John Anderson kindly consented to become Patron of the Society and the following new members were elected.

MRS. BLAND  
W. S. O. RICHARDS  
R. D. ACTON  
G. E. V. THOMAS  
J. B. CARRUTHERS  
R. S. DOUGLAS

HE. P. GUERITZ  
J. HEWITT  
B. NUNN  
DR. JOHN DONALD  
MR. J. W. CAMPBELL  
R. E. HOSE.

It was not possible to make any headway with the new edition of the map this year but the whole of the old edition is now sold out and it is hoped that in the ensuing year substantial progress may be made towards bringing out a new edition.



### HONORARY TREASURER'S ACCOUNT FOR THE YEAR 1905.

	\$	c.	\$	c.	\$	c.
Balances brought forward from 1904:—						
Mercantile Bank, Fixed Deposit .....	2700				1266	50
Chartered Bank, Fixed Deposit .....	2300				349	49
Mercantile Bank, Current Account .....	753	80			55	
Chartered Bank, Current Account .....	25	79	5779	59	70	
Receipts in 1905:—					60	
Subscriptions for 1902 .....	5				24	
" " 1903 .....	15				21	50
" " 1904 .....	90				108	10
" " 1905 .....	470				1	50
" " 1906 .....	5				1986	09
Life Membership .....	50					
Sale of Journals .....	204					
Sale of Maps .....	679	27			2700	
Sundry Recoveries .....	2				2300	
Bank Interest .....	200		1720	27	318	41
					195	36
			7499	86	5513	77
			7499	86	7499	86

Audited and found correct

C. BODEN KLOSS.

R. HANITSOH,

Honorary Treasurer, Straits Branch Royal Asiatic Society.



## Mantra Gajah.

BY W. GEORGE MAXWELL.

“The book of mantras\* used in connexion with elephants; taken from the mantras of Tunku Mantri Ibrahim bin Jaffar, which are in the possession of Che Pandak Abdullah and committed to writing by Toh Sarif Aman; mantras which have come down from the Datohs Sri Adika Raja of Ulu Perak, Toh Kalaung and Toh Kalalang, to Toh Muda Abdul-rauf and from him to the present day.”

With these words ends a small Malay manuscript in my possession of which I have made the translation that follows.

Of the persons mentioned I have not been able to discover much that throws any light on the original source of the mantras. Tunku Mantri Ibrahim is the well-known Mantri of Larut, who was banished to the Seychelles after the Perak War and who, in the days of his greatness, owned a large number of elephants. The present Tunku Mantri Muhammad Isa, the Magistrate in charge of Selama, is his son. Orang Kaya Kaya Sri Adika Raja is the title of the principal chief of the district lying in the upper reaches of the Perak river on the northern boundary between the Malay States under Siamese protection and Perak.

To the present Datoh Sri Adika Raja, Wan Muhammad Salleh, i.s.o., I am indebted for much assistance in the enquiries which I have made regarding these mantras.

The first glance at the mantras shows that, while a few are purely Malay, the majority of them are in a language which is not Malay, and that some are partly in one language and partly in the other. The two languages appear even to have

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\* The Malays have borrowed the Sanskrit word mantra, which denotes a charm or magical formula. I must apologise for its constant use in this article, but it is a word which cannot be adequately translated.



been mixed, or fused, for in some of the mantras which would appear to be non-Malay a great proportion of the words have Malay meanings. Of this section nineteen contains an example. But this, as will be suggested below, is most probably only the result of the corruption of the sound of non-Malay words in the mouth of a Malay. In order to emphasize the difference between the non-Malay and the Malay words, the former are printed in capitals, and the latter in italics. [In the manuscript, which is in the Malay character, the writer has made use of the Arabic vowel marks in writing the non-Malay words.] Where there are any signs of corruption I have, wherever I have considered it useful, given the meaning of the Malay words. Each of the purely Malay mantras is followed by a translation.

A perusal of this collection of mantras shows that not only is there a mixture of languages but that there is an extraordinary jumble of religions. Rama appears both in the Malay and the non-Malay mantras and is generally placed in antithesis to the Great Sages either of Hinduism or of Buddhism. The purely Malay mantras, which are only three in number, and confined to sections 4 and 5, are of general import only, with no particular reference to elephants. Of these mantras the second begins with *Bi'smi-'llahi'r-rahmani'r-rahimi* and the third ends with *la-ilaha illa-llah Muhammad rasul Allah*.

The Azazel, who is described in the first Malay mantra as a "headman of the forests," is perhaps the Azazel of the sixteenth chapter of Leviticus, who is supposed to have been either a pre-Mosaic Devil or else a spirit of the deserts and wildernesses.\*

---

\* "The scapegoat" is the translation of the Revised Version of the Bible, but a marginal note states that the Hebrew word is Azazel. Substituting the word Azazel for the word scapegoat the passage is as follows.

"And Aaron shall cast lots upon the two goats, one lot for the Lord and the other for Azazel. And Aaron shall bring the goat upon which the Lord's lot fell, and offer him for a sin offering. But the goat upon which the lot fell for Azazel shall be presented alive

“The Samil of the first mantra is probably Samhail, of whom D’Herbelot has the following account :

“SAMHAIL, nom d’un Ange qui gouverne le sixième ciel, “selon les rêveries des Musulmans.

The last mantra calls on Betara Guru and Betara Kala who are identified with Vishnu and Shiva respectively \* (The derivation of Betara being the Sanskrit avatara “descent,” according to Crawford, or according to Favre the Sanskrit battara, “respectable” §)

In so short a space it would be difficult to find more variety and confusion.

All the elephant owners and elephant drivers to whom I have spoken in Perak on the subject of the non-Malay mantras were more or less—as they knew more or less of the *ilmu gajah*—“the science of elephants”—familiar with the words of the mantras and with the medicines prescribed in the book, and one of them who was extremely interested in my enquiries into the *asal ilmu*—“the source of the science,”—has recently presented me with another manuscript containing similar mantras.

All my informants admitted their entire ignorance of the meaning of the non-Malay words, and not one of them made the slightest attempt to suggest any interpretation—They all agreed however in ascribing a Siamese origin to the mantras,

---

“before the Lord to make atonement with him, and to let him go to “Azazel in the wilderness”

D’Herbelot gives a different account of Azazel in his *Bibliothèque Orientale*. He writes as follows :

“AZAZIL, anges qui sont les plus proches du trône de Dieu. “On les joint ordinairement avec les *Afrasis* qui sont les *Seraphins*, “et avec les Kerubiin ou Chérubins. Saadi fait mention des Azazil “dans la préface de son *Bostan*: cependant il les comprend tous “collectivement sous un nom singulier; car il dit que lorsque Dieu “distribue ses grâces, Azazil dit, avec une profonde humilité: c’est “de vous seul, Seigneur, que tout notre bonheur dépend.”

\* Crawford Malay Grammar p. cxviii, and Skeat Malay Magic p. 85.

§ Favre Dictionary II p. 255.

R. A. Soc., No. 45, 1905.

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\* Crawford Malay Grammar p. cxviii, and Skeat Malay Magic p. 85.

§ Favre Dictionary II p. 255.

R. A. Soc., No. 45, 1905.

and they unanimously attributed the whole of their knowledge of the capture, training and treatment of elephants to the Siamese.

That the Malays are correct in admitting their indebtedness to the Siamese for their knowledge of elephants is not however admitted by some authorities.

Crawfurd was of opinion that the Malays obtained their knowledge from India. He writes "the popular name for the elephant everywhere is the Sanskrit one, *gajah* \* but as the animal is a denizen of the forests of the Peninsula and Sumatra, the probability is that this has arisen from the Hindus having instructed the natives in the art of taming it, a supposition corroborated by the fact that *all the gear and trappings of the elephant with the name of the conductor are also Sanskrit.*" †

In Maxwell's Manual of the Malay language, the rash concluding statement is considerably modified as follows.

"The elephant is most generally known over the Archipelago by its Sanskrit name *gajah*. Sanskrit terms are also used to signify the driver of an elephant and several articles used in connexion with the animal."

The following list † is given.

<i>English</i>	<i>Malay</i>	<i>Sanskrit.</i>
Elephant	Gajah	gaja.
Elephant driver	Gambala	gopala (herdsman).
Goad	Kosa	ankuṣa.
Foot chain	anduwan	andu (chain).
Front part of the head	} Gomba	Kumbha.
Unbroken, vicious, <i>musth</i>	} meta	mada.
Hobbles	sengkela	ṅrinkhala (chain).

\* *Biram* is used in many hiknais instead of *gajah*. Its derivation is not given in any Malay dictionary in my possession.

† Crawfurd Malay Grammar p. clxxviii. The italics are mine.

‡ Another word might be added. *Mengkuna*, the Malay word for a tuskless male is obviously the Indian word *Muckna*.

“From these circumstances we may probably conclude, with Crawford, that the art of training and domesticating elephants was first learned by the Malays from natives of India. The words of command used by elephant-drivers in the Malay Peninsula appear, however, to be adapted mainly from the Siamese, and it is from this people that the Malays of the continent have acquired much of their modern knowledge of the art of capturing, subduing and training the elephant.”\*

With all the deference that is due to these two authorities, I suggest that the truth is possibly contained in a legend which is preserved in the thirteenth *cherita* of the *Sejarah Melayu*. The story is as follows. “The headman in charge of the elephants of Sultan Mansur, King of Malacca, was Sri Rama, a Kshatriya by birth (*asalnia shatria*). [Incidentally we are told that he was a drinker (*peminum*), and that always, when he presented himself before the (Muhammadan) King, arrack was given him to drink]. One day Kanchanchi, the elephant that the king himself always mounted, escaped into the forest, and all Sri Rama's efforts to retake it were unavailing. Then Sri Rama said “there are, too, people in this country, who know (about elephants)” (*ada juga orang yang tahu didalam negeri ini*),† and he reported the whole matter to the king. Thereupon the king ordered enquiries to be made through Malacca to discover if by chance there was any one who knew the science of elephants (*ilmu gajah*). Now at this time the king of Malacca had as prisoner Maharaja Dewa Sura, the king of Pahang, a country abounding in elephants, and it was reported to the king of Malacca that Maharaja Dewa Sura was deeply versed in the science of elephants (*terlalu tahu ilmu gajah*). A message was sent to Maharaja Dewa Sura who undertook to recapture the elephant on the condition that he was set free from the prison in which he was confined. He was accordingly

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\* Maxwell. Manual of the Malay Language, p. 18.

† With all due deference, I submit that Dr. Leyden by translating these words in the Malay Annals as “there are people who are acquainted with the interior of this country” has missed the whole point of the story :—

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“released, and forthwith caught the elephant. Thereafter the king of Malacca ordered all the young men at his court to learn the science from Maharaja Dewa Sura; for it was the king’s custom, whenever any person was very skilful regarding elephants or horses or in the use of weapons, to have the youth of his court taught by that person at the king’s own personal expense.”

The salient points in the story are that the headman of a Malay king’s elephants was a Hindu of the warrior caste (who, at the present day, would perhaps have been known as Ramasami); that he was aware of the existence in the country of a knowledge of the art of catching elephants, whereas apparently the Malay king was not aware of it; that in the king of a country on the east coast of the peninsula, far removed from the influence of India or Sumatra, was found a skilful exponent of the art; and finally that his art differed from that of the Hindu.

It is suggested that it is possible that the deductions which may be made from a purely legendary story may have some foundation in fact; that is to say, that, when the invasion of the Peninsula from Sumatra took place, the invading Malays brought with them a knowledge of the training of elephants derived from India, but that at the time of the invasion the inhabitants (whoever they may have been) had already a knowledge of the management of elephants.

My efforts to discover any Malay tradition regarding the early history of the art of elephant training were not successful. In answer to my questions, my Malay elephant driver friends were able to state regarding these mantras very little more than they were *katurunan deripala siam* “descended from Siam.” For as many generations as they could count they were convinced that the mantras had been in the hands of their Malay ancestors. They knew no tradition of *siam* elephant catchers or elephant trainers being in the country. They had no idea why the *siam* came into the country nor why they imparted their knowledge to the Malays. How, why or when they acquired their present knowledge they could not say, but of one thing they were certain and that was that it was *katurunan deripala siam*.

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It is well known that the Malays have the same tradition regarding the old mining shafts that are to be found in various localities throughout the Peninsula. Everywhere they are called *lumbong siam*. "Siamese mines." In the gold area of Ulu Pahang I have even heard the word used as a verb with reference to land that had been so extensively pitted as to be practically worthless. *Tanah itu sudah siam* a Malay will say, meaning that the land has been worked out by a long-past generation of "Siamese".

It is, I believe, a generally accepted theory among scientists that these shafts are not really Siamese, but are the work either of the Indonesian race whose tools were the *batu lintar*, or else of the Mon-Khmer race who populated the southern part of Indo-China before the invasion of the Lao, or Thai, from the north. (As members of the society will remember, the affinity of the Mon-Khmer language with the dialects of the "aboriginal" tribes of the Malay Peninsula was pointed out by J. R. Logan\* and elaborated by C. O. Blagden †) I was therefore anxious to learn whether the Malays ascribed the mantras and the mining shafts to the same period or to the same race of *orang siam*. But this connexion of ideas appeared to be new to them, and they could say nothing more definite than "perhaps."

An examination of the mantras shows that they consist of more or less corrupt Siamese words, the uncouth sounds of the words probably having been considerably altered in the mouths of the Malays during the generations that the mantras have been in use. It is probable that though the mantras are now preserved in manuscripts their commitment to writing is only of recent date. For instance, the manuscript now translated is only twenty-six years old, and there is nothing to show whether it is a copy of an older manuscript or a collection of mantras committed to writing for the first time. Of what Colonel Yule termed Hobson Jobson words we probably have two excellent examples in sections 9

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\*Journal of the Indian Archipelago vol. IV. p. 345.

† J. S. B. R. A. S. No. 27 p. 21.

B. A. Soc., No. 46, 1905.



and 10. *Si Kambing Hutan* means in Malay "the goat-antelope of the forest" (the serow, *naemorhaedus sumatranus*). *Kumbang* is the generic Malay term for a beetle, and no particular species is known, so far as I am aware, as *Si Kumbang Hutan*, the forest beetle. And neither goat-antelope nor beetle can have any possible connexion with either mantra.

A Siamese to whom I read over the mantras recognized the Siamese sounds and words in them, but every now and then a mantra or part of it would puzzle him and after trying various sounds and tones he would say that that is was not Siamese.

If this is really the case, the question is whether the words are merely so corrupt as to be unintelligible, or whether they are in another language.

The text shows that the principal object of the mantras is to avert misfortune: they are defensive rather than aggressive. The terms used to denote the various kinds and degrees of misfortune require a word or two of comment. The general term is *pilak*, which, though it is not to be found in Malay dictionaries, is a fairly common, and, I believe, a purely Malay word.

*Bahli*, *genaling* and *jinggi* are practically synonymous terms for evil influences which the Malays believe to be brought into play by the death or capture of a wild animal. (An account of the Malay ideas on this subject, with a collection of mantras and a description of the driving out of the *bahli* will be found in an article by the present writer in Blackwood's Magazine for October 1903). For *bahli* a Sanskrit origin from *vadha*, killing, has been claimed.\*

*Genaling*, though now a Malay word in ordinary use, appears, with an antithetical form *gunaling* in the non-Malay mantras, and has perhaps a non-Malay origin. If its origin is Siamese, it must have become somewhat corrupted as there is no "g" in Siamese.

*Rengab*, a word which appears frequently in the mantras and in the text, where the compound from *pe-rengab* is more

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\* Maxwell. Manual of the Malay language p. 34.

common, and which is used by Malay *pawang*s to denote a charm which extinguishes an enemy's power of inflicting an injury, i. e. the Siamese word *ra-ngab*, an antidote.

*Chang* is the Siamese for an elephant and the meaning of the frequent expression *Om rengab maha rengab chang rengab* is therefore obvious.

*Chengrai* which also appears both in the text and in the mantras is used in Malay to mean any mishap or mischance, (with a curious special application to the rite of circumcision) is the Siamese word *chang-rai*, ill fortune or ill omen. (Both *rengab* and *chengrai* will be found in Wilkinson's Malay dictionary as Malay words.)

*Chemahang* is described in section 83 of the mantras as being in a language that is not Malay, and it is translated for the benefit of the reader. (*Chemahang arti-nia bahasa malayu kena pilak gajah atau kena pilak kayu atau kena chengrai atau kena bahdi yang besar*). I cannot find the word in my Siamese dictionary, but suggest that the Malay word *jembalang*, an evil influence, is a corruption of it or connected with it.

The first thing that is desired is a translation of the non-Malay mantras. It is not within my power to attempt such a translation. All that I have been able to do is to provide a literal translation of the Malay text and Malay mantras. Apart from the translation of the non-Malay mantras, we are confronted by many questions which demand answers.

Are similar mantras in use among the Siamese?

Do these mantras contain any element that is not Siamese?

If so, what is it, and is it possible that the Siamese lore is superimposed upon an older system?

Apart from the mantras, an examination and comparison of the Malay and Siamese systems of elephant catching and training may assist us in our enquiry, and for this purpose I have given in an appendix a brief account of the Malay system with a list of some of the technical terms used in connexion with the training-stocks and a list of the words of command. The first list was compiled by me in Perak and the second is copied

from the one supplied by my father in the second number of the Notes and Queries of this society. It will be seen that the words of commend used in Perak differ from those in Kedah, and that they certainly are not Malay words.

Lastly, is there any similarity between the Malay and the Siamese system of the medical treatment of elephants? In an appendix I give a list of the plants mentioned in the Malay text, and Mr. H. N. Ridley has been kind enough to supply their scientific names with a brief description.

It will be noticed that many of the remedies are symbolical. The use of three or five limes, that grow on a single stem, mixed with the love grass, that clings to every thing, is given in section 47 as a device to make a wild male elephant remain with a herd of females. The medicine to prevent an elephant from swinging its tail is the rubbish that collects round posts that stand in a stream and shake to and fro with the force of the current. (section 57). To make an elephant return to its master's house of its own accord from the forest the remedy is to take the cooking place, ladder and threshold beam of an abandoned house and to give fragments of them to the elephant with its food (section 80). To make an elephant fat one remedy must be given during the full moon and while the elephant is standing in water above the swelling of its belly, and another remedy must be given when the moon is rising. (section 78).

The remedies include such extraordinary articles of diet for a herbivorous animal, as rhinoceros' navel (section 78), fish (78) prawns (75) and oxhide.

The use of arrack (section 62) is hardly orthodox perhaps among Muhammadans even as a medicament for an elephant, but the prescription in section 83 of water from a pig's wallow is most extraordinary, for it would be difficult to imagine anything more abhorrent to the average Malay.

Many of the plants mentioned such as *kunyit trus*, *lengkuas*, *jenjuang*, *galenggang*, *gandarusa*, from part of the ordinary pharmacopeia of the Malays, but it will be interesting to know to what extent the remedies have been borrowed from, or are common to, Siam.

## A LITERAL TRANSLATION OF THE MANTRA GAJAH.

(Note. In the mantras Malay words are printed in *Italics*, Non-Malay words in *Capitals*).

This is written to set forth the mantras used in connexion with elephants. If we intend to build an enclosure in which to catch elephants, or if we wish to look for a suitable site for such an enclosure, or to select the best place for the gate of the enclosure, or if we desire to snare an elephant either when confined in the enclosure or at large in the great forest, in all these cases it is necessary that we should know the teaching of learned men and the auguries and signs, and then perchance God Almighty may grant a safe and prosperous issue to our undertaking.

1. If, when we inspect the proposed site for an elephant enclosure, we find many ant-hills in it or much earth that has been undermined by ants, that place is not a suitable one and much sickness will result if it is used. If there are two trees growing there so close together as to resemble stocks, or if two trees grow there interlocked, or if dead stump is there, the place is not a good one. It is not a good place if in it there are roots or jungle creepers twisted into inextricable knots, whether it be on the ground or above it. And it is a bad place if there is in it a hard wood tree of which part is dead and part alive.

2. This deals with the selection of the site for the gate of the enclosure. If there are jungle creepers growing one on top of the other the place is not good, nor is it good if a white ants' hill or any large ant-hill is found in front of the gate or within the enclosure. It is not good if there is low lying flat ground in front of the gate or within the enclosure. If in front of the gate two branches of trees have joined and grown together or if the gate is overhung by interwoven creepers, the place is not good one for the purpose.

3. This deals with the lore in connexion with cutting the wood for the post of the gate to the enclosure. When the first chip falls from the axe to the ground we look carefully to see whether the bark his uppermost or not. If it fall with the bark

underneath the wood will not do for the gate post, but if the bark be uppermost the wood is well suited.

4. Now when we burn the candle in front of the smaller enclosure to learn the augury whether the elephants will be early or late to enter the enclosure we should look at the wick of the candle : if the wick bends in our direction, that is a sign of the guarantee of the success of our enterprise, and if it bends away from us it is a sign to the contrary. If the wick bends to the right it is a sign that we should take the task in hand further to the right, whether our intention be to make an elephant enclosure, to select a clearing for hill padi or to build a house. If the wick bends to the left, we should go to the left. But if the wick bends over in a ring so that the end meets the stem, we must not utilize the ground for any purpose ; nor is it good if the wick burns with a double flame like the twin gravestones over a tomb. Nor is it good if the wick in burning becomes twisted. But if the wick burns upright and the flame rises straight, then the place is good one both for an elephant enclosure and for a dwelling place : and by the blessing of God our enterprise will be protected. And we shall obtain an advantage and freedom from danger if we repeat this charm when we light the candle.

‘ HEI JEI SIK PAK KALAK JEISAK PREI SHARAPAN CHAN-  
GRAI SAHA MAIHIN KAKA NILU AH AH AH.’

or we may use this charm.

*As-salam aleikom*

*Hei sri chahia.*

*Janganlah engkau berdusta.*

*Dan janganlah berbuat bohong kepada ku.*

*Akulah bersipat dengan sipat tuan.*

*Angkau bersipat dengan sipat hamba.*

*Tunjuklah alamat yang sebenarnya kepada ku.*

*Aku jadi deripada nur Allah*

*Angkau jadi deripada thelmak Allah*

*Aku menanggung ammat Allah*

*Angkau menanggung khianat Allah*

*Akulah bersipat hu berkat Haallahu*

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[ Hail ! bright and gracious one ! Do not be untrue to me, and do not make a lie to me. I stand here as master, you as slave. Show me a true sign. From the brilliancy of God is my creation, yours is from the darkness of God. I am supported by the protection of God, you have abused the confidence of God. I have the attribute of the blessed saying "Allah is God." ]

5. This deals with the opening up of forest that has never before been put to any use by man. It may be that we intend to make an elephant enclosure, or to dig a ditch, or to cut a water course for a mine, or to dig a hole for the posts of a house, or to dig a hole for the gate posts of an elephant enclosure, or to put up its fence : in all these and similar cases we must avail ourselves of all the auguries and lore in connexion with the matter and then perchance the blessing of God may attend our enterprise and give it a successful issue.

We first apply to the *penghulus* [headmen] who hold sway over the forest, and this is our petition.

*Bi'smi-'llahi'r-rahmani'r-rahimi.*

*Hei Azazil dan Samil Akbar.*

*Angkau hukomkan seklian anak chuchu chichit mu.*

*Jangan angkau bri mengaru-nyaru menyakiti MARA-*

*NA JANAI aku,*

*Dan anak buah aku,*

*Dan anak istri-ku,*

*Dan rumah tangga-ku,*

*Dan segala tanaman-ku,*

*Dan segala kahilopan-ku,*

*Dan segala kerja buat-ku,*

*Dan segala kampong laman-ku*

*Aku berdiri dengan firman Allah Takla.*

*Aku berkata kahanlak Allah Taala.*

*Berkat ya hu hak.*

[In the name of Allah the merciful and compassionate. Oh Azazil and Samil Akbar do ye order all your children, grand children and great grand children not to interfere with me nor to bring sickness upon me, nor upon my children, my

family and my household, nor upon any living animal of mine, anything that I have planted nor any work of my hands, nor upon anything within my yard or ground. I stand here with the command of Allah Taala. I speak the will of Allah Taala. By the blessing of YA HU HAK.]

And when we have said the above we say the following words.

*Hei Betara Guru, Betara Kala,  
 Angkau hukumkan segala raiat mu,  
 Jin dan bota, segala iblis,  
 Segala jemalang dan segala pilak dan bahali,  
 Segala hantu syaitan dan segala iblis.  
 Aku minta hukumkan kepada mu,  
 Jangan engkau bri mengaru-ngaru menyakit-nyakiti-ku,  
 Dan anak istri-ku,  
 Dan segala hamba sahaia-ku,  
 Dan segala kahilopan-ku,  
 Saktian SAKI BEGAI ku.  
 Jangan engkau bri segala raiat mu mengaru-ngaru dan  
 merenchanai.  
 Aku pun sa'orang hamba Allah,  
 Angkau pun sa'orang hamba Allah,  
 Mari-lah kita bersahabat.  
 Dan ber kasihkasihan dengan-ku.  
 Dan aku duduk didalam ajaalillah.  
 Angkau duduk didalam murka Allah.  
 Berkat laillahilallah.  
 Muhammad rasul Allah.  
 Ya Hu Hak.*

[Oh Betara Guru, Betara Kala, do ye order all your servants, the jins, the *bluts*, all the devils all the powers of mischief all the spirits of Satan and all his devils. I ask you to order them to obey you. Do not interfere with me nor bring sickness upon me, upon my wife and children nor upon my slaves nor upon any living creature of mine. Do not allow your servants to interfere nor make mischief. I am a slave of God as also are ye. Come let us be companions and friends. I dwell in the handiwork of Allah: you dwell in the wrath of

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Allah. By the blessing of the saying "there is no God but Allah, Muhammad is the prophet of Allah." YA HU HAK.]

6. This deals with the driving away of forest spirits. We can either drive them away or order them to stand aloof. Whenever we enter upon any enterprise in the great forest or begin to build the larger or smaller elephant enclosure we must repeat the following mantra.

OM KILAI MAIYUT KACHARI KACHARI KILAI DAK

KILAI *dan terbang* KACHANG *ka kanan sah pindah turun* KA WAI HANTU KAMAT KAMAIA NYAMISAN CHANGRAI MAIYU KATUWAI [Fly to the right: without fail leave your place and descend].\*

7. This deals with the forest spirits. We either order them away or command them to stand aloof when we are driving the elephants into either the larger or the smaller enclosure. We first repeat the mantra; then we blow with our mouths to right and to left, and then we set off to drive the elephants. This is the mantra.

OM BARAH BARAI PATARI PANARAI PATA BUNA RAAMIA-TIN *sah pindah ku turun* LAWI MARAATANGON KAMAI KAMAYAL. [Without fail leave your place and descend].

8. This is the mantra to use when we invade the forest, and it can be used over the *kunyit trus* § that we give to the men as they enter the forest to drive the elephants or it can be used when we ourselves enter the forest.

OM BIK BIK BANG BANGTU BANGRU BANGTI PADA BANG KUMAI MAYA OM RENGAB SARAPA RENGAB.

It is used for the big elephants as a *perengab*. † Another mantra that has the same effect is the following.

\* As is already explained, the words in brackets are a translation of the Malay words only of the mantra.

† A *perengab*, or *rengab* charm is one which extinguishes an enemy's power of inflicting an injury.

§ For *kunyit trus*, and other plants see the appendix.



OM KANCHING KANDAI RON PITAI NAKA NARA RU PIPAT CHAMDI  
ROM TI' PAMAN DAPUN SARAPA RENGAB.

9. The name of this mantra is *Si Kambing Hutan*, and we use it when we are about to enter the great forest, or to clear the boundary lines for either the larger or the smaller enclosure.

It is as follows.

OM BANGCHONG BANGDI BANGRU BANG TIPAT BANG  
KAMUD KAMAYA OM SARP BANG SIDIKAN GURU AMBUB ATI-  
YAH.

10. The use of this mantra is to drive away the spirits when we are about to enter the forest, and the name of it is *Si Kumbang Hutan*.

OM BIK BANGTU BANGDI BANGUI PADA BANG KAMUT MAYA OM  
RENGAB SARAPA RENGAB *puah kakiri puah kakanan* [turn aside to right and to left.]

11. This is a *perabun*\* charm for elephants. We repeat it when about to enter the forest, whatever be our work, and no misfortune will befall us.

ON GENALING PACHANARU PACHANARI SERBANG KOM  
BANGKAK TAKA BANTING LAIPAT PUCHUPAI BANG KOM  
BANG KUMAYA.

*turun kau pinilah kahutan yang pana puah karab turun  
kapadang yang mahaluas karimba yang maha besar  
salah ka kanan ku salah ka kiri ku puah.*

[Descend, move away to the boundless forest, in silence descend to the wide plain, to the vast forest ; you are wrong if you turn to right or to left. Avaunt].

12. This is a *perabun* charm which we use when we are seeking a solitary elephant, or when we enter the forest to drive a herd into an enclosure, or when we wish to drive away the forest spirits. It keeps us from all misfortune and mischievous influences in every enterprise in the forest.

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\* A *perabun* charm is one which dulls the senses of an opponent and makes him unaware of our presence.

OM GENALING PANCHANARAI SERBANGKOM BANGKAK  
TAKA BANTING LAIPAT PACHUPAI BANKOM BANGPI KOMLING  
KUMAYA *turun kau pindah kahutan yang pana puah karab*  
*turun kapadang yang maha luas karimba yang maha besar*  
(practically the same as No. 11).

13. This is the mantra we use when about to drive the herd either into the large or the smaller enclosure. We repeat it over the *kunyit trus* which we then sprinkle in the direction taken by the herd; and then with our mouths we blow in the direction of the gate of the enclosure.

OM KUNDANG DING KUNDANG SAI TALAUNG TEGULING  
DI PANTAI RAMBUT TEGULONG DI HADAPAN KU TIBA  
KANAN TIBALUN KIRI KU SIKAB PIAH NITIK MU HEI CHANG.

*Aku tahu asal mu menjadi,  
Deripada markubulikam mulia.  
Kau turut kata ku,  
Jikalau kau ta'turut kata ku,  
Mati di bunuh Sri Rama,  
Jikalau kau turut kata ku,  
Di bidopi maha Rishi.  
Kaluh! Kaluh! Kaluh!*

[I know whence you had your creation. It was from Markubulikam the noble. Do you obey my words. If you do not obey, you will be killed by Sri Rama; if you obey, you will be kept alive by the Maha Rishi.

Kaluh! Kaluh! Kaluh!]

14. This is a *perabun* charm for elephants, and we repeat it whenever we enter the great forest or any virgin forest that has never been trodden by man. It is an invocation to drive the forest spirits away from the elephants.

OM GENALING PACHANARAI SERBANG KOM BANGKAK  
TAKA BANTING LAIPAT PACHUPAI BANGKOM BANGKUMAYA  
turun kau pindah kahutan yang pana puah karab turun  
kapudang yang mahalnas karimba yang mahubesar.  
(practically the same as in No. 11).

15. This mantra is called the King of the Elephants.

We go to some high land and make a hole in the ground by turning round on our heel, and we take the earth which we have thus worked out of the hole and over it we repeat the mantra three times in a single breath. We next put the piece of earth upon the crown of our head; then we put it down on the ground in front of us, and again we put our heel upon it, and turn round on it three times repeating the same mantra three times again in a single breath.

The use of it is to stop the herd and to prevent it from going far.

OM PAWPANG MAHA PANG PIT OM TAW SAHOM  
SITIKON TANA SAHOM.

16. This is to keep the herd fixed in one place and to prevent it from going far. The meaning of it is "in chains."

OM BANG CHANG BANGDI BANGTU BANGRU BANGTI  
PADA KAMU KAMAYA OM BANG SARAPA BANG AH AH  
AH.

17. This mantra will restrain the elephants, and prevent them from going far. We break a stick into eight pieces, or we break it into many pieces, as we walk round the place where the herd is feeding or resting; and as we thus surround the herd we repeat the mantra.

PANTANG POK CHAKÂI TAMANG POK CHAKÂI BANGKANG.  
PAK CHAK AI.

18. This mantra is used when the elephants have entered either the larger or the smaller enclosure. It is repeated over the *kunyit trus*, which the *bomo* \* then either himself sprinkles all round the enclosure or gives to the men to sprinkle. While this sprinkling is being performed one must not cross the enclosure.

IKRIMIN PUNI CHI CHANARAK.

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\* The *bomo* is the man in charge of the operations. He is selected for his knowledge of the mantras and of the rites, and for his experience. He generally has some pupils under him who are known as the lesser *bomos*.

19. This is the mantra we use when we arrange the noose to prevent it from afterwards slipping from an elephant's foreleg.

OM KAW KATA CHANGRAMAI KU IKAT PEKARANG KU  
BERTA PEGANG KAU PERANG LENGAN TANGAN KITA BERTA  
KANCHUBKAN KAKI KITA.\*

20. When we are about to noose a big elephant, and are putting the noose in position, and spreading it out, we pay our respect to Nabi Noh, † and ask for permission to use the tree to tether a *raiat* of Nabi Sleman. When the noose is spread we sprinkle it with *kunyit trus*, and then draw the slip knot, and after that has been done we repeat this mantra. It is a *rengab*.

OM BAT KU CHABAT DIRADAI BAWBANGKAT CHANG  
PAJA NAK KARAI OM MAHA RISI BU KATARAK  
TAN PARA KAMTU.

And again we sprinkle the *kunyit trus*.

21. This is a *perabun* which we use when about to snare an elephant in the enclosure, or about to snare a very cunning elephant in the forest.

We repeat it when we have spread the noose, or we may repeat it over the *kunyit trus* which we may then sprinkle upon the noose.

OM GENALING BATING TAMDIT BATKALING SALIK  
SANTOM OM KAMIN PALAI RANG HA TAMKU LIMA-  
PAINA KARKU LASANTOM.

This is an alternative form.

OM CHAW TAW PALAI RANGKA TAMKU LIMAPAINA  
KAILIM PARAK NAK TAWTA WANTA.

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\* Many of the words of this mantra are Malay, though they do not form a sentence. Their general sense is "tie, hold our hand (or foreleg) and fasten up our leg."

† Nabi Noh (the patriarch Noah) is supposed by the Malays to be in charge of all trees and plants. All animals are under Nabi Sleman (King Solomon).

22. This is the mantra to use when we are about to snare an elephant in the forest or in the enclosure. We use it because we are letting loose the forest spirits, and we repeat it when we set the noose.

OM KANCHING KANDAI KAI PITAI LAKAROM KAU CHAKAN TANGIAK KON LANGKA PARBU MUHA PURSIDI KAU GURU AMBU YATI.

23. This is a mantra which the lesser *bomos* use when they intend to noose an elephant inside the enclosure. If the chief *bomo* is present he repeats it and the lesser *bomos* say it after him: if he is not present they repeat it without him. It sets them free from all powers that bring misfortune and mischief.

OM GENALING CHAP CHAP GUNALING RENGAB GUNALING OM CHAP GUNALING SAH SUHAL.

24. This is a *perabun* for a cunning elephant that is suspicious of the noose that we have set for it, and that refuses to go near it. We repeat the mantra over some dainty such as sugar cane or plantain which we put in a place where he will see it and eat it.

PARDOM BANGKOM SUHAL.

25. In order to set a big elephant\* free from all evil influences when we take it out of the smaller enclosure we repeat this mantra over some *kunyit trus*, which we sprinkle over the elephant from in front.

OM GUNALING PARIH PAMPARIT PAI PANA BARASIN MARONG SALIK SAMSATOM SARPATOM PARPAI TATBON TINGTAI PAT KAUCHAT PI HAI HAKATITOM BANGTOM  
*turunlah pindah kau kahutan pana puah karimba turun kau kapadang yang mahalua karimba yang maha besar puah rengab.* (practically the same as in No. 11.)

26. This is what happens when the chief *bomo* makes a feast. We make every kind of sweetmeat and sweet thing,

\* The bigger the elephant the stronger its attendant influences of misfortune and mischief.

and gather together all the men who are working in the enclosure, and we all eat together at the gate of the enclosure. We make a prayer that all harm may be averted from us, after that we repeat this mantra three times at the gate of the enclosure.

PAWBOB YABOB KINDI JUDI TANGPCNG NGAI MALAB  
MIA JI CHANAK PASTA TARU CHAIKOL CHAKUKAING.

This is an alternative form :—

OM PUAN OM NYAMIDAK MIDANG MIDAK TIKALANG  
SATAYANG CHADIN KABAI PAROK PANGALOK TAWMU  
CHAK KAUCHAK TOM.

27. This is what happens either when the chief *bono* or the subordinate *bomos* make a feast. The feast can be made either at the gate of the enclosure or in the middle of the enclosure. We invite our friends and feast ; and we supply the following materials *bras kunyit* (uncooked rice dyed with turmeric) and *bras basah* (washed uncooked rice) and *nasi pulut* (cooked rice of a glutinous kind, *oryza sativa*), every kind of sweetmeat, a fish, a little gold and a white cloth. We place these things either at the gate of the enclosure or in the middle of the enclosure, and we breathe (*jampi*) over them the following mantra.

PARPOM CHANTI RANG TURUN DISITU KARONG PALI  
PARPAI CHAUPANANG BINGKALA KIN LIYURAK SAMA-  
HALAB MAHACHAI KAIKU ISON RAKAI TANGNAU SUKUN  
LYU KAULAB KAU KHAN KAIKU KAIKU KAIKU AH AH  
AH.

28. This is the mantra we use to ask the spirits for the elephant when we are about to put it in the stocks, where it is kept while being taught the words of command.

OM BAWK KAU NAK KAU NAI RENGAB PATSUWAT  
PATSUWAT PATSUWAT.

Then straightway we strike the elephant three times with the goad, and the elephant will scream when we do it. Thereupon the elephant will cease to be disobedient, and will obey us.

29. This is a mantra to expel the spirits of the *renat* [the flooring of the stocks]. When the flooring has been made, and we are ready to put the elephant in the stocks, we sprinkle the flooring with *kunyit trus* and sweep it with the leaves of *chambacul* and *salanchang*.

OM BARANG BARAT PIKAT PIKAU CHANG RAMBIN  
PARAI *sah pindah kau turun lari hantu rimba puah rengab.*  
[move from hence, flee away down, spirits of the forest.]

30. This is the chief of all the mantras used for elephants. We use it in all undertakings and it is the first that we repeat. We can especially use it when we are ready to put an elephant in the stocks, or wish to take the goad to an elephant that has been taken out of the stocks. In the latter case, sitting on the elephant's neck we strike it with the goad, and then throw the goad away behind the elephant. Another man picks it up, and takes it and shows it to the elephant. This is done three times, and each time we repeat the mantra.

OM GENALING GENALIGENALING NUKTING GENALING  
NUKTAI KOT KOT TAKONG KALA GUMLUT KOT GENA-  
LING TAKONG KALA OM SINGKU PASING CHANGRAI OM  
SAH KUPASAH CHANGRAI ARAH ARAH TARONG PRAT  
TINJAU BALI TURUN BERTANTI SALAH DIBATANG  
TUBOH KU WI MITARAU KAUMILUH SIDIKAN GURU  
BATIA PARAKAU HEI GALUH AH AH AH.

31. The name of this mantra is the King of the *Bomos*. We use for an elephant with a sore head or fever or pain in its stomach. The signs of fever in an elephant are firstly that a quantity of steam rises from its head after we have bathed it, and secondly that its head is very hot.

We may also use the mantra when we take an elephant out from the smaller enclosure: in that case, we sprinkle some water on the elephant's head after repeating it.

OM PATA BURA MAISAN KAU CHA NGAU ANGKAT MA-  
TANG PIN PINDAH AU KAU KOKLAK MATA CHANGRAI  
CHANGRAI KACHAT PI TOKPAMIN KUMI PAILU  
SARAPA CHANGRAI CHANGRAI KAU MIMAN TARA

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ANGLAIA SITIKAN GURU MU YATIA OM SITIDAK  
SITIDANG SITIGARANG KANA PARAK BATU SAM  
DIAU SAMDAK SAKAIK SAKAIK SAKADONGNA ANG-  
NONG CHAMPARAN SIAN ANGNONG CHAMPARAN PAT  
PAT CHANGRAI ANSAKSI PATARADI SARAPA CHANARAI  
MATARANG CHANGRAI KAU MIMAN TERINGLU SITIKAN  
GURU MU BATIA.

32. If an elephant is sick or has fever this is the mantra which we repeat over the water with which we wash it. We may also repeat it over *kunyit trus* which we squirt from our mouths over the elephant. We do this for three or four mornings or evenings.

OM PAPARU PAPAARAI PANARI PANARAI MAHASA MA-  
HASA KUNTA PARAH SRI RAMA PARIT TARANG SITI  
KAN U MAHA RASI RASI YAKTAMA RAHI PARAI AURAB  
AWAI DAI MUONG SARAPA ANGKAU PERONGKAN SAK-  
ANG SAKOM SARAPA RENGAB SITIKAN GURU MU  
BATIA.

This is another mantra.

OM GENALING GENALING PARAH POM PABAPAI TAT-  
BAN YANG KOI PAT KACHAT AI CHAKAT TOM BANG-  
TOM.

*turun kau pindah kau kahutan pana puah turun kau  
kapadang yang maha luas kirimba yang mahabesar.*

[practically the same as in No. 11.]

33. This mantra is used with unfailing effect to expel all evil influences from a big elephant. It is repeated over *kunyit trus* which is then sprinkled over the elephant.

OM GENALING TING CHANDAPA GENALING ANTING  
KEMALUT BITI BITI GENALING YAKUT YANATA YAPA  
PABOM PARNANG GENALING WAI SITIKAN GURU MU  
BATIA OM RENGAB.

34. To drive away the forest spirits from the little baby elephants we use this mantra.

OM PANIRANG PANARAK *maku jauh angkau pindah kahu-  
tan pana puah karimba yang maha besar turun kau kapadang*



*yang mahaluas.* [practically the same as in No. 11.]  
SIDIKAN GURU KAU OM BAK BATIA.

This is another.

OM CHAWI CHAWAT CHAWI CHAMEAT MADA CHOH *lau pindah kahutan pana puah karimba bahana turun kapadang yang mahaluas turun karimba yang mahabesar.* [practically the same as in No: 11] KAMAI MAIA.

35. This is a *perengab* charm for a big elephant. We may either repeat it over *kunyit trus* which we sprinkle over the animal or over *chandarwal* leaves with which we then brush it. If the evil influences are strong we sweep the elephant with a black cloth instead of with the leaves.

OM RENGAB MAHARENGAB CHANG RENGAB UNDAI RENGAB PITI PIAT YAKAROM RENGAB RAKANGLANG KARAHAI RENGAB PADAPAI MAN PONG OM RENGAB MAHARENGAB.

36. This is a *perengab* charm for a disobedient elephant.

OM RENGAB CHANGRENGAB PITAI YAKARU RENGAB PARYOM POM RENGAB RANGKONG KANG KAMARAI RENGAB PADA PAMAN PONG RENGAB MAHARENGAB SIDIKAN GURU AMBOK BATIA RENGAB.

And if the elephant is very disobedient indeed, and refuses to obey us, this is a mantra which may be repeated over the food we give it.

OM RENGAB CHANGRENGAB DAI RENGAB PITAI PIAH YAKAROM RENGAB PARIOM APOM RENGAB RANGKONG KAMARAI RENGAB PUAH RENGAB.

And this is yet another mantra for a disobedient elephant.

OM PADA PAYAMAN PONG OM RENGAB MAHARENGAB SIDIKAN GURU AMBOK BATIA.

37. When an elephant has been in the stocks for three days and we take it out for the first time and bring it down to the water to drink and bathe, we should repeat this mantra.

OM GENALING TANG CHANDAP GENALING ATING KAMALUT GENALING YAKOT YANATA BANA PAROM PARANANG WAI SIDIKAN GURU MU BATIA RENGAB.

38. This is a mantra to ward off evil influences from an elephant when we are taking it back to the stocks after bathing it.

OM YANG CHANG BANGDI BANGTU BANGRU BANGTI PADA  
BANG KAMU KUMAIA OM BANG SARAPA BANG OM RENGAB  
CHANG RENGAB DAI RENGAB PITAI YAKAR OM RENGAB  
RAKANGLANG KARAMI RENGAB PADA PAIAMAN PONG OM  
RENGAB MAHA RENGAB.

39. This is a mantra which we repeat when we mount the elephant.

OM PANG PAHAMLOK PALAI PECHAH GALONG OM DIK  
MAMAN.

40. This sets forth our powers when we are about to entice a solitary wild elephant into a noose by making it follow our tame elephants. If the wild elephant will not follow our animals, we repeat this mantra and then hurl some clods of earth at him.

MATAPU CHUMKAN MIDON YOH KAYU UMBI KAWAN  
CHAMKAN LAMANG MANU RA AMBI KAYU AMBI KAWAN  
TANGWAN TANGWAN PIRAK DUT PIRAK SITUN DURAJA  
CHAMKAN LANTANGUN RA AMBI KAWAN TANGWAN TANGWAN.

41. This is the mantra we use when we beckon onwards a solitary wild elephant that will not follow our decoy elephant. We take some *chamar* leaves and repeat the mantra over them

MATAPU CHUMKAN LION NAKCHONG ABIA KASI'AN AMIA  
KON CHOMKAN LION TANGKON PARIK DOS PARIK SITON  
DUNANG MAKARU TANGKON.

Another way is to repeat the mantra over three lumps of earth which we then throw at the elephant.

42. This is the *perabun* charm that we use when we wish to catch a herd of tame loose elephants in the forest and find that a male wild elephant is with them. We walk round the herd either once or three times repeating the mantra.

OM PAU PANG MAHA PANG PIT OM TAU TAU SITI KAR-  
TANA SAHOM OM SAUHOM.

As we finish these words we close our eyes.

43. If we go in amongst a herd of tame loose elephants and find a male wild elephant among them we repeat this mantra.

OM WI CHIT TRAWI KAM BARA AU LA SIPOH SUHOM  
DAI BANG BENG KOMBANG TIPADA SAM KOM AH AH AH.

44. This mantra will forcibly detain a rogue elephant that is chasing us: we repeat it three times in one breath.

TOT PARTOT KANCHANG KANDAI KON PITAI TOT HAI.

45. This is a *perabun* charm which we use when we decoy a solitary wild elephant; with closed eyes we repeat it three times over a leaf and then thrust the leaf behind our left ear.

OM NAK KAMBANG BUKAMBANG THALABYU CHANG  
HAI PAI.

Another general form of *perabun* charm for elephants is this. We repeat it over two leaves or over three leaves and then thrust the leaves behind our left ear.

OM NANG KAMBANG BUKAMBANG THALABYU CHANG  
HAI PAI

46. When we wish to mount an elephant in a herd of tame elephants we repeat this mantra whether there is male wild elephant among the herd or not.

OM PANG PAHAMLAH PALAI PACHAH KALONG DIK  
MIMA.

47. When a solitary wild elephant has joined our herd of decoy female elephants we use a mantra to prevent him from afterwards leaving them. We take three limes that grow on a single stem or better still five limes growing one single stem (if these cannot be obtained, two limes growing on a single stem will do), and we pick out the love-grass that has caught in our sarongs. We mix the two together and rub them over our female elephants. We also sprinkle betel-leaf and betel nut over their foreheads. Over the various ingredients mentioned we repeat this charm.

OM MA BANAK NIK MAKU AW MAK TIK MAK MAKAKA-  
RAN MANINGKAL KAK KAN TIK.

48. This is a mantra to prevent a solitary wild elephant from fidgetting and disturbing a herd of tame elephants. We repeat it as we walk round the herd, which we do either once or three times.

OM KASAK KUA TARAK HAK CHAN JINSA NAK SILAK  
SATAHA TIHAK WI SARA WIKAK WI TRAWA PUTAI YA  
ATI YAN NIK MAKURI NACHUNG TANGU KAPURUNTA  
SARA MAMA WI SARA WIKAKH WIPARU PURAK BINAT  
SIAN TIK *bulan naik jangan bulan turun ikut turut kata  
Sri Rama.*

[ let the moon rise, let it not set : obey the word of Sri Rama. ]

49. This is a mantra to make a solitary wild elephant, or a herd of wild elephants, stay in one place.

TOT SAPAR TOT CHANGLIUM CHANGKAN CHANG  
SAMA KU DHANGTANG PAHPIT SITI KAN GURU BATIK  
PARAHAI KALU AH TOT.

50. This is a mantra to beckon onward a solitary wild elephant. We repeat it over a *chamar* leaf and then beckon to the elephant with the leaf three times. As we beckon we must not look behind us.

MATAPU CHOM KAN LION TANGKUAN PARAK DUN-  
ANG MAKARU TANGKUAN TANGKUAN TANGKUAN.

51. When an elephant has been caught in our noose, this is a mantra to make it stupid, and to prevent it from inserting its tusks into the slip knot and working the noose open.

*Hei tunggal terkatup tertutup terkancing angkau  
disuroh Sri Rama. Ah! Ah! Ah!* [Hei! solitary one!  
thou art closed up, shut up, bolted up, and this by the  
order of Sri Rama. Ah! Ah! Ah!]

52. To make a wild elephant amorous of our tame female elephants, we pick some of the weed *tutup bumi* that grows in the middle of the highroads and take it root and all. We chew it with betel leaf and betel nut, and then spit it out on the elephants' forehead and brows and both ears and both

checks. We must avoid passing in front of the elephants when we release them and their goads must be kept at home with the goads of our other elephants.

53. This is the medicine for a stubborn elephant that will not learn our schooling. We take some of the *nasi-nasi* plant that grows reflected in the water, and rub it over its chest by its heart and over both shoulders. We do this for three consecutive evenings.

54. This is the medicine to soften the heart of an elephant and make it docile. We take the smaller kind of *gelenggang* plant known as *gelenggang saior* and rub it over the elephant's chest for three consecutive evenings. The plant must be gathered at evening time. Another way of softening an elephant's heart is to repeat the following charm over its food ( sugarcane or plantain ) for three mornings or three evenings.

OM DARANG MUKANIA  
 DARANG LANGLI MUKANIA LANGLI  
*Telunjuk ku akan kosa mu*  
*Hati ku akan chucha mu*  
*Tunduk tedurong kakiri ku*  
*Tunduk tedurong kakanan ku*  
*Kalau angkau ta'tunduk tedurong kapala aku*  
*Angkau di sumpah-i Sri Rama*  
*Tunduk jinak kapada aku*  
*Kalau angkau ta'tunduk jinak kapada aku*  
*Angkau di sumpah-i maha Rishi*

OM RENGAB.

[ My fore finger on your goad: my wish to subdue your wish. Bow down your head to the left. Bow down your head to the right. If you do not bow down your head to me, you will be cursed by Sri Rama. Bow down tamely to me. If you do not bow down tamely to me, you will be cursed by the Great Sages.]

55. To take away an elephant's ticklishness we take as medicine the great hairy caterpillars of the red kind and rub them over the elephant's thighs.

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56. To cure an elephant of the trick of shaking itself free from its load, this is the medicine: we take the roots of the *galenggang* plant, the roots of the *trong asam* and the roots of the sensitive plant\* ; we chew them with betel leaf and betel nut and spit part of the mixture over the forehead of the elephant and then spit part over its testicles, and after this spit part over both cheeks and both thighs. We do this for two or three days.

Another cure is the following : we take the roots of the sensitive plant and some moss from a stone that has been standing in water, and burn them to ashes, which we then mix with oil, and rub over the elephant's cheeks and thighs.

Yet another way is to take the root of the large species of *galenggang* plant, and chew it with betel leaf and betel nut, and then spit over the elephant's cheeks and thighs for three consecutive days. The plant must be gathered at evening time.

57. This is a medicine to prevent an elephant from swinging its tail from side to side. We take the rubbish that collects about sticks in the water and about the posts which stand in the stream and shake to and fro with the force of the current. We burn this to ashes and mix the ashes with oil which we rub on the elephant's tail for three consecutive evenings.

58. To make an elephant subservient to the goad we take a handful of *kait kait* leaves and rub them over the elephant for three consecutive mornings or evenings ; or else when we bathe the elephant. This is another way ; if we put gold and silver in a bowl of water, and then bathe the elephant's head with the water, the elephant will without fail obey the goad with alacrity.

And this is yet another way ; we take gold, silver, copper and the iron of which cannons are made, and place them in a bowl of water. With this water we then bathe the elephant's head, and at the same time we lay the goad upon its head. We do this for three consecutive days.

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\* *Mimosa pudica*

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59. This is the medicine for an elephant that will not kneel at the word of command. We take the root of the male *kanchi* plant that has never flowered, and chew it up with betel leaf and betel nut and squirt over all the elephant's joints. We do this for two three or four days. Another way is to take the root of the gourd plant that creeps over abandoned houses and to chew this with betel nut and betel leaf and to squirt it over the elephant's thighs for two or three consecutive evenings. If an elephant will not kneel or refuses to kneel down in water, we take the moss off the stump of a tree that has been felled to make a boat. We burn the moss to ashes and mix it with oil and rub it on the elephant's forehead and on its thighs.

60. If an elephant refuses, or is afraid, to swim, we take the root of the *kiambang* plant and burn it to ashes which we mix with oil and rub on the elephant's forehead or on its thighs.

61. This is a list of the diseases, of elephants.

*Mersud* : a swelling of the tip of the trunk.

*Merchuan* : a swelling of the part under the chin.

*Tasab* : a swelling of the forehead.

*Merkabat* : a swelling of the eyes.

*Keruan* : a swelling of the ear.

*Merpuan* : a swelling in the stomach.

*Mertemulam* : a swelling of the genitals.

*Mernor* : a swelling of one leg.

*Mertalam* : a swelling of both legs.

*Merchap* : a swelling of the anus.

*Merkabun* : a swelling of the rectum.

*Merpahat* : a swelling of the end of the tail.

*Keradan* : a swelling of the tip of the trunk.

For this last disease the medicine is to take the leaves of *langkandi*, *prai*, *labu ayer* and *katang-katang tahi lembu* with some whitewash and some salt. We shred these ingredients, or grind them to paste and apply the mixture as a poultice to the swollen part.

The medicines for *tasab*, the swelling of the forehead, is to take the bark of the *ramanggi* and *dedap*, some *kunyit trus*, *lampuyang*, *lengkuas padang* and limes. We place these ingredients in a pot and boil them to shreds, and then apply the medicine to the elephant's forehead, and without fail the disease will be cured.

62. This is the medicine for *merkatat*, the swelling of the eyes. We take some oxhide and burn it to ashes; then add some oil, the leaves and roots of the *pria* and of the creeping gourd plant. We pound these ingredients to a pulp and mix some arrack with it. The whole compost is applied to the swollen part. It is a certain cure.

63. For the swelling of the ears we use this medicine. We take the fruit of the tamarind with limes of the varieties known as *limau mata kerbau*, *limau purut*, *limau krat lentang* and common limes and oranges; of all these we take the leaves and roots as well as the fruit; we chop them fine, and pound them well and then boil them in a pot. With the water we wash the swollen part, and apply the sediment as a poultice.

Now this is a medicine, which we should know, for all ailments of elephants. We take the roots of the *trong prat*, the bark leaves and fruit of some tamarind, the bark of the *kintongan*, common limes, the limes of the varieties known as *limau krat lentang*, *limau mata kerbau*, *limau purut*, *limau raia*; we take from a betel nut tree that has never fruited the young aerial roots that have not yet reached the ground; we also take *kunyit trus* of the white and black varieties, *lengkuas padang*, *lengkuas benar*, *temu lawak*, *halia udang* of the red kind, *juang juang* leaves of the red kind and *teberau*.

All these we pound to powder, and place in water for a night. With this water we wash the elephant all over for two or three days; the sediment we give it to eat in small quantities with its food. After this we should avoid letting the elephant feel the heat of the sun for a few days.

64. We now tell of all the medicines for the diseases of elephants. First of all there is this one which is handed down from



the *bomos* of old. We take the roots and leaves of the *pasamin*, plantains of the variety known as *pisang miu* with the leaves and root of the plant; we add the roots of *chemandrai hitam*, *rotan tawar*, *tutup bumi*, *kenchar*, *pianggu*, *pulai hitam*, *rotan dini*, *panggil-panggil*, *jerun*, *kuchoi*, *galenggang*, *kaduduk*, *paku*, *tambun tahi*, *temu pulung*, and *temu kunchi*; we also take limes of the varieties known as *limau purut* and *limau padang*, and the bark of the *kintong*. We mix all these ingredients thoroughly and then pound them to a pulp. The juice is given to the elephant to drink for three days, or is sprinkled all over its body for three consecutive evenings.

65. If an elephant has sore eyes so that it does not allow us to touch it and carries its head low, we sprinkle black pepper over its eyes for two or three consecutive evenings. If its eyes run with water, we blow at them through a tube either some lime juice or the clear water in which ashes have been standing; we do this for two or three consecutive evenings.

66. This is a medicine for a running discharge in an elephant's eyes. We take the fruit of the *mataiang* and burn it to ashes, which we then mix with water; we strain the water and add some lime juice; we then put this in the elephant's eyes for about three days, and of a certainty the discharge will stop.

67. This is the medicine for a disease of the trunk: we take from some well the vessel which men use to lower into the well to raise water; we take it rope and all, and burn it to ashes, which we mix with a little oil and rub on the end of the trunk. For this remedy to have effect the vessel must have been stolen from its owner.

68. This is a remedy for the disease known as *kesar api*. We take some *lenjuang merah*, the cabbage heart of the *teberau*, limes, *meswi*, red onions, turmeric and white pepper; after chewing these ingredients with betel nut and betel leaf, we squirt the mixture from our mouth over the elephant's body three times on three morning or three evenings. Another way

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to pound these articles to powder, to which we add a little water and then sprinkle all over the elephant's body for about three consecutive days.

Another remedy is to take the root of the red *bunga rai*, and the root of the *jarang songsang*; we chew them with betel nut and betel leaf and squirt the mixture from our mouth upon the elephant for three consecutive days or evenings.

This is the medicine for an elephant which has the diseases known as *kesar ayer* or *kesar angin*.

We take about a *gantang* measure of *rembiga* leaves, pound them to pulp and rub them over the elephant's body; or, adding water, apply them as a wash—we do this for four or five days.

Another medicine for *kesar ayer* is as follows: of the *lenjuang putih* we take the roots, the leaves, and the cabbage heart; we take leaves of the sensitive plant, the bark of the *bongli*, *kunyit* trus of both the black and white varieties *meswi*, red onions and white pepper. All these ingredients, we chew with betel nut and betel leaf and squirt from our mouth over the elephant's body; we do this for two or three days.

This is a cooling lotion. We take the fruit of the *kubong*, the leaves of the *bungkal* and the cabbage-heart of the *teberau*; we pound them to pulp and soak them in an earthenware pot, and then apply for about three consecutive days or evenings.

As we apply it we repeat these words.

OM KAK TIU TIU SAK.

Yet another remedy for *kesar* is this: we take leaves of the *sentang hantu*, *mataiang*, and betel-nut tree; pound them to pulp and add a little whitewash, and rub the compound over the elephant's body for four or five days.

And yet another remedy: we take the red fruit that grows on sand banks, and any kind of fruit of trees whose early leaves are red, and give them to the elephant to eat with a little Siamese salt. Of this medicine we give, in small quantities, as much as the elephant will eat.

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69. This is the remedy for fever : we take *ganularusa* and chop it up fine, and soak it with cooked rice. Having done this, we put it out in the dew that night, and afterwards sprinkle it over the elephant's head for about three days.

We must be careful not to expose the elephant to the sun during this time.

70. This is the remedy for pains in the elephant's stomach: we take the bark and fruit of the tamarind and the bark of the *kintong*, the bark of *jambu kapal* and of the *sena*, the fruit of the *tevus rangkinang* and the *rangkir any kayu*, with its fruit and bark; we pound all these things to a pulp which we give the elephant to eat together with Siamese salt; we may also sprinkle it over the affected part.

71. This medicine kills all the diseases in an elephant's stomach: we take some ripe *trong prat*, *lengkuas padang*, Siamese salt, bark of the *malaka* that has been brought from foreign parts; we split the *trong* and the *lengkuas* into strips, and then pound the mixture to a pulp; then we soak it in vinegar, and after three days we give the liquid to the elephant to drink, and the sediment we mix with the elephant's food, or with a plantain or some sugar cane. We do this for three or four days.

72. This is the medicine for an elephant that is troubled with intestinal worms: we take the white and black varieties of *kunyit trus*, some black valley earth, the cabbage-heart of *teberau*, *mesoi*, red onions, and white pepper; we stuff a sugar cane with these ingredients or we mix them little by little with the elephant's food for two or three days repeating this mantra.

OM KAK TUI TUI SAK.

The following medicine will kill all the intestinal worms whose presence in an elephant's stomach prevents it from becoming fat and healthy: we take some saltpetre and carraway seed, and give as much of them as it will eat to the elephant. When we have done this for three or four consecutive days all the worms will be dead.

73. This is medicine for an elephant this is suffering from chill: we take the roots of *trong asam*, and of *rotan dini*,

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the pith and roots of the *cheekor*, *jerangan*, *lenjuang merah* and *kunyit trus*: adding a little white pepper, we chew this with betel leaf and betel nut and squirt the mixture from our mouths over the part of the elephant's body that is affected.

If the elephant's body is hot, we take *satawar hutan*, *balongan*, *satawar benar*, *anyor*, *tebu betong*, *lenjuang putih*, *teberan*, *chapa* and *rotan tuwar*; we shred all these very fine or pound them to pulp, and cook them with betel leaf and betel nut. We then squirt the mixture from our mouths, or sprinkle it over the elephant's body for two or three consecutive days.

The elephant must not be exposed to the sun during this treatment.

74. This is the remedy for a swollen foot, leg or shoulder: we take the inner part of some ginger, *kunyit trus*, turmeric, and *lampuyang*; we grind or pound them to pulp and adding a little salt, warm it on the fire; we then apply to the mixture the affected part for three or four days.

If an elephant's ear or leg is swollen we repeat this charm over it.

OM CHIKAN CHI CHAU SIMAN PALAI AITU RATI  
DUCHANGU BAYI DUCHANG SAN BISAYI TAB.

75. This is the medicine for a sprain in an elephant: we take leaves of the *galeggang ramanggi* which people use as a vegetable, *nasi nasi*, the juice of the *tebu salah*, the stem of the *kladi hitam* and a prawn of the variety known as *ulang galah*; we bake all these until they are burnt and then put them in some flour which we warm and apply as a poultice to the affected part for three or four days.

76. This is a medicine to cure an elephant of eating earth: we take some earthworms and some black valley earth; we bake the worms until they are burnt and then mix them with the earth which we give to the elephant to eat for three or four days.

77. This is a medicine for an elephant that will not eat heartily: we take some *lengkuas padang* and *lengkuas benar*

and the root of the *pisang-pisang*, and pound them to a pulp which we mix with the elephant's food for three or four consecutive days or evenings.

78. This is medicine to make an elephant fat: we take some *tembakul* fish, and Siamese salt and give them to the elephant to eat. This must be done on the 13th to the 15th days of the month. When we administer this medicine the elephant must be standing in water that covers the swelling of its belly.

This is another remedy: we take *patawali* and the roots of the *trong prat*, *trong pipit*, *trong asam* and *mataiang*; we chop them very fine and soak them in some large vessel, adding a little vinegar and Siamese salt; then we give it to the elephant to eat, or we rub it over its body. This must be done the moon is rising.

This is another remedy: we take the roots and leaves of the *lenjuang benar*, *lenjuang putih*, the aerial roots of the betel nut tree, the roots of *rambiga* and *mataiang* and some Siamese salt. We give this medicine to the elephant to eat with some plantains, Indian corn or sugar cane, either when it is standing in water as before, or when the moon is rising.

This is another remedy: we take the skin of a rhinoceros' navel and soak it in water with some Siamese salt and some honey. Then we give the elephant the skin to eat with its food: we pour the liquid over the elephant and give it some to drink. We do this for three or four consecutive days.

Yet another remedy is to soak *pedindang* fruit and Siamese salt in honey. We then give the elephant the skin of the fruit to eat; the liquid we either pour over it or give it to drink for three or four consecutive days.

79. This is the charm we use when for the first time we put the pannier upon a new elephant that has never been used before. We first sprinkle the elephant with *tepong tawar* [ceremonial flour] which we address as follows.

*Hei Tepong tawar, tepong jati, tepong tawar*  
*Seklian changrai dan bahdi*  
*Turun changrai, turun bahdi, turun pilak*  
*Turun kadalam laut Pauh Janggi.*

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[Hail, Tepong tawar, pure flour! Hail, all the mischievous and evil influences! Let all the mischievous and evil influences and all misfortunes descend into the sea of Paulh Janggi.]

We then put the pannier on the elephant's back, and sprinkle the water of a young green cocconut, one over its head and another over the base of its tail. We then throw the cocoanuts at the elephant, the one at its head and the other at its back, and take an augury from the manner of their falling: if they fall on the part that has been opened it is a bad sign, but it is a good sign if they fall with the open part uppermost. While doing this we repeat this mantra.

OM PAT MAHAPAT CHAILA KUPAT KARU HEI CHANG-  
RAI MAYU TAWI SAH.

As soon as we have repeated this mantra we get up into the pannier.

80. This medicine will make our elephant come back to our house of its own accord from the forest.

From an abandoned house we take the cooking place, the ladder that leads up to the house and the threshold beam. We break them up and give fragments of them to the elephant to eat with plantains or Indian corn, and do this for three consecutive days or evenings.

81. This will make an elephant brave in fighting. We take a considerable quantity the roots of the *ketub-ketub* and *panggil-panggil* and pound them into pulp, and give them to the elephant in his food for three consecutive mornings or evenings. This is certain to make the elephant courageous.

82. This will make an elephant sagacious. We take the bark of the *ramanggi*, the bark and ripe fruit of the tamarind juice of the ordinary lime and of the variety of sugarcane, known as *tebu betong* and add them to the elephant's food for three consecutive days. Its effect is certain.

When giving this medicine we repeat this mantra.

SUKI TIMA SAPAHA CHARAU SOK SI RA AR ASAUPA  
KATA YASA SIMA TONKHA TIRU KISARO ASAM PINTU

Before we administer any of the medicines mentioned above we should breathe over the following mantra three times, in order to prevent any harm happening to us or to anything connected with us.

OM BIRANDOK RANDAI KAPARAI PARAI PANDOM  
SHAROK SAHAROK NYAYOM LI CHAPALOK NAJAM  
PALING CHAMCHAK IRAK KAN CHAMBOT NACHAM NU  
LANGMU TARANGKOK MITAROM CHANG TAPING TAU  
PERIA LAMUNTARI PUAH RENGAB.

This is an alternative mantra.

OM CHATING CHATING HAKA TANGKAU CHANGKAN  
BAT KAU TABAT NARIT KONKU SUROH LULOH LULAI  
PIAH TAUTAR AU YARA WON SATAHA TARA ONG  
JIBAYON TAHOM BAAMAN MIOK KATA AUL.

83. This is the remedy to use when a person has been affected by *chemahang*, which means in the Malay language the evil influences attendant on elephants or trees, or when a person is affected by *changrai* or by strong *bahali*. We take the resin that exudes from the *merbau* tree and *chamara petri* and *empelas* leaves, and water from the joints of trees and water from a pig's wallow and ripe fallen limes; we knead them to a pulp with which we besmear the sufferer. And, if God wills, he will recover.

84. This chapter deals with the methods of telling a good elephant from a bad one.

We have to look at the elephant's shape, its stride, its ears, its skin, and at any individual peculiarities or markings that it may have.

Ears so broad that they will meet, a long lobe to the ear, a low forehead, a very long trunk, a tail that reaches to the ground and sweeps its dust, a broad flank, a head that wags to right and left as the animal walks, and tusks that reach down to the ground; if one finds all these points in one animal, it is, according to the *bomos* of old, a very bad sign, and such an elephant will bring poverty upon its owner.

It is very good to find in one animal long ear lobes that lie close to the cheek, a long tip to the trunk and a high fore-

head ; and an elephant like this will bring wealth and comfort to its master.

An elephant with a short lobe to the ear, the fold of the ear turning outwards and the ear itself being short ; that rocks itself to and fro when standing, that swings its trunk and its tail, and wags its head as it walks ; an elephant like this is not good and will eventually bring loss upon its owner and its own life will be short.

An elephant is a good one if it has the following points, the lower lip close to the upper lip, the lobe to the ear close to the cheek, and the folds of the ear and the tip of the ear turning inwards.

An elephant with twenty white and closely set toes, a long under lip and large testicles is a very good and lucky one.

If the protuberances on the elephant's head are twelve in number, or if it has fourteen toes, or fifteen toes, or if the hairs of its tail grow in two different ways, or if the tip of its tongue is black or its eyes red, the animal is an evil brute that will bring ill health and sickness upon any one that keeps it.

An elephant with protuberances on its tail, and under its chin and with all its toes black is no good, neither is one with protuberances on its ears especially if they be black or red like blood.

An elephant with a black roof to its mouth or with black at the base of its tongue is no good.

It is a good sign in an elephant if after eating it carefully places in front of it all the food that is left over. It is a bad sign if it scatters its superfluous food right and left.

It is a very bad thing for an elephant to have its tusks streaked with black or red, or to have tusks that cross one another or that curve outwards.

This is the end of the book of mantras used in connexion with elephants, finished on the 27th day of Rajab 1296 ; taken from the mantras of Tunku Mantri Ibrahim bin Jafar, which are in the possession of Che Pandak Abdullah and committed to writing by Toh Sarif Aman ; mantras which have come down



from the Datohs Sri Adika Raja of Ulu Perak, Toh Kalaung and Toh Kalalang, to Toh Muda Abdulrauf and from him to the present day.

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### APPENDIX I.

#### *The Malay system of Elephant Catching and Training.*

The method of taking a herd of elephants is probably common to all countries : in a place frequently visited by a herd the Malays build an enclosure either of timber, (when it is called a *kuba*) or strengthened by earth work (when it is called a *pendiat*). It is protected by a deep and wide ditch. Long wings of fallen logs lead the way into the gate of the enclosure, which is known as the "smaller enclosure." All round an area of some miles of the forest in front of this enclosure a line is cleared, and in it little erections of a few branches and palm leaves are built in the trees at regular intervals. As soon as the herd has entered the circumscribed area, which is known as the "larger enclosure" men are stationed day and night in these trees with fires burning, to prevent the elephants from moving out again before all the hundreds of men who are necessary for a drive can be collected. When the elephants have been driven into the "smaller enclosure," a great suspended door is dropped, and all exit prevented.

A solitary elephant is made a victim to female influence. He is induced to join the society of three or four tame cow elephants which are let loose in the forest, and when he has become accustomed to them, the Malays arrange on the ground, in some convenient place between two trees, a rotan noose with the ordinary running knot.

Coming up to the elephant and his harem then on other tame elephants they gently urge the herd towards this noose. A female elephant that is new to him then attracts the atten-

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tion of the male, and he moves forward to caress her. Urged by the surrounding elephants she moves slowly towards the noose and steps into, and out of, it in safety. The male follows in her footsteps, and as he plants his foot a Malay pulls the knot and he is caught. Of course he rushes away at once, but at the end of the line attached to the noose is a heavy mass of branches which act as an effectual drag upon his progress. Fatigue soon makes him go slower, and then the elephants close upon him again and while two great cows press upon him on either side, a Malay slips a noose upon another leg. Soon each leg is noosed, and then in some convenient place the ends of all four nooses are made fast to trees, and the elephant is a prisoner.

An elephant, whether caught with a herd or in a noose, is kept tied up until it has been thoroughly subdued and quiet, and will submit to being washed and handled. Hobbles are then put on it, and then, tied to another elephant, it is taken down to the river to bathe. From this stage its domestication is gradual.

Then comes its tuition. Under the Malay system every elephant, even one born in captivity and brought up from its birth in the village, has to be taught the words of command in the barbarous cruelty of the *chelony* or stocks. Here it is confined in such a position that it cannot move an inch in any direction while it learns its lessons.

In seven to ten days a clever village reared elephant will have learnt enough to earn its release from the stocks. A wild elephant will require forty to a hundred days.

After this a forest-caught animal is taken about tied to a tame elephant, and gradually the rotans that join them are lengthened, until at last the elephant can be trusted to be let loose. It drags long rotans after it for some time however so that if it attempts to escape it can be easily seized again.

A year should be allowed to elapse between the date of an elephant's being taken out of the stocks and of its being put to use as a beast of burden. During this time it is being perfected in the lessons learnt in the stocks.

## APPENDIX II.

*Words of Command used in driving Elephants  
in Perak and Kedah.*

## PERAK.

- Tee-tee—Stand still! Keep quiet!  
 Tuhuh-tuhuh—Go back! Move backwards!  
 Dee-dee—Come close! (Used in calling the elephant.)  
 Hee-hee—Go on!  
 Umbû—Go to the right!  
 Klong—Go to the left!  
 Kohoi-kohoi—Go slowly!  
 Chîn—Go carefully! (Used where the road is slippery, or going down a steep bank, or through a deep swamp.)  
 Rabah—Feel!  
 Kwêt—Pull down! (Used in directing the elephant to remove any stick or branch obstructing the path.)  
 Onh—Push! (Used in ordering the elephant to push down a perpendicular obstacle, as a post, or trees, stump.)  
 Hoh-hoh—Stop!  
 Riap—Approach! (Used in ordering an elephant to go along side of a Malay house or pëlantar. He will bring his head close if riap is said. For the hind-quarters the order is Riap buntut.)  
 Tërûm—Kneel down!  
 Terum puan—Kneel down lower!  
 Tah—Get up!  
 Paha'mbû—Keep clear of timber on the right!  
 Paha klong—Keep clear of timber on the left.  
 Chelût—Let the howdah slip off; (The gambala (driver) is on the ground.) At this word of command the animal lowers his hind-quarters and lets the rengka slip over his tail.  
 Tû-i—(Employed to make the elephant stop switching his tail and striking his occupants of the rengka with it.)

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- Cheng—Put the right foot into the hobbles (*sengkala*.)  
 Cherot—Same for the left foot.  
 Chang—Lift the foot! (To have the *sengkāla* taken off.)  
 Tee-tee—Dont! (Used when the elephant takes up water or saliva in his trunk and sprinkles his sides with it.)  
 San—Let go! (Used when the animal squeezes the gambala's legs with its ears behind which he sits.)  
 Guling—Roll! (in the water). An elephant being bathed will when told to do so and will get up when roll *bangkit* or *tah* is said.  
 Kot, kot, kot,—(Used in driving an elephant home if, when the gambala has found him, he is too dirty and muddy to be ridden. He will go stright home in front of his gambala at this word of command.)  
 Riang-riang—Let go! (Used when an elephant objecting to have the *tali rūt* (rattan rope passing under the belly) fastened, puts up one his forelegs and presses it against his body to prevent the rope from being pulled tight.)

**KEDAH.**

- Go on! Hee.  
 Come! Chee, Cham.  
 Stop! Hoh.  
 Turn! Dao (same for right or left.)  
 Kneel down! Tërum.  
 Get up! Puan.  
 Move aside! (to avoid a tree), Pei.  
 Come close! Chit.  
 Pull down! (a branch), Ao-bûn  
 Push down! Kwit.  
 Take care! (e.g., in crossing a bridge.) Koy.  
 Feel! (with the trunk) Klam.  
 Climb! Kot.  
 Stoop down! (head only to let a man get up.) Lât.  
 Lift up one leg! (to let a man get up) Song.  
 Don't! Dei.

Don't whisk the tail! Tû-i.  
 Trumpet! Riak.  
 Salaam! (by lifting the trunk) Wei.  
 Pick up! Jûn.  
 Swim! Chû.

### APPENDIX III.

#### *List of some of the Technical Terms used in connexion with the Training of Elephants.*

- Balei Chelong—The covered in enclosure in front of the stocks. Here the trainer receives his friends and visitors.
- Tiang Guru—A stout post in the middle of the *balei chelong*. It is used as a table, and on it are kept all the paraphernalia used in connexion with the elephant's training. It is sprinkled with *tepong tavar* before the training begins, and may not be touched by any one but the trainer.
- Galang renat—Stout beams laid on the ground, upon which planks (termed *kayu renat*) are laid. The flooring of the stocks is thus above the level of the ground, and the place is easily drained.
- Anak Chelong—The two great posts between which the elephant's neck is firmly held.
- Galang rusok—The two beams which are fastened at one end to the *anak chelong*, and, running along the elephant's ribs, prevent it from moving its body to right or left.
- Galang dada—A stout beam, supported on forked sticks, which passes under the elephant's chest, and thus prevents it from lying down.
- Sengkala—Hobbles which bind the forelegs together, and the hind legs together.
- Chanang—A small piece of wood fastened between the two *anak chelong* to prevent the elephant from pushing a fore foot between the posts.

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**Tali Teronching**—A broad rattan band round the elephant's hind legs. From it a twisted rattan rope ties the hind legs to any convenient tree or post.

**Tali Pul**—A rattan which ties each fore leg to the *anak chelong*. [Thus the elephant is in this helpless condition—its neck is firmly nipped and held in by two posts, its sides are wedged between beams, and a beam runs under its chest; its fore legs are not only tied together but also tied to the posts that hold its neck, while as an additional precaution the *chanang* prevents any possible movement; the hind legs are tied together, and also attached to convenient posts.

When one understands what this means, and realizes that a forest caught elephant undergoes from forty to a hundred days of this treatment (the hundred days, let it be understood, being the limit not of the elephant's refusal to submit to training but of its tenacity of life) it is not difficult to believe that the epitaph of great percentage of forest caught elephants is "*mati dalam chelong*"—it died in the stocks."]

**Tali Tegun**—When the elephant is first taken out of the stocks down to the water to bathe, it bears a skeleton frame work of rattans, in the form of the harness of the panniers (*rengka*) that it is to be taught to wear. The rattans are fitted on to its neck, round its belly, under its tail in exactly the same way as the *rengka* harness. This frame work, which is termed *tali tegun*, serves the double purpose making the animal accustomed to the feel of the harness and of allowing the trainer a safe hold for his scrambles up to, over, and down from, his charge.

**Saluar**—When an elephant first leaves the *chelong* it wears, suspended from the *tali tegun*, a loose rattan round each leg. These are known as *saluar* (trousers) and by means of them to animal if it becomes obstreperous can easily be tied up.

**Tali Taham**—A rattan collar round the elephant's neck, by means of which a rattan rope (*tali chawak*) firmly binds a half trained elephant up to a trained animal. It is used when a half trained elephant is first allowed out of the stocks. When the elephants are tied closely together, the term is *Chawak Imba*. When the elephant is getting broken in, a little distance is allowed between it and the other animal, and the term is *Chawak Puchong*. Last of all, when the elephant is quite tame the animals are separated by a considerable length of rattan which is considered as little more than a mere precaution. This is known as *Chawak Wai*.

**Sedang**—The technical term for the progress of an elephant's instruction.

**Pancharuan**—A short stick tipped with a sharp piece of iron.

It is only used to "remind" the elephant. A longer stick tipped in the same way with iron is called a *tanjak*, and is used to hurt the animal. Both *pancharuan* and *tanjak* are unlike the goad (*kosa*) with which the trained elephant is driven.

**Pulang Pohun**—"The return of the season." The term for the twelvemonth which should elapse between an elephant's being put in the *cheloug* and its first having a *rengka* (pannier) put on it.

**Barak**—During this twelvemonth, the elephant is known as *Gajah Barak*. At the end of the period, when the new *rengka* has been put on the animal with all due ceremonies, the *gambala* takes the animal from house to house calling out "barak" "barak," and everyone gives him something, a little rice, some fruit or a fowl.

At the end of the day, the elephant driver gives a feast to his friends.

**Patih Kosa**—The technical expression for an animal that is perfectly obedient to the goad.

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This is one of the pantuns the *gambalus* sing as they wash their animals.

Tarek puntong batang jarak  
Batang resam chondong k'ulu  
Tarek lah untong angkau ini barak  
Mengikut resam zaman dahulu

#### APPENDIX IV.

#### *List of plants used as Medicines.*

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Anyor.—*Curculigo recurvata*. (Amaryllideae) commonly known as Lumbah, a common broad-leaved plant with yellow flowers at the base.

Balongau, or Bulongan.—*Canthium parvifolium* Roxb, or *Gmelina villosa*.

Both of these plants to which the name is applied are thorny shrubs, with acid yellow fruit. The fruit of the latter preserved in syrup is used in consumption by the Malays, and rubbed with lime and garlic on the body for dropsy.

Bongli.—*Zinaiber Casumunar* Roxb. A ginger often met with in waste ground in villages, a common ingredient in Native Medicine. The rhizome is used.

Bungaraiab.—The common red *Hibiscus H. rosu siveensis*. The flowers are often used as a demulcent.

Bungkal prob.—*Ctenolophon parvifolius*. A tree.

Chamar—*Zinaiber?* sp. A wild jungle ginger.

Chamara petri—Chamara is the *Casuarinia equisetifolia*.

Chapa—*Blane a balsamifera* (Compositive) also known as Sem-bong, a tall herb with a strong camphoraceous odour. The dried leaves used in a variety of diseases, for colds, colic, etc. Powdered and blown up the nose of a horse they are supposed to cure it of a cold.



- Chekor.—*Koempferia galangana*, L. A small kind of ginger with broad flat leaves white flowers and an aromatic rhizome, often cultivated, probably native of India or Siam.
- Gandarussa.—*Jasticia Gandarussa* (Acanthaceae) a shrubby plant with narrow leaves, common in villages, and of unknown origin, commonly used in Medicine for all kinds of ailments, and also in Magic.
- Halia Udaug.—Hahyabara small leaved ginger (*Scitamineae*) A slender wild ginger with a small rhizome, inhabiting forests.
- Tambu Kapal—*Engenia Malaccensis* var. A very big variety.
- Jarang Songsang—*Cymbidium Finlaysonianum* (*Orchideae*.)
- Jeringau.—*Acorus Calamus* L. (*Arqidae*) The sweet Flag, a native of the North Temperate zone, and probably, introduced here from China, a swamp-plant with long sword shaped leaves and an aromatic rhizome commonly planted in villages and much used in medicine.
- Chemandrai hitam.—A herbaceous plant apparently one of the *compositae*.
- Dedap.—*Erythrina* sp. (*Leguminosae*). The commonest species here is *E. Stricta*.
- None of the species are really wild here, but are cultivated as props for pepper etc.
- Empelas.—*Tetracera Assa* (*Dilleniaceae*). A chimbre with white flowers.
- Gelenggang.—*Cassia alata*, (*Leguminosae*). A shrub with orange flowers in spikes probably originally American now widely dispersed all over the tropics. The leaves applied externally are a well-known remedy for Kurap, and other skin diseases, used internally are purgative.
- Gelenggang sacar *Cassia Tora*.
- A common weed in villages, with yellow flowers and long beans, the seeds of which are in some places used to make coffee.

Jerun.

Juang-Juang—*Dracaena Parteri* *Liliaceae* and other wild *Dracaenas*. Low shrubs with broad or narrow green leaves, and spikes or panicles of white flowers, with no known properties. Senjuang and Lenjuang appear to be used as synonyms.

Lenjuang merah is *Cordylire*—var *ferrea*, the red *Dracaena* of gardens, a native of the Polynesian Islands.

Lenjuang putih is I believe the green leaved form.

Lenjuang Benar, is probably *Dianella ensifolia*.

A common liliaceous plant with yellowish white or blue flowers and berries.

None of the plants seem to have any properties at all.

Kaduduk, commonly known in the south as Senduduk, *Melastoma malabathricum* a (*Melastomaceae*) A common pink flowered shrub. The leaves are astringent and used in dysentery.

Kait-kait.—*Uncaria* spp. (*Rubiaceae*) The wild gambiers; climbing shrubs with hooks, (whence the Malay name) are indiscriminately known as akar kait-kait.

Kanchi.

Katang-katang Taki Lembu.

Kenchar ? Kenchur *i.e.* Chekur.

Katub-katub, ketop-ketop, *Bauhinia bidentate* and other species (*Leguminosae*) Woody climbers with orange or red flowers.

Kiambang.—*Pistia Stratiotes* (*Aroideae*) The Waterlettuce, a common floating plant, with a rosette of velvety leaves often cultivated by Chinese to feed pigs.

Kintong; kintongan.

K'ladi hitam, *Xanthosoma violaceum*, A cultivated aroid introduced from S. America.

Kubong.

Kuchai, Chives, The common little onion grown here as spring onions.

Kunyit, Turmeric; (*Curcuma longa*)

Labu, Labu Ayer Pumpkin, *Cucurbita pepo* L (*curcúbitaceae*.)

Lampuyang, *Zingiber Zerumbet* Roxb. (*Scitamineæ*) A ginger commonly met with in villages, with an aromatic rhizome.

Langkandi *Vitex Langundli* (*Verbenaceæ*). An aromatic shrub with blue flowers, very commonly used in native medicine.

Lengkuas benar, *Alpinia Galanga* L (*Scitamineæ*) the greater Galangale, a tall herb with white flowers, and an aromatic rhizome, used in curries and also in native medicine.

Lengkuas padong, *Alpinia conchigera* Griff. A shorter and more slender wild species common in damp spots, often in villages.

Lenjuang, see Juang-Juang.

Malaka, *Phyllanthus pectintus* Hook fil. (*Euphorbiaceæ*). A tree with very fine foliage, and globular acid fruit.

Mataiang. *Ardisia* sp.

Merbau.—*Azelia palembanica* (*Leguminosæ*). The well known timber tree.

Meswi.—*Cinnamomum, xanthoneurum* (*Laurineæ*). The bark of this tree known in trade as Massoi bark, is imported into Singapore from New Guinea. It is very aromatic.

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- Nasi-nasi.—*Eugenia zeylanica* (*Myrtaceae*). A tree or shrub growing often near the water, with white flowers and white aromatic fruit.
- Paku.—Fern.
- Pasamiu.—? Pisang minu, *Musa Malaccensis*, a wild Banana.
- Panggil-Panggil.
- Patawali.—*Tinospora cordifolia*.
- Pedindang.—*Trichosanthes* (*Cucurbitaceae*). A climbing wild pumpkin with brilliant red fruit stated commonly to be "Mabok" is poisonous but not deadly only used in medicine so far as I know in cases of headache where the fruit is plastered on the head.
- Pianga.—*Clerodendron nutans* Wall (*Verbenaceae*). A jungle shrub with white flowers. Properties unknown.
- Pisang-Pisang.—A name applied to a number of anonaceous trees on account of the resemblance of the fruit to bunches of plantains.
- Prai.—*Elatiospermum Tapos* Miq. (*Euphorbiaceae*). A big tree the seed of which is eaten, and forms in some parts of the peninsula an important article of food to the Sakais.
- Pria.—*Momordica Charantia* (*Cucurbitaceae*). A popular vegetable of unknown origin. The fruits are yellow and wrinkled, with seed enclosed in red pulp commonly cultivated.
- Pulai hitam.
- Ramunggai or Morungei.—*Moringa pterygosperma* (*Moringaceae*)  
A shrub or small tree commonly known as the Horseradish tree probably a native of India. The leaves, fruit and roots are all eaten

- Rambega *Calotropis procera*, (*Asclepiadeae*). The Mudar fibre plant, Native of India, half cultivated and occurring sporadically in sandy spots.
- Rangrinang Kayu.
- Rotan Dini.
- Rotan Tawar.                                 ? *Calamus aquatilis* Ridl.
- Salanchang.
- Setawar benar. *Castus speciosus* L (*Scitamineae*). A common plant with large white flowers on the edges of woods. Properties unknown, but popular among the Malays in medicine and magic.
- Setawar hutan. *Forrestia Griffithii* Clarke (*Commelinaceae*) a hairy herb four or five feet tall, common in forests.
- Sena. *Pterocarpus indicus* L (*Leguminosae*) a well known tree.  
 I take this to be the drug referred to in this paper, as the bark is the part used. But "Sena" is also used for what is properly called Sena Makki the Senna leaves of commerce, a well known purgative imported from Arabia (*Cassia angustifolia* Vahl)
- Sentang hutan                                 *Ixora* ?
- Tambun Tahi, *Baccaurea* sp. (*Euphorbiaceae*). .
- Tebrau.—*Saccharum Arundinaceum*. Elephant-grass (*Gramineae*). A large kind of wild sugar cane common on river banks.
- Temu padang.—*Curcuma*. sp. Temu hitam.
- Temu Kunchi.—*Gastrochilus paucuratus* Ridl. A small ginger with an aromatic rhizome much valued in native medicine.
- Temu Lawak.—*Curcuma Zedoaria* Rose. A half wild turmeric, the zedoary common in villages. The rhizomes are

often sold in the bazaar, and used in curry, and in medicine. Formerly valued as a drug in European pharmacy.

Tepus Rang Rinang.

Trong asam.—*Solanum ferox* (*Solanaceae*)

Trong pipit.—*Solanum sarmentosum*.

Trong prat.—*S. indicum*.

Tutup Bumi.—*Elephantopus scaber* (*Compositae*). A common weed with flat leaves and small pink flowers in a head, occurring in grass plots and waste ground, probably introduced from South America, a decoction of the roots is used for coughs by the Malays.









*Sus oi.* Full grown boar.

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## The New Sumatran Pig.

### *Sus oi* in the Rio-Linga Archipelago.

By C. BODEN KLOSS, F.Z.S.

In September 1901 a single specimen of a peculiar pig was obtained up the Indragiri River, E. Sumatra by Dr. W. L. Abbott who presented it to the U. S. National Museum. According to the natives of the locality, the "nang-oi," as they call it—thus differentiating it from the common pig—is abundant in the forest and sago plantations along the banks of the river and its foot-prints may always be distinguished from those of *Sus villatus* by their much greater size.

From this one specimen a new species, *Sus oi* was described and it was, until recently, the only one on record, but lately other examples of what appears to be the same animal have been obtained by Mr. J. E. Romenij and others on Pulo Battam. As most of the islands of the Rio-Linga Archipelago possess their own forms of monkeys, rodents, mouse-deer, etc., it is possible that these pigs may eventually be found to differ sufficiently from the animal of the Sumatran mainland to form an insular race although less probably than is the case with the others, for pigs do not seem liable to as great variation. At present, however, they appear to be the typical *Sus oi*.

Mr. Romenij communicates the following with regard to them.

"These pigs were hunted in the way customary here, viz., with a number of Kling trackers and beaters and a pack of wild dogs, mostly pariahs. During the few weeks that I had at my disposal to go out shooting I went regularly to Pulo Battam and got to know the places where these pigs were to be found, with the result that we bagged several of them and amongst these some fine big boars. The largest one that was shot there was unfortunately lost on the way back, as the sampan, in

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which the carcase was towed behind the launch, got upset in a rough sea. The photograph of a very fine boar shot by another party shows the abnormal size of the head in comparison with the body and funny light coloured bumps on the head which the ordinary wild pigs don't show. This was a very old chap. My boars seem to me to be in a better condition and more in proportion with *long* and heavy bodies and standing high on their legs.

"I think I have told you before that I and others have frequently been to the same island in former years but never came across this kind of pig, and I can only conclude that it is the pineapple plantations now opened up near the coast, which have drawn them lately from the more interior parts of the island.

"In Java, I am told by old sportsmen, there exists a kind of wild boar which also has the hairy warts on the nose but no beard or whiskers\* same as the Pulo Battam boar has. Some North Borneo planters who have seen my head, say that the N. Borneo boar† is more yellowish and that an old sow there has even far heavier whiskers and hairy warts than any boar: there is therefore a good deal of difference between these and the Pulo Battam pigs.

"The same kind of pig is said to be found on Pulo Bintang (Rio)."

Below is the description of the type specimen:—

***Sus oi* sp. nov.**

MILLER. PROC. BIOL. SOC. WASH. VOL. XV. 1902

"*Type*.—Adult male (skin and skull) No. 113,150 United States National Museum. Collected on banks of the Indragiri River (about 30 miles above mouth) eastern Sumatra, September 20, 1901, by Dr. W. L. Abbott. Original number 1319.

*Characters*.—Externally most like *Sus barbatus*, but with body even more scantily haired (there is no mane and the skin

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\* *Sus barbatus*.

† *Sus verrucosus*.



*Sus oi.* Head of boar.



is nowhere concealed by the bristles except on the face), and two well-developed warty protuberances on muzzle. Skull essentially as in *Sus longirostris*. Teeth smaller than in *Sus longirostris* or *S. barbatus*, the posterior lower molar greatly reduced in size, much as in *Sus celebensis*.

*External features.*—The body and neck are sparsely and uniformly sprinkled with black bristles which nowhere conceal the yellowish white skin. On sides and belly they are very stiff, closely appressed and directed backward, about 20 mm. in length and nearly .5 mm. in diameter. On legs they are less coarse in texture and sufficiently numerous to produce a distinct dark shade. Along middle of neck and back they increase in length to about 50 mm., the diameter at the same time decreasing to .3 mm. The hairs form no mane, but throughout the region where it occurs in other hogs the hairs are less scattered and appressed than elsewhere. They are black, tipped with yellowish brown. Head as in *Sus barbatus*,\* except that about midway between eye and muzzle there are two well-developed protuberances 30 mm. in length and 20 mm. in breadth densely covered with stiff antrorse bristles. These bristles as well as those of the upper part of the face are uniformly yellowish brown. On cheeks they are strongly intermixed with black. Tail scantily covered with stiff black hairs about 25 mm. in length. They nowhere conceal the skin, but on terminal third are sufficiently close-set along sides to form a distinct flattened brush.

*Skull.*—The skull so closely resembles that of an adult male *Sus longirostris* from Borneo that it might readily be supposed to belong to an individual of the same species.

*Teeth.*—The teeth, with the exception of the canines, are uniformly smaller and narrower than those of *Sus longirostris*. Upper incisors wide apart, the second separated from both first and third by a space of 15 mm. (in *S. longirostris* the distance between second and first is 5 mm., that between second and third only 2 mm.). Posterior upper molar with last tubercle less than half as large as in the corresponding tooth of *S.*

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\*See plate xxx, of Verhandel. over de Natuurlijke Geschiedenis der Nederl. overzeesche bezittingen.

*longirostris*. Third lower molar consisting of only two cross ridges and a terminal heel, the entire length of the tooth much less than that of the tooth preceding teeth combined. In form it closely resembles Nehring's figure of the same tooth in *Sus celebensis*\* and is very different from that of *Sus longirostris* and *Sus cristatus*.†

*Measurements*.—External measurements of type: total length, 1870; head and body, 1575; tail, 295; height at shoulder, 850; height at rump, 800; ear from meatus, 88; ear from crown, 97; width of ear, 75. Weight 113 kg. Cranial measurements of type: greatest length, 480 (465)§; basal length, 405 (390); basilar length (to tip of premaxillary), 410 (397); palatal length to tip of premaxillary, 330 (—); width of palate at pm. ‡, 50 (45); zygomatic breadth, 162 (148); least interorbital breadth 80 (76); length of nasals, 240 (230); greatest breadth of both nasals together, 38 (38); occipital depth (to lower rim of foramen magnum), 140 (140)."

I have recently had the opportunity of examining the skull and freshly flayed skin of a Battam boar presented to the Raffles Museum, Singapore, by Mr. Romenij and have been struck by certain details in which it differs from the above characters, but as this is merely a comparison of one isolated individual until the description of another it is unsafe to draw any conclusions.

On roughly comparing the partially cleaned skull, however, with those of three *longirostris*? boars in the Raffles Museum from the Baram R., Sarawak, the greater facial angle and breadth of palate and lower jaw were immediately noticeable.

A space of 10 m.m. only separates the upper incisors from each other.

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\*Abhandl. u. Berichte des K. zoologisch. u. anthrop.-ethnol. Mul. zu Dresden, 1888-1889, pl. ii, fig. 8.

‡In *Sus barbatus*, this tooth is, according to Nehring, of the *usnas* form, that is with three cross ridges and a terminal heel.

§Measurements in parenthesis are these of an adult male *Sus longirostris*.



*Sus oi.* Head of boar.





The colouring too is somewhat different. The scantily haired skin is generally covered with an equal mixture of pale yellowish and black hairs, the former darkened and the latter bleached for two to three millimetres at the tip, but this particular colouring is only remarked on close examination. The growth, however, is so slight as not to detract from the dirty yellowish appearance of the body which is thus contrasted with the outer sides of the forelegs that are almost entirely black, as are the lower hind-legs also, but to a less extent; while the short bristles between the bare snout and the warts are grizzled black and whitish. The fore-head and inter-orbital region are freely sprinkled with short, pure white hairs very slightly yellowish at the tips.

The spatulate-like growth of coarse black bristles on the distal third of the tail is very noticeable and forms a marked point of difference from *Sus barbatus* and *longirostris* in which the tails are covered with bristles throughout in all the examples I have seen.

The warts on the nose are elliptical in shape, the greatest diameter being about 50 m.m. and they rise some 40 m.m. above the skin surface from which they spring: they are entirely cartilaginous and in no way connected with the skull.

Between the eye and ear and at the angle of the lower jaw the skin forms almost a distended pocket and it is from the ridge of this excrescence that the curled whiskers, which show such a remarkable development in some specimens, take their rise.

The animal is practically maneless except for a slight lengthening of hair above the neck and shoulders but this is only visible when closely looked for. The specimen under discussion stood 39 inches (990 m.m.) high at the shoulder and the length from tip of snout to tail—unfortunately taken along the curves of the body instead of in a straight line—was 73½ inches (1866 m.m.)

The teeth show it to be fully adult and while the skin of a *cristatus* or *vittatus* boar of the same age would have shoulder shields little less than an inch in thickness this *Sus oi* skin not

only shows no thickening at all in that region but is remarkable for its exceeding thinness throughout.

In a note on *Sus oi* in the "Field" of August 13th, 1904, Mr. R. Lyddeker (apparently basing his opinion merely on two photographs of Mr. Romenij's specimens) is inclined to doubt whether it can be separated from *Sus barbatus* and also repeatedly claims it as an addition to the fauna of the Malay Peninsula.

Without going into the question of the validity of *Sus oi* as a species—save to remark that it is doubtful whether there is at present in Europe sufficient material with which to refute Mr. Miller's opinion of its distinctness—I cannot refrain from pointing out that it is impossible to claim this pig for the Malay Peninsula on the strength of its occurrence in Pulo Battam since the affinity of the fauna of the islands of the Rio-Linga Archipelago—although strongly specifically differentiated in many respects—is entirely with that of Sumatra.

Only one species of wild pig is at present known to occur in the Malay Peninsula and that is the animal regarded as identical with *Sus cristatus* of India, and I see no more reason for now claiming *Sus oi* for the Mainland than there would have been for including in the past *Sus vittatus*, *Presbytes maurus* and other animals that occur in the above islands, amongst the fauna of the Malay Peninsula.

(The plates illustrating this paper are from photographs lent by Mr. Romenij).

## Some Mouse-deer Tales.

By R. V. WINS EDTT.

These tales of *Si Kvnchil* or *Si Plandok* were copied down by me almost word for word from the narrative of a Malacca Malay, whom I met casually in Perak. He was a man some thirty years old and he told me he had heard the tales as a boy from a Javanese settler in Malacca, who translated them for the pleasure of his Malay acquaintances from a thick Javanese book : he added that the book was in manuscript and looked old. His recital was racy and colloquial and had none of the artifice and literary graces of the professional rhapsodists. He said, he could only remember a few tales. These are they : tales of the Mouse-deer, his wit and the carking cunning "which keeps his body so thin and his eyes so large and bright."

I once narrated the first of my tales to some Kuala Kangsar boatmen on the Perak River, and they capped it with a story of identical moral, where however it is a man who releases a tiger from a trap and the tiger in return threatens to devour the man, and a river-bank is called upon and attests the ingratitude of men and beasts ; till at last the mouse-deer lures the tiger into the trap again, to see how the man can release him ! These same boatmen substituted the phrase "Nabi Sleyman's belt, *tali pinggang*" for "Nabi Sleyman's turban" in the story of the mouse-deer with the snake and the tiger. Apparently, many Mouse-deer tales are told, of the same gist but with slightly different dress : and this is only to be expected, when they are circulated merely from lip to lip. I have not got the book by me and my memory may play me pranks : but, so far as I can remember, the tale of the mouse-deer enticing the lion into a well to fight his own shadow, which appears in the Hikayat Gelila Demina, appears in a slightly different shape in Mr. Skeat's little book of folk-lore tales.

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Mr. George Maxwell and others have reminded me, that one of these tales of mine bears an extraordinary resemblance to that of Brer Rabbit and the Tar Baby.

The only story which I have abbreviated and altered verbally in translation, is the rather indelicate anecdote of how *Si Plandok* behaved, when he leapt right into the tiger's maw.

\* \* \* \* \*

Once upon a time, a tall tree by a river-bank fell suddenly and pinned down a crocodile by the tail. It happened, that some buffaloes came down to drink hard by and the crocodile besought them to lift the fallen tree and release him. One of the buffaloes answered, "But how can we release you? how can we lift the tree? We have neither fingers nor paws, where-with to grasp its trunk." "No, my friends," said the crocodile, "but you have strong horns and foreheads: of your mercy, place them under the trunk and heave all together." Then, three buffaloes pushed their horns under the tree and heaved all together and raised the trunk. And, the crocodile slipped out, like an eel that has had his tail nipped, quick as lightning; and forthwith siezed the hindleg of the biggest buffalo in his jaws. The buffalo cried out with pain and anger. "What is this? Have I not helped you that you serve me thus? Why do you requite evil for good? But, the crocodile only bit the harder. Now, Mr. Mouse-deer had come up, while this was going on, and jumping upon the tree-trunk said to the buffalo. "Why, do you ask such stupid questions? It is the nature of beasts and men to be ungrateful. See, here is an old sleeping-mat drifting down-stream. I will ask it about the matter." Therewith, he called out, "Ho, sleeping-mat, is it the custom of the world to requite good with evil or with gratitude?" "With evil," answered the mat: "I was once clean and new, soft to lie upon and comporting to my master, but see, now I am old and worn, he has flung me adrift in the river." "Hear that," quoth the Mouse-deer: "but I will enquire, also, of this dish-cover I see floating down." And he called out, "Ho, dish-cover, is it the custom of the world to requite good with evil or with gratitude?"

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"With evil," answered the dish-cover: "I was once bright and new, fine with silk and gold thread, the pride of my mistress, but see, now that I am torn and tarnished, she has cast me away on the river." "Hear that?" quoth the Mouse-deer. "Don't ask stupid questions, you silly buffalo. But, as for these creatures lifting that tree-trunk and setting you free, Mr. Crocodile, I don't believe a word of it, and I won't, till I have seen it with my own eyes. Let go that old bull's leg: it is very tough: and keeping your eye on yonder baby buffalo, who cannot run far and is very tender eating, just tell these beasts to lift up this trunk, as you want me to believe they lifted it just now, and then only will I accept your story." So; the crocodile was nettled, and did as the Mouse-deer asked, let go the bull's leg and approached the trunk to instruct the buffaloes how to raise it, once more. Then the buffaloes strained and strained and lifted it a little. "See," said the crocodile, peering and pushing right under the trunk to watch the work, "see, up it goes." "And down it goes," yelled the Mouse-deer: "down with it, you buffaloes, quick, quick, on top of the rogue." The buffaloes dropped the tree, and there was the crocodile pinned fast beneath it and sore wounded, "As long as there is a crocodile in the world," said the dying beast, "he shall be your foe and the enemy of all your tribe, you accursed mouse-deer." "Well, well," answered *Si Plandok*. "as long I am in the world, my wits shall be my friends, I hope."

Then the Mouse-deer went on his way up hill and down dale, through jungle and plain; till he was faint and thirsty. At last, he came to a stream and went down to drink. "There are no crocodiles here," he thought to himself, and he drank from a brook, his back turned to the big river. But a crocodile crept up and seized one of his hindlegs. "Ho," said he, nearly screaming with pain, "I was mistaken. What is to be done now? Mr. Crocodile, sir, why are you biting a dead branch?" "Call your leg a dead branch?" laughed the crocodile. "That's not my leg," said the Mouse-deer, "taste it carefully: don't bite or you'll miss the flavour: does it not

taste like dead wood?" "Indeed, it does", replied the crocodile, letting go. "But it was my leg, all the same," said the Mouse-deer, as he leapt up the bank.

Then the Mouse-deer bethought him how he should get across that great river and escape his enemies the crocodiles. After a while, he drew near to the bank and cried out, "Hi all ye crocodiles, rise, float, I command you." "Pray, who is this that commands us," asked a crocodile, lifting his head, "I am the messenger of *Nabi Sleyman*. Rise, ye crocodiles rise, all of you, float on the surface of this river, all ye that are in this river; for it is the will of the prophet Sleyman that I count all you his slaves: in the name of *Nabi Sleyman* I conjure you rise and float." Then all the crocodiles floated on the top of the water. "Come, all of you, herd together," said the Mouse-deer, "or I cannot count you truly." And all the crocodiles crowded together, till they stretched from one bank of the river to the other. "I will count you one by one," said the Mouse-deer; "so that there shall be no mistake in my reckoning." "One," said he, as he leapt from the bank on to the back of the nearest beast: "two" and he leapt on to the back of the next; "three," and he was on the back of a third: "four," "five," "six," "seven," "eight," "nine,"—"ten," said he, as he jumped to the opposite bank and "done" said he: "I reckoned truly and now my reckoning has brought me across, you may sink, you foolish crocodiles."

Then, the Mouse-deer continued his journey up hill and down dale, through jungle and plain, till he was tired and hungry. And he saw the red-shooted shrub (? *lamah-lamah*) which Mouse-deer love, and ate the shoots and went on his way, his mouth streaming red slaver. By and by, a sambur-doe met him and asked, why is your mouth red like that?" "Ah," said the Mouse-deer, "some kind jungle folk in yonder Kampong gave me betel to eat: they invite all comers; you had better go, too." Now, sambur deer love betel. "Show me the way," said the doe. "Straight ahead," answered the Mouse-deer, "and tell the folk I told you to go." "Thank you, Mr. Mouse-deer," said the doe and off she ran as fast as she

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could to get betel. But the folk there had set a snare to catch any beast that came to their gardens and the sambur doe was caught fast. Then, those folk came out to kill her. "Alas!", she protested, "it was a mouse-deer told me, I should be welcome," "Welcome indeed," said the folk, "for you are the rascal that has destroyed all our betel." So they killed the sambur-doe.

But as Mr. Mouse-deer went on his way, a young sambur-deer met him and asked him, "where is my mother?" Then, the Mouse-deer answered: "how should I know?" "You lie," answered the sambur and rushed at him to kill him; "she is dead and it is your doing." But the Mouse-deer leapt aside into a deep pit, where his enemy dare not follow. So, the sambur went away and *Si Plandok* was left alone, to reflect how he should get clear of a pit which was too deep for him to leap up and out. At last he called so that all the beasts of the forest came and asked him what he did there. "Ware sky," cried the Mouse-deer, pointing to the drifting clouds, "I'm down here, because the sky is about to fall, and if you care for your lives you'll all of you jump down as quick as you can, before it falls and kills you." Thereupon, all the beasts began to tumble in, one on the top of the other. "Don't crush me in this narrow space," quoth the Mouse-deer, leaping on the buffalo's back: "don't crush me," and he jumped higher on to the tiger's back, and thence on to a deer's, so out and on to the bank and away. Then, the Mouse-deer wandered on till he met a huge tiger. "I shall eat you," said the tiger. "Don't," prayed the Mouse-deer, "I entreat you, spare me." "I shan't: I'm very hungry," said the tiger. "Well open your mouth wide agape and I'll jump in," said the Mouse-deer, "that will save you trouble." "All right," said the tiger and did as *Si Plandok* asked him. The Mouse-deer leapt hard and straight for the tiger's gullet and tore his way right through the tiger's body; then, popping out his head, shouted to a goat grazing near to be off, before he should be caught and killed. "I must stop this back-door treachery," said the tiger and espying a pointed stick began to thrust and



press himself against it, but slipping down smartly let the stick pierce right into his body so that he died. But *Si Plandok* leapt out and escaped.

Then, Mr. Mouse-deer took counsel with himself. "I have many enemies, the crocodile, the deer, the tiger and all the beasts I lured into that pit. What shift is there for me to save myself alive?" And he came to a wild wasps' nest. "Good," said he, "I will bide by this nest." Presently, a tiger found him and asked him his business. "I guard *Nabi Sleyman's* gong," said the Mouse-deer, pointing to the nest. "May I strike it?" asked the tiger. "Of all things, I should like to strike it: and, if you let me do so, I will not eat you." "You may," answered the Mouse-deer, "but, with your leave, I will go a long way off first or *Nabi Sleyman* will be angry." "All right," replied the tiger. Then the Mouse-deer went a long way off till he came to a clump of bamboos: and there he waited. Then, the tiger smote *Nabi Sleyman's* gong and all the wasps came swarming out and stung him till his face was swollen. So, he bounded away in a rage and went to where the Mouse-deer stood. "Knave, villain," said he, "see my face all swollen. Now I will kill you. But what is this bamboo you are watching?" "It is *Nabi Sleyman's* viol," said the Mouse-deer, pointing to a slit stem, in which the wind sounded. "How do you play it?" asked the tiger. "Lick it here with your tongue," said *Si Plandok*, pointing to the slit. "May I?" asked the tiger. "Yes," said the Mouse-deer, "but with your leave, I will go a long way off first or *Nabi Sleyman* will be angry." "All right" said the tiger. Then Mouse-deer went a long way off and stood by some filth. Then the tiger licked the bamboo; and a gust blew and closed the fissure, so that the end of the tiger's tongue was pinched off: and that is why tigers are short-tongued to this day. So, he bounded away in a rage and went to where the Mouse-deer watched over the filth. "See the hurt you have done me, accursed one," said the tiger, showing his tongue: "now, of a truth, I will slay and eat you. But, first, what is this filth that you guard it?" "It is *Nabi Sleyman's nasi Kunyet*," said the Mouse-deer. "May I

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eat it ?," said the tiger. "Of all things, I should like to eat it : and if you let me do so, I will not kill you." "You may," said the Mouse-deer, "and perhaps it will cure your tongue : but first, let me go a long way off or *Nabi Sleyman* may be angry with me." "All right," said the tiger. And Mr. Mouse-deer went a long way off and stood by a coiled snake. Then the tiger tasted the filth. "Why is it so bitter?", said he : "beast, this is not rice but filth only." And he rushed in a rage to where the Mouse-deer waited. "Now, indeed your hour has come," said the tiger : "make ready to die. But, first, what is this you are guarding," and he looked at the coiled snake. "This is *Nabi Sleyman's* turban," said the Mouse-deer. "May I wear it?", asked the tiger : "of all things I should like to put it on : and if you let me do so, perhaps I may spare your life." "You may put it on," said the Mouse-deer "but first let me go a long way off or *Nabi Sleyman* may be angry with me." "All right," said the tiger. Then the Mouse-deer went a long way off and, looked on gleefully. So, the tiger began to unwind the coils but the snake awoke, his tongue darting like flame, and fought with the tiger and overcame him and killed him. "Ha! ha!", laughed the Mouse-deer and went on his way, up hill and down dale, by jungle and by plain, till he was hungry. Then he came to a cucumber garden and nibbled all the cucumbers. So, the gardener was angry and took paint, dry cocoanut husks and old clouts and made a scarecrow and smeared it with the gutta of the jack-fruit tree. "What is this?" said the Mouse-deer, returning to his feeding ground : "a man, or a doll? Only a doll, I declare." And he poked it with his foreleg. But his leg struck fast in the gutta, "It's alive, after all, and it wants to fight. I'll kick it hard." Another leg stuck fast. "Oh! it's only a wretched doll but it has strong glue." And he kicked with his hind legs also, till all four legs were stuck fast. Then the Mouse-deer wept and called for help. And the bird *Ketopok* flew down and offered to release him but warned him it would be a dirty job. "Never mind that," said the Mouse-deer, "so long as I get free." So, the *Ketopok* covered him all over with bird-lime. By and bye,

the gardener came up. "Ha!", said he, "here is the thief caught fast. We'll take him home and kill him." Now the Mouse-deer kept still and held his breath. "Don't take him home, father," said the gardener's son, looking at him, "he's been dead some hours and is quite rotten and stinking." And he pulled the Mouse-deer away and threw him on a heap of rubbish. But the Mouse-deer jumped up and shook himself and shouted, "I'm not dead but dirty." Then he sprang away into the forest.

The Mouse-deer journeyed on, and came to another cucumber garden, and there, too, he nibbled the cucumbers. But the gardener set a trap and caught him and put him in a cage, while the good-wife prepared spices to dress him for a feast. Now, the gardener had an old watch-dog. And the dog went up to the Mouse-deer's cage and asked him why he was locked up. So, the Mouse-deer said, "It is because they would force me to marry the gardener's daughter against my will. See, they are preparing spices for a wedding feast." Then the dog asked, is it not for stealing cucumbers you are imprisoned." But the Mouse-deer persisted it was because he would not marry the gardener's daughter. Then the dog answered, "How long have I done faithful service here, and why should you a stranger be preferred to me. I will take your place and marry." And the dog pushed open the cage and entered it, while the Mouse-deer ran off. By and bye, the gardener came and opened the cage and found only the watch dog; and he cursed and beat the dog: but the dog could only tell, how the Mouse-deer had cheated him.

At last the Mouse-deer came to the sea-shore and met the king of sea-snails, *siput kiyong*, by whom he was worsted. "I pity you;" said he to the snail, "well enough, you can only just crawl with your house and pillow on your back." "Why," said the snail, "I'll beat you in a running race along the sea-shore, if you give me seven days' notice." "Done," said *Si Plandok*, laughing and wondering what the king of the snails would do. But the snail sent messengers to all his *rayats* and bade them assemble in crowds by the edge of the sea,

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hiding themselves in shallow water, till they saw a Mouse-deer come running, when they were to pop up one after another in front of the Mouse-deer. So, after seven days, the Mouse-deer started to race the sea-snail along the seashore, but fast as he could run, there was always the snail, or so it seemed to him, before him. And Mr. Mouse-deer was angry and discouraged, because he thought the king of the snails had worsted him.



## Another Sea-Dyak Legend.\*

\**vide* Journal Straits Branch R. A. Soc. No. 41. 1904.

“TWO SEA-DYAK LEGENDS.”

BY THE REV. EDWIN H. GOMES, M.A.

### PULANG-GANA

*And how he came to be worshipped as the God of the Earth.*

Long, long ago, though the Dyaks knew of paddy and planted it every year, yet they had very poor crops because they did not know who was the god that owned the land, and as they did not offer him sacrifices, he did nothing to help them. In those days there lived together seven brothers and their only sister. Their names were *Bui-Nasi*, *Belang-Pinggang*, *Bejit-Manai*, *Bunga-Jawa*, *Litan-Dai*, *Kenyarwang*, and *Pulang-Gana*, and the sister's name was *Puchong-Kompat*. They lived on a hill by the side of a broad river. On all sides were wide plains, and beyond these were high hills rising in the distance. Most of these were covered with thick jungle; only a few clearings could be seen where paddy had been planted.

Not far from their house the brothers had a garden, in which they planted potatoes, yams, sugar, cane and tapioca; but a porcupine used often to come at night and do much damage to this garden. Their youngest brother *Pulang-Gana* was told to keep watch at night, and drive away the animal or kill it if he could. But all his efforts were vain. When he was awake the animal did not come, but as soon as he fell asleep the porcupine would creep in quietly and eat up the potatoes and yams. The elder brothers were not kind to *Pulang-Gana*. They would not keep watch themselves, but whenever they saw any fresh damage done, then they not only scolded their younger brother but beat him with sticks.

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"He is only lazy," they said, "he deserves a thrashing; he does nothing but sleep and is too lazy to wake up at night and drive the porcupine away!"

Poor *Pulang-Gana*! His was a hard lot indeed!

He determined to keep careful watch one night, and whatever it cost him, to kill the porcupine, so that his brothers might have no more cause for blaming him. That night he did not sleep at all. The porcupine came just before dawn when all was very still. *Pulang-Gana* was awake, and went after it, determined to kill it. The animal ran away and *Pulang-Gana* followed. The moon was shining brightly and he had no difficulty in seeing in what direction it went. Every now and then the porcupine stopped, but as soon as *Pulang-Gana* came close to it, it started off again and he was not able to kill it. So the animal went on and *Pulang-Gana* followed. He was determined not to give up the chase until he had killed the animal that had been the cause of his being scolded and beaten so often.

The sun was beginning to rise in the East and still *Pulang-Gana* pursued the porcupine.

"Sooner or later," he said to himself, "I must catch it up. The animal is already tired. I will not return home till I have killed it."

The porcupine now came to the foot of a rocky mountain. *Pulang-Gana* thought the chase would soon be over and he hurried on. But before he could come up to the animal it made its escape into an opening in the solid rock. The cave into which it had disappeared was large enough for a man to stand upright in, and *Pulang-Gana* said to himself:

"Now I have you; wait till I have a light to show me where you are, and then I will come in and kill you."

He collected some dry branches and tied them together for a torch. He found a piece of dry soft wood, and also a short stick of some hard wood the point of which he sharpened. With the palms of his hands he worked the small stick and drilled a hole in the soft wood. Soon it began to smoke, and with the aid of some dry twigs he blew the fire into a blaze; then he lighted his torch, and hurried into the cave after the porcupine.

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He saw the animal a little distance ahead of him and followed it leisurely. There was no need for haste, as he would be able to kill it easily enough when he drove it to the end of the cave and it had no means of escape. The cave seemed to extend a great way into the mountain. After a few hours walking *Pulang-Gana* was surprised to come to an opening in the rock through which the porcupine had evidently escaped. Outside the sun was shining brightly. *Pulang-Gana* went through this opening, but though he looked in all directions he could see no signs of the porcupine.

He was uncertain what he ought to do next. The porcupine had escaped and there was no chance of his being able to kill it. He did not feel inclined to return to his brothers because they were all unkind to him. On the other hand, he did not know if this new country in which he found himself was inhabited, and if inhabited, whether the people would treat him kindly. He looked around and saw smoke arising some distance off, and guessed that there was a Dyak house there. As he was hungry he decided to go to it hoping that the inmates would be kind to him and give him food.

As *Pulang-Gana* came nearer he saw that the house was a very long one inhabited by about one hundred families. He stopped at the bottom of the ladder leading up to the house, and following the Dyak custom, asked in a loud voice if he might walk up.

"Yes, come up *Pulang-Gana*," said some one in reply. "We have been expecting you for some time and will be glad to see you."

He was surprised that his name should be known in this strange country in which he had never been before. He walked up and in the long open room stretching the whole length of the house, he saw an old man and a young and beautiful girl.

"Spread out a mat, my daughter," the old man said, "that *Pulang-Gana* may sit and rest after his long journey, and you can prepare some food for him, no doubt he is hungry as well as tired."



She spread out a mat for *Pulang-Gana* and then went into the room to get ready a meal for their visitor. Soon after she opened the door of the room and asked him to come in and eat.

The old man who seemed kind and hospitable said to him :

“Go in and have some food. You must be hungry after your long journey. When you have eaten and rested, we can have a talk together. I have long wished to meet you and to ask you about yourself and your brothers, and how affairs are in your country.”

*Pulang-Gana* went into the room and found a nice meal awaiting him. Being very hungry, he did full justice to it.

That evening as they sat by the fire, the old man asked him about his people and if they had good crops of paddy in his country. *Pulang-Gana* said in reply that though his brothers possessed the largest paddy fields in the country, still he never remembered their having a really good harvest. The paddy they obtained was not sufficient to last them the whole year, and they had to fall back on potatoes and sago for food. The old man seemed interested in what *Pulang-Gana* said of himself, and *Pulang-Gana* went on and told him of all his circumstances, how he lived with his six brothers and only sister and how unkind his brothers were to him. He told the old man also about the porcupine which did such damage to their garden, and how often he had been scolded and beaten by his brothers for not being able to drive away or kill the animal. He gave an account of his adventures that morning, how determining to kill the porcupine, he had followed it through the under-ground passage through the mountain and had found himself in this strange country.

“I have heard your story,” said the hold man, “and think you are very much to be pitied. Your brothers seem to have been very unkind and to have treated you very badly. I would like you to stay with me here, and not return to them. I have no son, and would like you to marry my daughter and live with us. I am getting old and am not so strong as I used to be and will be glad of your help.”

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"I should like to stay with you very much, for you seem so kind, and are so different to my brothers, and I should like to marry your daughter and spend the rest of my life here. But there is no one to look after our garden, and the porcupine will do much damage to it. And my brothers are sure to be angry with me for leaving them, and when they see their garden destroyed through my neglect, they are sure to hunt for me and when they find me they will probably kill me. No; much as I would like to stay, I am afraid I cannot. I must start to return to-morrow. It would have been different if I had succeeded in killing the porcupine, then it would not matter so much if I stayed away some time."

"You need not trouble yourself about the animal that attacks the vegetables planted in your garden. I can prevent its coming again. That porcupine is not really an animal. One of our slaves here, named *Indai-Antok-Genok*, is commanded by me to transform herself into a porcupine and pay visits to that garden. I shall tell her to do so no more, and your brothers' garden will be safe enough without you to watch it. You must remain here with us. There is nothing for you to fear. If you do not return your brothers will think that some accident has happened to you and that you are dead. As they are all so unkind to you, you may be sure they will not trouble to look for you."

"Well, if that be the case, I will gladly live with you. I was not happy with my brothers and I am sure I shall be happy here."

So it was decided that *Pulang-Gana* should remain in the house of the old man. Some months afterwards he married the daughter and they lived happily as husband and wife. His wife's father and mother were kind to him and so were the other people in the house, and *Pulang-Gana* was very glad he decided to cast in his lot with them.

Now this old man who treated *Pulang-Gana* so kindly was no ordinary mortal. His name was *Raja Shua* and he ruled the spirits who live in the under-ground caves of the earth. His wife was quite as powerful as he. She was a goddess and

had power over the animals of the forest, all of which obeyed her. She was known as *Seregendah*. The daughter that married *Pulang-Gana* was called *Trentom-Tanah-Tumboh* and sometimes *Setanggoi-Tanggoi-Buloh*. It was from his father-in-law and his wife *Seregendah* that *Pulang-Gana* received power over the land.

In process of time *Pulang-Gana's* wife gave birth to a girl, who was very much admired by all, and greatly loved by her parents.

When the child was a few years old, one day she came to her father and mother and asked them what property they intended to leave her. The mother showed her the valuable jars and brassware that she possessed, all of which were to belong to her child. Then the little girl asked her father what he had to give her. *Pulang-Gana* had no property to leave to his daughter. Years ago he had come by chance to this house of *Rajah Shua* bringing nothing with him, and unless his brothers gave him a share of their father's property, he would have nothing to leave his daughter. So he told her to be content with what her mother gave her. She would be very rich without anything from him. But she was not satisfied with this reply, and cried because her father said he had nothing to give her.

When *Pulang-Gana* saw how sad his child was, he said to his father-in-law that he would like to pay a visit to his brothers and ask them for a share of the property, that he might have something to give his daughter. *Rajah Shua* told him he might go to them but warned him that probably he would not have a kind reception, and advised him not to be away long but to return as soon as possible.

*Pulang-Gana* started on his journey to his old home, wondering how his brothers would receive him after his long absence. He had no difficulty in finding his way as his father-in-law gave him very definite instructions about his journey. He found that his brothers had built a new house not far from the site of the old one in which he had lived with them years ago. The house seemed very quiet and he found that nearly all the

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people were away on a fishing expedition. Only his sister-in-law, the wife of his brother *Belang Pinggang*, was at home.

She was very much surprised to see him, and said they had given him up for dead long ago. She told him that the others were away fishing, and that his brother *Bui-Nasi*, and a little boy, besides herself, were the only ones left at home. He would find his brother and the little boy working at the forge making some implements for their work.

*Pulang-Gana* said he would go to his brother and he left the house and walked in the direction where he guessed the forge was from the sound of hammering he heard.

"Oh! Is that you *Pulang-Gana*?" said *Bui-Nasi* as soon as he saw him. "Where have you been all these years? We thought that you had met with some accident and had died long ago."

*Pulang-Gana* said little about himself to his brother. He told him how he had lost his way in the jungle years ago, and when he arrived at last at a house, the people there persuaded him to stay with them, and he said that he was now married and had a daughter.

"Have you come with your wife to stay with us?" asked *Bui-Nasi*.

"No," was the answer, "I have only come on a short visit by myself to ask for my share of the property left us by our father."

"You have nothing whatever to expect. You left us years ago of your own will and have been away all this time, and now you have the impudence to come and ask for your share of the property. I advise you to say nothing of this to the others. They will be very vexed with you if you do."

"I do not ask for much," said *Pulang-Gana*. "I will be satisfied with little. But my daughter asked me what I had to give her, so I came here to ask for something, and I should be sorry to return empty-handed."

"You shall not return empty-handed," said *Bui-Nasi* in scorn. "Here is something for you to take back with you. If is all that you will get from us, I can tell you." With these

words he threw *Pulang-Gana* a clod of earth which he saw lying near. Now go away, and do not let us see your face again."

*Pulang-Gana* put the lump of earth in his bag, and with a heavy heart, started to return to his house. So this was the way his brothers treated him! There was nothing to expect from them!

When he arrived at his house all the family gathered round him. They had heard that he had gone to ask his brothers for his share of the property and they were anxious to see what he brought back. His little daughter rushed up eagerly to him and said:

"Father what have you brought back for me from my uncles? Let me see the nice things they gave you."

Then *Pulang-Gana* said sadly, "I received no share of the property from your uncles. They would have nothing to do with me, and drove me away."

"But did you get nothing at all from them?" asked his father-in-law.

"Yes," said *Pulang-Gana*, "my brother *Bui-Nasi* did give me something, but I am ashamed to tell you what it is. Here it is," and he took out from his bag the lump of earth his brother had given him, and handed it to his father-in-law.

When *Rajah Shua* saw what it was that *Pulang-Gana* had received from his brothers, he said joyfully:

"They have given you the most valuable gift it is possible to imagine. You are now a person of great importance. The earth is yours. Whoever wishes to plant on it must first make offerings and sacrifices to you and pray to you to give him a good harvest. It is in your power to make the earth fruitful or barren, and to give mankind a good or a bad harvest as you will."

A few months after, the brothers of *Pulang-Gana* at the advice of *Bui-Nasi* decided on the site where they were to plant paddy that year. It was a large forest some distance away from their house. First they cut down the smaller trees, and then they felled the large trees, and when all this work was done, they rested for some weeks, waiting for the sun to dry up

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the timber so that it might be set on fire and the land be ready for planting on.

One day *Pulang-Gana's* father-in-law said to him, "I hear that your brothers have been busy cutting down the trees where they intend to plant paddy this year. As they gave you the earth some time ago to be your share of the property, it is only right that they should ask leave from you before planting on it. Since they have not done so, you must stop them from planting paddy there."

"How can I prevent them planting paddy where they like?" said *Pulang-Gana* in dismay. "Is it likely that they will take any notice of anything I say?"

"Yes," said his father-in-law, *Raja Shua*, "they will have to listen to what you say, for I will be on your side and will help you. I am the god that rules the spirits that live in the underground caves of the earth, and my wife *Seregendah* has power over the animals and the spirits which inhabit the forests. As your brothers have treated you so unkindly, and have given you no share of the property, and have simply given you a clod of earth to take back with you, my wife and I will punish them and reward you by giving you power over everything that grows on the earth. Before the land is planted upon, offerings must be made to you, and invocations must be made to yourself and myself and my wife *Seregendah*. Unless these things be done, the ground will not be fruitful.

"As your brothers have not done anything of the kind, you must teach them a lesson and prevent them from going on with their work. This evening at dusk you must go to the newly cleared forest and cry aloud: 'Come here all you who are the servants of *Seregendah* and *Raja Shua*,' and name all the wild beasts of the forest. They will come to you in large numbers. Then you must ask them, as well as the invisible spirits, who will be present too, to help you and put up all the trees that have been cut down."

And *Pulang-Gana* did as his father-in-law advised him. He went at dusk to the part of the jungle where his brothers had been cutting down the trees and called to the animals in

the name of *Rajah Shua* and of *Seregendah*, and they came in large numbers and helped him to put up all the trees that had been felled, and the forest appeared just as it had been before any of the trees had been cut down.

The next day *Bui-Nasi* went early in the morning to see if the fish traps he had set in the stream had caught any fish, and as he was near the part of the forest where the trees had been cut down by his brothers and himself not long before, he went on to see how things were getting on and if the felled jungle was dry enough to be burnt.

To his great surprise he found all the trees standing, and no signs of the clearing that had been made! He hurried home and told his brothers what he had seen, and they all returned, accompanied by their friends and followers, and found that what *Bui-Nasi* had told them was perfectly true. They were all very much surprised as they had never known such a thing happen before.

"I wonder if this is really the part of the forest which we cleared a few weeks ago," said one of the brothers. "Perhaps we have mistaken the spot."

"No," said *Bui-Nasi* in reply, "there is no mistake. Here are the whetstones on which we sharpened our axes and choppers; and here too is where we did our cooking for our mid-day meal."

They held a consultation as to what was to be done.

"This is very strange," said *Bui-Nasi*. "Some enemy who is helped by powerful spirits is determined not to let us plant paddy here. Let us try and find out who has made the trees that we have cut down stand upright and grow up again as before. My advice is that we cut down the jungle anew, and that some of us remain and keep watch here all night. Perhaps we may be able to catch the culprit."

So the brothers and all their friends and followers set to work, and before the day ended, they had cleared afresh a large stretch of jungle.

Twelve men, with *Bui-Nasi* at their head, were set to watch, and the others returned home, discussing among themselves what had taken place.

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Those that were left by the clearing had not long to wait. Soon after dusk they saw a man come and standing on the trunk of a large felled tree, call aloud to the animals of the forest and the invisible spirits around in the name of *Rajah Shua* and *Seregendah* to come to his help. The twelve men crept up cautiously behind him and seized him.

"We have you now," they said as they held him fast. "It is you who have caused us all the trouble of having to cut down this jungle for the second time. Now we intend to kill you, and you will not be able to play your tricks on us any more."

It was too dark to see who it was, and *Bui-Nasi* said, "Let us have a light and see what he is like. I am sure he must be as ugly as he is troublesome."

One of them fetched a light and to their great surprise they saw their prisoner was *Pulang-Gana*!

"So it is you *Pulang-Gana*!" said his brother in anger. "You are up to your old tricks again. You were too lazy to work before, and would not keep watch over our garden, and you left us without telling us where you were going. And now, after several years' absence, you come back and disturb us in our work, and by some means or other set up the trees we have had the trouble of cutting down. Though I am your brother I have no pity for you. As long as you are alive you will give us trouble, so we intend to kill you and be well rid of you."

He expected *Pulang-Gana* to be afraid of him and to plead for his life. But things were very much changed from the old days when *Pulang-Gana* was the despised youngest brother, beaten and scolded by the others. Now he was the son-in-law of the gods, and had *Rajah Shua* and *Seregendah* to help him, and he was not at all afraid of his brothers, because he knew well they could do him no harm.

He shook off those that held him, and told them to listen to what he had to say. His manner and bearing were very different from that of one who feared them. They stood round him in awe, for they instinctively felt that *Pulang-Gana* was not to be trifled with, and from what had already taken place, they knew that he was aided by powerful spirits.



Then *Pulang-Gana* spoke :

“ I have good reason for doing what I did. You have no right to cut down this jungle or to plant on this land. You have not paid me the price of the land. Not long ago, you, *Bui-Nasi*, gave me a clod of earth as my share of the property of our father, and so I have now the right of preventing any from planting on the earth. It is no use your attempting to kill me. Though you are many in numbers, it is impossible for you to kill me because I am now the god of the earth, and am assisted by *Rajah Shua* and *Seregendah* whose power you know.”

There was silence for a short time, and then *Bai-Nasi* said, “ No doubt what you say is true, for no one without supernatural aide have could made the trees that were cut down stand upright and grow. What do you wish us to do in order to obtain your leave to plant on the land ? ”

*Pulang-Gana* told them to gather all the people together the next day and he would tell them what all must do in order to insure their getting good crops of paddy.

That same night messengers were sent in all directions to tell the people in the neighbouring villages to come together so that *Pulang-Gana* might teach them what they were to do before cutting down the jungle and planting paddy.

The next morning a very large crowd gathered together and *Pulang-Gana* said to them :

“ You must, before cutting down the jungle, make invocations to me, as well as to *Rajah Shua* and *Seregendah*, and you must ask me for leave to plant on the piece of land you have decided on, and you must make sacrifices to me of two kinds, some animal—a pig or a fowl—must be killed, and also there must be some offering of food—rice, or eggs, or potatoes, or fruit. Then some offering must be taken and buried in the ground to be planted. That is the rent you pay to me for the use of the land that year, for all the land belongs to me and I expect rent to be paid by all who use it.

“ And if anything goes wrong in your paddy fields, and the crops are poor, or, being good, are attacked by insects or

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animals, then you must call upon *Rajah Shua* and *Seregendah* and myself to come to your aid, and we will help you."

And then for the first time did the new ceremonies come into force, and, aided by the higher powers, mankind were able to obtain much better crops than they had done before. And this is why no Dyak dares to plant paddy without first making invocations and offerings to *Pulang-Gana*, *Rajah Shua* and *Seregendah* and also burying some small gift in the earth for the use of the land that year.



## Some Notes on Malay Card Games.

R. O. WINSTEDT.

In preparing these notes, I have used as a ground-work the chapter on card games in Mr. Skeat's *Malay Magic*, but in addition to supplementing that account in some details, I have collated local variations in the rules of the games and collected some terms which I have not seen recorded elsewhere.

I. *Main chabut*. This game, says Mr. Skeat, "is a species of vingt-et-un and is played with either twenty-one or thirty-one points" or pips or *mata* as the Malay idiom is. If the game is thirty-one points, not more than nine people can play: if twenty-one not more than seven. The "ten" cards are not used: according to Mr. Skeat, court cards also are thrown out in the twenty-one game, but I have seen court cards used in both games and counted as ten pips each. The ace (*sat*) is used and is worth one, ten, or eleven pips as is convenient to the player; except that, if you have two aces in one hand while playing the twenty-one game or three in one hand while playing thirty-one, the ace must be reckoned as worth only one pip. The dealer (*perdi*) distributes two *lunas* or 'keel' cards, 'poundation' cards as we might say, to each player. The nicknames for the various combinations in these 'keel' cards given by Mr. Skeat—*lunas nikah*, a court card and an ace; *lunas dua jalor*, two threes; *kachang di-rendang di-tugalkan*, two aces—I have found to be familiar even to the younger generation in Perak. After the 'keel' cards have been dealt, each player in turn draws (*chabut*) fresh cards from the bottom of the remaining cards of the pack. Whoever gets thirty-one or twenty-one pips exactly, according as to which game is being played, is said to "*masuk mata*." In a game of thirty-one, no player can *chabut* more than seven cards or more than five in a twenty-one game, and if he has drawn seven or five cards

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and not yet got nor exceeded thirty-one (or twenty-one) pips, he is said to *masok daun* and wins even over a player who has *masok mata*. Of those who *masok daun*, the one with the smaller number of pips would win: but for two players to hold such a hand hardly ever occurs. The player who gets more than thirty-one (or twenty-one) points is said to be "dead" *mati*, or "blind" *bota*, or "to go to pot" *masok pering*, literally 'enter the plate,' alluding to the plate in the centre of the players into which he will fling his hand. When a player has drawn cards, till he has a total of twenty-six, twenty-seven or twenty-eight (or sixteen, seventeen, eighteen) points in his hand and is afraid to draw another card for fear of exceeding thirty-one (or twenty-one), he is said to be "in a small coil," *blit kecil*, and "passes," if this happens, when he has twenty nine or thirty pips, it is *blit besar*.

"When two players have the same number of pips. e.g., nine and nine or eight and eight—," writes Mr. Skeat, "the coincidence is described in the words, *Jumpa di-jalan, diadu kalah, dichabut mati*." This is not very intelligible. I believe, it should be explained as follows. If I have passed with twenty-nine or twenty-eight pips in my hand and another player after me does the same, it is a rule of the game that I (who first had twenty-nine pips in my hand) win before him. So, the phrase applies to the loser. If he had drawn another card, he would probably have become *mati*, holding more than thirty-one points: reluctant to draw another, he cannot *adu* or compete with the man who was *blit* first with the same number of pips as he.

*Kena ranjau*, translated by Mr. Skeat "to be bluffed," I take to be the same as *kena das*. (Singapore) and to apply to a player who inadvertently or foolishly shows his hand, *buka daun*, before the rest of the players are all *blit* or *mati* or *masok mata*, and so has to pay up all round by way of penalty.

II. *Daun tiga lei or pakau*. Three cards are dealt to each player. The best hands are called *daun trus*. In Perak and Selangor, the very best hand is three aces: the next best in Perak is three court cards, in Selangor three threes. Then

follow in Perak, hands of nine and eight pips; in Selangor, says Mr. Skeat, hands of three tens, and three court-cards in that order and then hands of nine, eight, seven pips and so on in descending order of value. "The highest hand counting by pips," Sir William Maxwell puts it clearly, "is that which contains the greatest number of pips after the tens are deducted." In Perak, "a hand of three threes is really a good hand, being nine, but it is considered a propitiation of good luck to throw it down (without exposing it) and announce that one is *bota* in hopes of getting good luck afterwards."

Apparently, Singapore players recognize a different list of *daun trus*. The best hand is three court-cards, *tiga kula*: the next best is three threes or a nine and two court cards. And then follow hands of nine, eight pips and so on in descending scale. The tens are not used at all. Court cards are valued at zero, except when you have three in one hand and so hold the best possible of *daun trus*. Three aces are reckoned as three pips only: so, a hand of three aces is absolutely worthless, and a hand of two aces and a court card, for instance, makes you only two pips. If you hold one court card, one ace and one nine, the ace is counted as zero like a court-card and you score nine: so, this hand is one of the *daun trus*, equivalent to two court cards and a nine.

Then there are the phrases, *handak kaki tiga*, *minta penoh*, *minta isi*, *minta kosong*, used in the process, *mengurut daun*. "A player does not hastily, look at his three cards and learn his fate at once," says Sir William Maxwell, "but he prolongs the excitement by holding his cards tight together, and looking alternately at the outside ones, and last of all at the middle one, sliding out the latter between the two others little by little. Thus it is left uncertain for some time whether a card is an eight or a seven, a nine or a ten." *Handak kaki tiga* is a player for a six, seven or eight cards having pips in rows of three. If after seeing my top and bottom cards I want the remaining card to have no pip in the centre; if, for example, I want a six and not a seven or eight, I am said to *minta kosong*: if, on the contrary, I want a pip or pips in the middle of the

third card, want a seven or an eight, I am said to *minta isi*, or *minta penoh*. Many players make a clicking sound like one encouraging a horse, if they want a *kuda* or court card.

*Main trop.* The following are some terms in connection with this game which I have failed to find either in Skeat or in Wilkinson's Dictionary.

In *main trup*, when a player leads a trump card, his action is described by the words *sudi* or *juru*. Diamonds are sometimes called *batu Malacca* or *lobin* (or *jubin* : Jav. = square flag-stones) spades, *payong*. *Bibi* is used of the Queen. If I and my partner have already got seven tricks between us, I ask him *kiler-kah* atau *kot-kah* : should he hold no more cards of value in his hand, he says *kiler* and the game is over ; should he hold high cards and thinks we can take all the tricks, he says *kot* and we play on in the hope that our opponents may *kena kot*, not score a single trick ; but, if any of our tricks are lost, the tables are turned and we ourselves *kena kot balik*. *Mita sus* is to ask for special cards from one's partner. There are numerous masonic signs accounted by Malay gamblers proper and clever, but which we should call cheating. Thus, to open one's hand of cards fanshape like opening an umbrella is to call for *payong*, spades : brush the edge of your cards along the table and you ask for diamonds, because thus the *batu Malacca* is cut : lift your cards quickly and you ask for the card with the flying animal, *klawer* : want hearts and you describe on the table a circular movement with your hand of cards. Of course, you and your partner must be accomplices and your sleights pat and deft.

*Main daun cheki.* The following is a complete list of the names of these cards as given me :—*iyu merah besar*, *iyu merah sa'krat*, *iyu kuching*, *iyu kasut*, *iyu budak*, *iyu panjang* : *kau merah*, *kau jalan*, *kau kuwap* : *sah waji*, *sah burong*, *sah halus* : *si lebai*, *si trubu*, *si pinggang* : *chek laier*, *chek burong*, *chek halus* : *lah tuli*, *lah krang*, *lah halus* : *peh pichak kapala*, *peh krang*, *peh pinggang* (or *tali*) : *go babi*, *go tonglang*, *go pending* : *ji gendang*, *ji pentil*, *ji bengkok* or *burong*. *Cho it* and *chohot* are names of two species of *main cheki*.

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# A List of the Butterflies of Borneo, and Nymphalinae.

By R. SHELFORD, M.A., F.L.S.  
(Curator of the Sarawak Museum.)

## Part II.

SUB-FAM-NYMPHALINAE.

Genus *Ergolis*.

102. *Ergolis ariadne*, Joh.

*Papilio ariadne*, Johannsen, Amæn. Acad. vi. p. 407  
(1764).

The typical form occurs in the Indian region, Siam, Malay Peninsula, Java, Borneo, the Lesser Sunda Is., Sumbawa Flores and Alor; there are three sub-species occurring in Ceylon, Yunnan and Timor respectively.

103. *Ergolis specularia*, Fruhst.

*Ergolis specularia*, Fruhstorfer. Berl. ent. Zeitsch. Bd.  
XLIV p. 91 (1899).

In West-Java, South-Borneo and a sub-species in Alor and Sumbawa.

Messrs Pryer and Cator in the British North Borneo Herald Oct. 1894 pp. 259 and 260 describe two species of *Ergolis* as *Ergolis ahmat* and *Ergolis telok*, their descriptions are so brief and incomplete as to be quite useless for purposes of identification, and as the types of the species are now lost it would be as well to lose sight of the barbarous names as well. *E. ahmat* may possibly be a form of *E. merione* Cr.



Genus *Eurytela*.104. *Eurytela castelnaui*, Feld.

*Eurytela castelnaui*, Felder. Wien. Ent Monats. iv. p. 401 (1860).

Occurs also in Tenasserim, Malay Peninsula, Sumatra, Palawan with a sub-species in Nias.

The species is extremely rare in S. W. Borneo and Sarawak, though fairly common in British N. Borneo.

Genus *Euripus*.105. *Euripus halitherses*, Doubl. and Hew.

*Euripus halitherses*, Doubleday and Hewitson Gen. D. Lep. vol. ii p. 293 pl. 41 fig. 2 (1848).

Sub-sp. *E. halitherses borneensis*, Dist.

The typical form occurs in India, Assam and Burma, the sub-species *borneensis* is confined to Borneo, other sub-species occur in the Malay Peninsula, Sumatra, Java, Nias, Palawan and the Philippines. The different forms of the polymorphic female of this species have been given a great variety of names and the result is that the relationships between the different forms and between topomorphic varieties are much obscured. I believe that three fairly distinct female forms and three only can be recognised, viz. :—

1. A form mimicking both sexes of the species of the sub-genus *Danisepa*, to which the name *isa*, Moore may be applied; *alcatheoides*, de Nias *danisepa*. Fruhst, *pfeiferoides*. Fruhst. etc., are merely more or less well-marked varieties of this form; in Borneo or elsewhere this form is highly variable and no two specimens exhibit identically the same markings.
2. A form mimicking a *Euplœa* such as *Penoa uniformis*, to which the name *uniformis*, Fruhst. may be applied;

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the specimen figured by Moore in his *Lepidoptera Indica*. Plate 204 fig. 1, 1 a may be considered a typical example of this form.

3. A form mimicking species of the sub-genus *Trepsichrois*; the *nyctelius* of Doubleday and the *cinnamomens* of Wood-Major.

Form No. 2 seems to be intermediate between *isa* and *nyctelius* and I am sure that if a large number of these polymorphic females could be collected from a very wide area a graduated series between extreme forms of *isa* and of *nyctelius* could be constructed, unfortunately the females of this species are very rare and it will be long before this ideal can be attained; in the meantime to recognise in the distributional area of the species merely three female forms with distinctive names or numbers appears to be less confusing than to name indiscriminately every topomorph differing from closely related topomorphs in most trifling details.

#### Genus *Cupha*.

106. *Cupha crymanthis*, Drury.

*Papilio crymanthis*, Drury, *Illust. Exot. Ent.* i. pl. 15 fig. 3 and 4 (1770).

Sub-sp. *C. crymanthis lotis*, Sulz.

The species has a very extended distribution ranging from India and China to Celebes, Ké and Amboina and to the Philippines. The typical form is restricted to China, Formosa and Hainau.

107. *Cupha arias*, Feld.

*Messurus arias*, Felder, *Reio. Nov. Lep.* iii. p. 391 (1867).

In Mantanani Is. off the coast of N. Borneo, in Palawan and the Philippines; a sub-species occurs in Celebes.

Genus *Atella*.108. *Atella alcippe*, Cr.

*Papilio alcippe*, Cramer. Pap. Exot. iv. pl. 389 fig. 9 H.  
(1782).

Sub-sp. *A. alcippe alcippoides*, Moore.

The typical form is confined to the Moluccas; *alcippoides* occurs in Sikkinm, Silhet, Khasia, S. India, Burma, Tenasserim, Andamans, Malay Peninsula, Borneo, Sumatra, Java; other sub-species are found in the Nicobars, Philippines Palawan and Celebes.

109. *Atella sinha*, Kollar.

*Terinos sinha*, Kollar, Hügel's Reis. Kasch. iv. pt. 2, p.  
438 (1844).

Occurs in India, Burma, Assam, Tenasserim, Malay Peninsula, Great Sunda Is., Philippines, Celebes.

Genus *Cethosia*.110. *Cethosia hypsea*, Doubl.

*Cethosia hypsea*, Doubleday and Hewitson, Gen. D. Lep. pl.  
20 f. 4 (1847).

The typical form is confined to Borneo, but sub-species are found in the Malay Peninsula, Sumatra, Java, Billiton, Palawan, Balabac, and the Philippines.

[The larva has the dorsal half of the body red, the ventral half black, with the exception of the seventh segment which is entirely creamy white. Like many other members of the genus the larva is gregarious; it bears a close resemblance to the larva of a day-flying moth *Hypsa* sp. which is also gregarious. Mr. H. N. Ridley, Director of the Singapore Botanic Gardens found a number of the Hyspid larvæ grouped

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closely and symmetrically around the end of a flower-stalk, the group looking like a large conspicuous fruit. The pupa of *Cethosia hypsea* is at first pure white with a few brown and yellow blotches, but it gradually becomes a pale brown. The adult is one of the commonest butterflies in Borneo and I have no doubt that it is a very distasteful species; when on the wing it is not at all unlike the widespread *Limnas chrysippus* and it may be considered as an "incipient mimic" of that species.]

111. *Cethosia biblis*, Drury.

*Papilio biblis*, Drury, 111 Exot. Ent. I Pl. 4. f. 2 (1773).

Sub-sp. *C. biblis Sandakana*, Fruhst.

The species occurs in Sikkim, Assam, Burma, Tenasserim, Indo-China, Nicobars, Andamans, Malay Peninsula, Java, Borneo, Philippines, Moluccas. The sub-species *sandakana* is confined to N. Borneo.

Genus *Terinos*.

112. *Terinos clarissa*, Boisd.

*Terinos clarissa*, Boisdewal, Spéc. Gen. Lep. i. pl. 9, fig. 4 (1836).

Occurs in Upper Tenasserim, Malay Peninsula, Singapore, Borneo, Java.

113. *Terinos fulminans*, Butl.

*Terinos fulminans*, Butler, Cist. Ent. i. p. 9 (1869).

Confined to Borneo.

114. *Terinos tenthras*, Hév.

*Terinos tenthras*, Hewitson, P. Z. S. 1862 p. 89.

There is a specimen of this species in the Sarawak Museum from Simanggang, Batang Lupar River. Sarawak

and this constitutes the first record of the species occurring in Borneo; it is also found in the Malay Peninsula and Singapore.

*Terinos terpander*, Hew. (*syn.* *T. nympha*, Wall.) seems to have been wrongly recorded from Borneo, the species is confined to Sumatra.

Genus *Cynthia*.

115. *Cynthia erota*, Fab.

*Papilio erota*, Fabricius, Ent. Syst. III. 1 p 76 (1793)

Sub-sp. *C. erota erotella*, Butl.

This sub-species is found in the Malay Peninsula, Borneo, Natunas, Banka and Billiton; a female from Mr. Kina Balu is distinguished by Fruhstorfer as an aberration to which he gives the name *moutana*. The exact range of the species is rather uncertain, but if Fruhstorfer's grouping of the various forms is correct (Iris 1899 p. 84) the species range from the Indian region to the Philippines and to Celebes and the Moluccas.

Genus *Eulaceura*.

116. *Eulaceura osteria*, Westw.

*Apatura osteria*, Westwood, Gen. D. Lep. p. 305 (1850).

From Tenasserim, Malay Peninsula, Singapore, Java, Borneo.

Genus *Herona*.

117. *Herona Schönbergi*, Staud.

*Herona schönbergi*, Staudinger, Iris. 1890 p. 337, pl. 3 f. 3.

Confined to Borneo.

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Genus *Precis*.118. *Precis iphita*, Cr.

*Papilio iphita*, Cramer, Pap. Exot. III t. 209. C. D. (1782).

*Precis neglecta*, Swinhoe, A. M. N. H. (7) vol. 3. p. 103 (1899).

Sub-sp. *P. iphitat osca*, Fruhst.

This sub-species is restricted to Sumatra and Borneo other forms are found in China, India, Burma, Java, lesser Sunda Is. Malay Peninsula, Palawan.

The splitting up of this and other species of the genus into sub-species cannot be regarded as altogether satisfactory. The wonderful results obtained by G. A. K. Marshall (of Trans. Ent. Soc. Lond. ) from his breeding experiments with African species of *Precis* afford convincing proof of the extraordinary plasticity of the species of this genus and until similar experiments are conducted with the Indo-Malayan species we can have no worthy evidence of the constancy of the sub-specific or geographical forms distinguished by Fruhstorfer (Berl. Ent. Zeitsch. XLV p. 22. 1900).

*Precis neglecta* Swinhoe appear to be nothing but an aberration or seasonal phase of *P. iphita* and in our present state of ignorance I have no hesitation in sinking the name as a synonym.

119. *Precis hedonia*, L.

*Papilio hedonia*, Linnaeus, Mus. Olr. p. 279 (1764).

Sub-sp. *P. hedonia ida* Cr.

This form occurs in the Malay Peninsula, Great and Lesser Sunda Is. Philippines, Palawan, Sumba, Flores. Other forms occur in Celebes, Moluccas, New Guinea and Australia.

B. A. Soc., No. 45, 1906.

Genus *Junonia*.120. *Junonia allites*, L.

*Papilio allites*, Linnaeus, Cat. Ms. p. 24 (1763).

Indian region, Nicobars, Malay Peninsula, Hainan  
Great Sunda Is., Nias.

121. *Junonia almana*, L.

*Papilio almana*, Linnaeus, Syst. Nat. x. ed. p. 472 (1758).

From Indian region, Andamans and Nicobars, Malay  
Peninsula, China, Formosa, Japan, Philippines Great  
Sunda Is. and Lesser Sunda Is.

The wet season form *J. asterei*, L. alone occurs in  
Borneo where it is extremely rare, Pryer and Cator  
record one specimen from N. Borneo.

122. *Junonia orithya*, L.

*Papilio orithya*, Linnaeus, Syst. Nat. ed. x. p. 473 (1758).

Sub-sp. *J. orithya wallacei*, Dist.

The species ranges from India and China right down  
to Australia. Fruhstorfer recognizes nine geographical  
races.

## GENUS NEPTIS.

Sect. *Rahinda*.123. *Neptis hordonia*, Stdl.

*Papilio hordonia*, Stdl, Cramer's Pap. Exot. V pl. 33,  
fig. 4. 4. D (1791).

Occurs in India, Assam, Burma, Tenasserim, Siam,  
Malay Peninsula and the Sunda Is.

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124. *Neptis dindlinga*, Butl.

*Neptis dindlinga*, Butler, Trans. Linn. Soc. (II) i. p. 542,  
pl. 68, fig. 6. (1879).

From Burma, Tenasserim, Malay Peninsula, Borneo.

125. *Neptis paraka*, Butl.

*Neptis paraka*, Butler, Trans. Linn. Soc. (II) i. p. 542, pl.  
68, fig. 2. (1879).

From Assam, Burma, Tenasserim, Malay Peninsula,  
Great Sunda Is, Nias and Mergui Archipelago.

126. *Neptis aurelia*, Staud.

*Neptis aurelia*, Staudinger, Exot. Schmett. p. 145 (1886).

From Burma, Tenasserim, Malay Peninsula, Borneo,  
Sumatra.

127. *Neptis Sandaka*, Butl.

*Rahinda Sandaka*, Butler. P. Z. S. 1892, p. 120.

Confined to Borneo.

This may be merely an aberration of *N. paraka*, Butl.

Sect. *Lusippa*.

128. *Neptis heliodore*, Fab.

*Papilio heliodore*, Fabricius, Ent. Syst. III. i. p. 130  
(1793).

Occurs in Lower Burma, Tenasserim, Siam, Malay  
Peninsula, Sumatra, Java, Borneo.

The males of this species are extremely rare.

129. *Neptis siaka*, Moore.

*Neptis siaka*, Moore, Trans. Ent. Soc. Lond. 1881 p. 311.

From Sumatra, Nias and Borneo.

R. A. Soc., No. 45, 1905.



Sect. *Stabrotates*.130. *Neptis miah*, Moore.

*Neptis miah*, Moore, Cat. Lep. Mus. E.I.C. i. p. 164, pl. 4a fig. 1 (1857).

Subsp. *N. miah batara*, Moore.

The species occurs in India, China, Burma, Siam, Malay Peninsula, and the great Sunda Is. The sub-species *batara* occurs in the Malay Peninsula, Sumatra and Borneo.

Sect. *Bimbisara*.131. *Neptis harita*, Moore.

*Neptis harita*, Moore, P. Z. S. 1874, p. 571 pl. 66. f. 8.

Occurs in India, Assam, Burma, Tenasserim, Malay Peninsula, Borneo.

This may be only a sub-species of *N. vikasi*, Horst.

132. *Neptis anjana*, Moore.

*Neptis anjana*, Moore, Trans. Ent. Soc. 1881, p. 309.

Occurs in Burma, Tenasserim, Malay Peninsula, Sumatra, Borneo, Nias.

133. *Neptis omeroda*, Moore.

*Neptis omeroda* Moore, P. Z. S. 1874 p. 571.

Occurs in Penang, Singapore, Sumatra, Borneo.

The species appears to be extremely closely allied to *N. harita* and *N. vikasi*.

Sect. *Pardassana*.134. *Neptis fuliginosa*, Moore.

*Neptis fuliginosa*, Moore, Trans. Ent. Soc. Lond. 1881. p. 31.

Occurs in Lower Burma, Tenasserim, Sumatra and Borneo.

135. *Neptis leucothoë*, L.

*Papilio leucothoë* Linnæus, Mus. Ubr. p. 292 (1764).

Subsp. *N. leucothoë matuta*, Hübn.

The following table must be regarded merely as a provisional arrangement :—

<i>Neptis leucothoë</i> L.	forma typica—	China, Formosa.
”	”	astola, Moore. Himalayas, Khasias, U. Burma.
”	”	varmona, Moore. India, Sikkim, Ceylon.
”	”	andamana, Moore. Andamans.
”	”	nicobarica, Moore. Nicobars.
”	”	adara, Moore. Burma, Tenasserim, Malay Peninsula, Sumatra.
”	”	matuta, Hübn. Java, Borneo.

136. *Neptis susruta*, Moore.

*Neptis susruta*, Moore, P. Z. S. 1872, p. 563, pl. 32, fig. 4.

India, Sikkim, Burma, Tenasserim, Malay Peninsula, Sumatra, Borneo.

137. *Neptis nata*, Moore.

*Neptis nata*, Moore, Cat. Lep. Mus. E. I. C. i. p. 168, pl. 4a, fig. 6 (1857).

From Burma, Tenasserim, Malay Peninsula, Nias and the Great Sunda Is.

Messrs. Pryer and Cator describe a species of *Neptis* as *Neptis fulva* (British N. Borneo Herald p. 260 1894); Moore regards this as a synonym of *Neptis nata* (Lep. Ind. vol. iii. p. 243) *Neptis Kéchil* Pryer and Cator is

probably an aberration of the same species, the description is hopelessly inadequate and the type of the species is lost.

Sect. *Antrapania*.

138. *Neptis duryodana*. Moore.

*Neptis duryodana*, Moore, P. Z. S. 1858, p. 10, pl. 49, fig. 8.

From Borneo and Sumatra with possibly some subspecies in Java and the Malay Peninsula.

Moore gives *Neptis basalla*, Pryer and Cator as a synonym.

Genus *Cirrochroa*.

139. *Cirrochroa bajadeta*, Moore.

*Cirrochroa bajadeta*, Moore, Cat. Lep. Mus. E. I. C. i. p. 150, pl. 3a fig. 3. 3a (185).

*Cirrochroa ravava*, Moore, l. c. p. 150 (185).

Occurs in the Malay Peninsula, Java and Borneo.

[A wonderful flight of this species occurred at Kuching and Sadong, Sarawak on the 12th of January 1903; a short account of it was published in this journal No. 39 p. 203].

340. *Cirrochroa mithila*, Moore.

*Cirrochroa mithila*, Moore, P. Z. S. 1872 p. 558.

Subsp. *C. mithila rotundata*, Butl.

Occurs in Sikkim, Assam, Bengal, Tenasserim, Burma, Malay Peninsula and Great Sunda Is. *Rotundata* differs from the typical form in being more heavily marked especially at the apex of the forewing above, in Bornean males the discal fascia on the underside is narrower, and in the females it is rather differently shaped and on the hind-wing narrower than in the Indian forms. It

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is quite possible that the Bornean race is sub-specifically distinct from the other Malayan races, in which case it will require another name.

141. *Cirrochroa calypso*, Wall.

*Cirrochroa calypso*, Wallace, Trans. Ent. Soc. Lond. 1869  
5 p. 339.

The species is confined to Borneo.

142. *Cirrochroa malaya*, Feld.

*Cirrochroa malaya*, Felder, Wien. Ent. Monats. iv. p. 399  
(1860).

Sub-sp. *C. malaya baluna*, Fruhst.

From the Malay Peninsula, Sumatra and Borneo ; the Natunas Is. race is distinguished as *natuna* Fruhst.

143. *Cirrochroa satellitia*, Butl.

*Cirrochroa satellitia*, Butler, Astula Entom. i. p. 9.  
(1869).

Hong-kong, Malay Peninsula, Borneo.

144. *Cirrochroa orissa*, Feld.

*Cirrochroa orissa*, Felder, Wien. Ent. Monats. iv. p. 399  
(1860).

From the Malay Peninsula, Sumatra and Borneo.

[In Borneo at any rate this is a characteristically mountain species.]

Genus *Dugapa*.

145. *Dugapa fasciata*, Feld.

*Atella fasciata*, Felder, Wien. Ent. Monats. iv. p. 236  
(1860).

B. A. Soc., No. 45, 1905.

From Tenasserim, Malay Peninsula and Great Sunda Is. Philippines, Palawan.

Genus *Stibochiana*.

146. *Stibochiana schönbergi*, Honr.

*Stibochiana schönbergi*, Honrath, Berl. Ent. Zent. 1889, p. 165, pl. 2, fig. 4.

*Stibochiana persophone*, Staudinger, Iris, 1892, p. 451.  
From Mr. Kina Balu and Matang, Borneo.

Genus *Hypolimnas*.

147. *Hypolimnas bolina*, L.

*Papilio bolina*, Linnæus, Syst. Nat. x. ed. p. 479 (1758).

Ranges through the Indian region and China, the Malay Peninsula and the Philippines, through the Malay Archipelago and Australia and the South Sea Islands. The females are extraordinarily variable and it does not seem possible as yet to divide them up into constant local races. The female form most frequently met with in N. Borneo is dark fuscous above with a subapical blue-white fascia on the forewings, one specimen from N. Borneo in the Sarawak Museum however, has a tinge of red near the exterior angle of the forewing, whilst a specimens from Kuching has a large red patch near the external angle of the forewing and a discal white patch on the hind-wing. The species is rare in Sarawak, though quite common in N. Borneo.

148. *Hypolimnas misippus*, L.

*Papilio misippus*, Linnæus, Mus. Ubr. p. 264 (1764)

Africa, India to Malay Peninsula, China and Formosa Great and Lesser Sunda Is.

I have not yet met with the species in Sarawak.

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149. *Hypolimnas anomala*, Wall.

*Diadema anomala*, Wallace, Trans. Ent. Soc. Lond. 1869,  
p 285.

Malay Peninsula, Great Sunda Is. Nias, Amboina,  
Philippines.

[The female is a close mimic of *Euplœa claudius mulciber* ♂, some males have also a blue gloss on the forewings and then mimic *E. claudius mulciber* ♀, others have no blue gloss and mimic *Euplœa crameri*. The species has the flaunting flight so typical of the Danainæ. It seems very likely that this wide-spread genus is a protected one and that the mimicry of Danaines by the various species is Müllerian mimicry as opposed to Batesian.]

Genus *Dichorragia*.150. *Dichorragia nesimachus*, Boisduval.

*Adolius nesimachus*, Boisduval, Cur. Rég. Anim. ms. ii. pl.  
139, bis, fig. 1 (1836).

Sub-sp. *D. nesimachus mannus*, Fruhst.

The typical form occurs in India, Burma, Malay Peninsula, the sub-species *mannus* in Java, Sumatra and Borneo and a third form in Celebes.

Genus *Parthenos*.151. *Parthenos sylvia*, Cr.

*Papilio sylvia*, Cramer, Pap. Exot. i. pl. 43 figs. F. G.  
(1776).

Sub-sp. *P. sylvia borneensis* Staud (*nella* Surub, *syn.*)

This sub-species is confined to Borneo. Fruhstorfer divides the species into no less than twenty-four local races ranging through India to China and the Philippines and down the Malay Archipelago to New Guinea.

Genus *Lebadea*.152. *Lebadea martha*, Fab.

*Papilio martha*, Fabricius Mant. Ins. ii. p. 56 (1787).

The Sarawak Museum collection contains a male of this species from Satap, Sarawak which is quite indistinguishable from Burmese males of the wet-season brood. Fruhstorfer divides the species into eight races with one aberration from Burma, Assam, Sikkim, Indo-China, Malay Peninsula, Natunas, Great Sunda Is., and Palawan. *Lebadea martha paduka*, Moore from Borneo I prefer however to regard as a distinct species, in spite of the fact that the Malay Peninsula race serves partly to bridge the gap between it and the typical form from Burma etc.; the occurrence side by side in a limited area of two sub-species appears to me quite incredible.

153. *Lebadea paduka*, Moore.

*Limenitis paduka*, Moore, Cat. Lep. Mus. E.I.C., i. p. 179 (1857).

Borneo and Palawan (? only).

Genus *Pandita*.154. *Pandita sinope*, Moore.

*Pandita sinope*, Moore, Cat. Lep. Mus. E.I.C., i. p. 181 pl. 6a, fig. 3 (1857).

Sub-sp. *P. sinopz sinoria*, Feld.

This sub-species occurs in Borneo, others in Malay Peninsula, Java, Sumatra, Billiton, Banca, Nias.

Genus *Limenitis*.155. *Limenitis procris*, Cr.

*Papilio procris*, Cramer, Pap. Exot. ii. pl. 106, fig. E. F. (1777).

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Sub-sp. *L. procris agnata*, Fruhst.

The species occurs in India, Ceylon, Burma, S. Andamans, Malay Peninsula, Great and Lesser Sunda Is. Flores and Palawan; the sub-species *agnata* is confined to the Malay Peninsula, Sumatra and Borneo.

156. *Limenitis daraxa*, D. and H.

*Limenitis daraxa*, Doubleday and Hewitson, Gen. D. Lep. ii. p. 276 pl. 34. fig. 4. (1850).

Sub-sp. *L. daraxa viridicans*, Fruhst.

India, Assam, Burma, Tenasserim, Malay Peninsula and Borneo.

The sub-species *viridicans* is only found on the mountains of Borneo.

#### Genus *Athyma*.

157. *Athyma larymna*, D. and H.

*Limenitis larymna*, Doubleday and Hewitson, Gen. D. Lep. ii. pl. 35, fig. 1. (1850).

Sub-sp. *A. larymna elisa* Fruhst.

The sub-species is found in Borneo, Malacca, Tenasserim and Sumatra, other races in Java, Palawan and Nias.

158. *Athyma idita*, Moore.

*Athyma idita*, Moore, P. Z. S. 1858, p. 16. pl. 51, fig. 3.

From the Mergui Archipelago, Malay Peninsula and Great Sunda Is.

159. *Athyma kanwa*, Moore.

*Athyma kanwa*, Moore, P. Z. S. 1858, p. 17. pl. 51, fig. 2.

From Burma, Assam, Malay Peninsula, Sumatra, Nias, Borneo.



160. *Athyma pravara*, Moore.

*Athyma pravara*, Moore, Cat. Lep. Mus. E. I. C. i. p. 173  
pl. 50, fig. 4 (1857).

From Assam, Burma, Tenasserim, Malay Peninsula,  
Great Sunda Is. Banca Nias.

161. *Athyma kresna*, Moore.

*Athyma kresna*, Moore, P. Z. S. 1838, p. 12. pl. 50, fig. 4.  
*Athyma subrata*, Moore, l. c. p. 13, pl. 51, fig. 1.

Occurs in India to the Malay Peninsula, Mergui  
Archipelago, Sumatra and Borneo.

Fruhstorfer regards *A. subrata*. Moore as a local race  
of *A. neste*, Cr. but this is certainly not so; *A. subrata* is  
the female of *A. kresna*. [The female is a close mimic  
of *Neptis harita*, Moore; it is extremely rare].

162 *Athyma neste*, Cr.

*Papilio neste*, Cramer, Pap. Exot. iii. pl. 256, fig. E F,  
(1782).

Sub-sp. *A. neste nivifera*, Butl.

The typical form is confined to Java, the sub-species is  
found in Tenasserim, the Malay Peninsula, S. Borneo,  
Java, Sumatra.

163. *Athyma ambara*, Druce.

*Athyma ambara*, Druce. P. Z. S. 1873. p. 344, pl. 32 fig. 2.

The typical form is confined to Borneo; there is a  
sub-species *ambarina* in the Malay Peninsula and Suma-  
tra.

164. *Athyma cama*, Moore.

*Athyma cama*, Moore, Cat. Lep. Mus. E. I. C. i. p. 174,  
pl. 5a. fig. 5. (1857).

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Sub-sp. A. *cama ambra*, Staud.

The typical form occurs in India (Himalayas) Assam, Burma, the sub-species on Mr. Kina Balu, N. Borneo.

165. *Athyma abiasa*, Moore.

*Athyma abiasa*, Moore, P. Z. S. 1858, p. 16, pl. 50, fig. 7.

Occurs in Malay Peninsula, Mergui Archipelago, Nias and Great Sunda Is.

The species is very variable in size and in markings: mountain specimens in Borneo are considerably larger as a general rule than low country forms, but there appear to be no other characters of the least constancy to justify a separation of the species into two distinct races.

166. *Athyma enloca*, Sp. n.

♂ *Upperside*: Dark fuscous with the following markings:—on the *forewings*, a short narrow line in the cell, a triangular spot at the end of the cell, three subapical spots placed obliquely outwards, two discal spots, the upper large and situated in the second median interspace, the lower small and divided by the sub-median nervure, a sub-marginal series of six small spots, white; a powdering of green scales at base of cell and between the discoidal streak and outer triangular spot; on the *hindwings* the discal band is much reduced consisting of two white spots and of a greenish grey suffusion in the sub-median interspace, there is a double sub-marginal series of spots which become obsolete towards the external angle of the wing, the inner spots are pale fuscous, the outer are pale fuscous but becoming greenish and larger towards the anal angle. The dorsum of the first abdominal segment is covered with greenish-grey hairs.

*Underside*. Olive, brown; on the *forewings* the markings are much the same as on the upperside, but the

cell has a whitish streak closing it and two transverse brown lines between the discoidal streak and outer spot; the sub-marginal series of spots is indistinctly doubled and suffused slightly with violaceous; on the *hind-wings* the abdominal margin and greenish, there is a whitish mark below the pre-costal nervure, the discal band is still more reduced than on the upperside, the inner sub-marginal series is whitish and with internervular obsolete dashes, brown in colour passing from it inwards, the outer series is violaceous.

Body and legs beneath greenish.

Expanse, 51 mm. *Hab.* Mt. Matang, 3200, Sarawak (June). Type and only known specimen in the Sarawak Museum. The species is remarkable for the great reduction of the white markings on the upperside.

[A little detail in the markings on the upperside of species of the genus *Athymae* seems to have hitherto escaped notice. In nearly all the species—*A. sclenophora*, Koll. and *A. zeroco*, Moore are exceptions,—the transverse discal white band of one hind-wing is continuous with the corresponding band of the other wing by means of a patch of white hair covering the dorsum of the first abdominal segment; in the males of *A. sclenophora* and *A. zeroco* the discal bands are broader and are more oblique and so touch the abdominal margin of the wing at a lower level than they do in such a species as *A. kresna*, Moore, and we find that the band of one wing is not connected through an abdominal tuft of white hair with the other band; in these details of markings at any rate these two species approach the genus *Limenitis* but it is interesting to note that the females have these discal bands more transverse and connected one with the other across the abdomen in the manner so characteristic of other *athymae*. The species of the genus *Neptis* which serve as models to so many mimicking *Athymae* in no case known to me have the discal bands of the hind-wings connected by an abdominal patch, even

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though these bands in many species are quite as transverse as in characteristic *Athymae*. The presence of a tuft of white hairs on the dorsum of the first abdominal segment, forming a connection between the discal band one of hind-wing and that of the other wing is then quite an important character of the genus *Athymae*, it is present in a modified form in *A. euloca*, *milsii*. in correlation with the obsolescent discal bands of that species].

Genus *Adolias*.

167. *Adolias dirta*, Fab.

*Papilio dirta*, Fabricius, Ent. Syst. iii. pt. 1, p. 59 (1793).

The typical form occurs in the Indian region, Malay Peninsula, Sumatra, Borneo, Natunas, Banca and Billiton, sub-species occur in Indo-China, Hainan, Assam, Sikkim, Java and Philippines. Fruhstorfer names a form occurring on mountains in Sumatra and Borneo:—*ab. montana*, Hagen.

168. *Adolias cyanipardus*, Butl.

*Symphædra cyanipardus*, Butler, P. Z. S. 1868, p. 613.

Sub-sp. *A. cyanipardus sandakanus*, Fruhst.

The sub-species occurs in Borneo and doubtfully in Sumatra; the typical form is found in Assam, Silhat and Cachar, and a second sub-species occurs in Banca.

169. *Adolias canescens*, Butl.

*Symphædra canescens*, Butler, P. Z. S. 1868, p. 612 pl. 45, fig. 5.

Borneo. A sub-species is found in the Malay Peninsula and Sumatra.

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Genus *Euthalia*.Sub-genus *Bassarona*170. *Euthalia* (*Bassarona*) *bellata*, Druce.

*Adolias bellata*, Druce. P. Z. S. 1873, p. 344, pl. 32, fig. 3.

The typical form is confined to Borneo, sub-species occur Tenasserim, Malay Peninsula, Sumatra, Nias and Java.

Sub-genus *Rangasa*.171. *Euthalia* *Rangasa* *dunya*, D. & H.

*Adolias dunya*, Doubleday and Hewitson, Gen. D. Lep. ii. p. 291, pl. 44, fig. 3 (1850).

Tenasserim, Malay Peninsula, Great Sunda Is., with a sub-species in Nias.

Sub-genus *Cognitia*.

This sub-genus is in the greatest confusion and a recent paper by Fruhstorfer (Berl. Ent. Zeitschr. XLIV. pp. 121—155 1899) has not cleared matters up very much; in fact until the opposite sexes of several of the species have been taken in coitú, the numerous types compared and the genital armature of the males dissected out no satisfactory revision of the sub-genus can be made.

From Borneo seven species have been recorded :—

1. *Euthalia ambalika*, Moore.
2. " *vacillaria*, Butl.
3. " *diardi*, Voll.
4. " *asoka*, Feld.
5. " *magnolia*, Stand.
6. " *gopia*, Moore.
7. " *gandava*, Voll.

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The habitat of the last two species is extremely doubtful, in fact the only locality quoted for *E. gandava* is "0,072 meter," *E. gopia* may possibly be from the Malay Peninsula. *E. magnolia* is a Kina Balu species and *E. asoko*, Feld. has been wrongly recorded from Borneo as it has been confused with *E. vacillaria*. The remaining three species are found in Sarawak; specimens of all three have been taken at various times of the year at and around Kuching and in my opinion the species can be readily distinguished one from the other.

Examples of both sexes of the three species have been sent to the late Mr. L. de Nicéville, to Herr Fruhstorfer and have been compared with specimens in the British Museum (Natural History) named and as arranged by Dr. A. L. Butler; although I have not invariably found myself in accord with the opinions of these distinguished lepidopterists I am none the less deeply indebted to them for their valuable information and I have not found it impossible to reconcile their rather diverse opinions with what I consider to be the facts of the case.

*Euthalia vacillaria*, Butl. was described in 1868 from a female only, the male has never been described although male specimens agreeing exactly with male specimens in the Sarawak Museum collection stand under the name *vacillaria* in the British Museum collection. A description of the male follows:—*Upperside*—Very like the male of *Euthalia ambulika*, Moore, but the apex of the forewing is distinctly falcate, the pale blue fascia of the forewing is narrow and ends, as a rule, just below the lowest sub-costal nervule, on the hind-wing above, below the costal nervure is a large patch of black androconial scales, *Underside*, dull brown ochreous, the margin of the forewing from just below the apex to the second median nervule lilacine grey—Expanse 60 mm.

The falcate forewing and the large patch of androconial scales are the salient features of this species. This

species may perhaps be only a sub-species of *E. gsoka*, Feld. from the Malay Peninsula but for the present it will be advisable to keep the two forms separate.

*Euthalia ambalika*, Moore was described in 1859 from a female and nine years later a male described by Butler\* was associated with this female but this male is really the male of *E. diardi*. On Mt. Penrisen in 1898 I observed an undoubted female *ambalika* with a male hovering round her and following her from one resting-place to another, fortunately I was able to secure both specimens and I have no doubt that they are the opposite sexes of the same species. The male differs from the male of *E. vacillaria* in the following points:—The apex of the forewing is not falcate; the blue border of the forewings extends to near the apex of the wing and internally it is deeply but narrowly notched; the patch of androconial scales is small or absent; the colour of the underside is bright ochreous. The male is very variable in size and rather variable in colouration, the blue band of the upperside often being tinged with lilac and the underside is sometimes rather sullied the markings sometimes being clear sometimes obsolete. The female has no blue band on the upperside of the hind-wings. *E. ambalika* is possibly a sub-species of *E. puseda*, Moore from the Malay Peninsula, *E. blumei* Voll. from Java being another.

*Euthalia diardi*, Voll. was described in 1862 from a female. The male is to be distinguished from the corresponding sex of *E. ambalika* by the following points:—the blue fascia of the forewing is broad and extends to the apex of the wing; the blue fascia on the hind-wing is very broad; the androconial scales are reddish brown; the underside is *not* bright ochreous

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\* Herr Fruhstorfer informs me that a specimen of what I consider to be the true male of *E. ambalika* is identical with the co-Type of *E. diardi* in his collection.

but dull brown shaded with blacine near the apex of the forewing and on the sub-discal area of the hind-wing. The female is readily distinguished by a broad band of blue on the hind-wing. The species is probably merely a local race of *E. cocytina*, Horsf. from Sumatra.

172. *Euthalia cynitia vacillaria*, Butl.

*Adolias vacillaria*, Butler, P. Z. S. 1868, p. 606, pl. 45, fig. 1.

Borneo.

173. *Euthalia cynitia ambalika*, Moore.

*Adolias ambalika*, Moore, Trans. Ent. Soc. 1859, p. 74, pl. 5, fig. 3.

Borneo.

174. *Euthalia cynitia diardi*, Voll.

*Adolias diardi*, Vollenhoven, Tijds. Ent. 1862, p. 188, pl. 10, fig. 2.

Borneo.

175. *Euthalia cynitia magnolia*, Staud.

*Euthalia magnolia*, Staudinger, Iris 1896 p. 235, pl. V, fig. 5.

From Kina Balu, North Borneo.

176. *Euthalia gopia*, Moore and *Euthalia gandava*, Voll. I do not include in this list for lack of proper evidence of the provenance of the species.

Sub-genus *Tasinga*.

177. *Euthalia Tasinga anosia*, Moore.

*Adolias anosia*, Moore, Cat. Lep. Mus. E. I. C. i. p. 187, (1857).

R. A. Soc., No. 46, 1905.



Found in Sikkim, Assam, Tenasserim, Burma, Malay Peninsula, Great Sunda Is., Bali, Banka.

Sub-genus *Dophla*.

178. *Euthalia (Dophla) evelina*, Stoll.

*Papilio evelina*, Stoll, Cramer, Pap. Exot. V, p. 132, pl. 28, figs. 2, 2B.

Sub-sp. *E. evelina compta*, Fruhst.

Fruhstorfer divides the species into 11 races ranging through India to Indo-China and the Malay Peninsula, the Great Sunda Is., Nias, Philippines and Celebes. The sub-species *compta* occurs in Burma, Tenasserim, Malay Peninsula, Sumatra and Borneo.

[The species is very partial to rotten fruit and I have caught many specimens in mosquito-netting traps baited with this butterfly delicacy.]

Sub-genus *Nora*.

The naturalist who attempts to clear up the confusion in which this sub-genus is shrouded will have no easy task to accomplish. In the past, species were described from single male and female specimens in the most reckless manner, whilst more modern authors appear to have shirked a careful revision of the group yet have not refrained from adding to the number of species in it, and the result is—chaos. For my own part I can do no more than give an annotated list of the species found in Borneo; still, such local lists are the necessary preliminaries to an accurate revision of the entire group. It may be remarked *en passant* that many of the characters whereby the sub-genus *Nora* can be distinguished from *Euthalia* in its restricted sense are rather obscure e.g. the patch of glandular scales on the hind-wing of the male is very variable and it occurs more-over in many species of *Euthalia*; in the absence of the

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female sex of a species, it is often difficult to state whether that species should be referred to the sub-genus *Nora* or not, the pattern on the underside of the wings is perhaps as good a character as any other.

179. *Euthalia (Nora) ramada*, Moore.

*Adolias ramada*, Moore, Trans. Ent. Soc. London, 1859, p. 69, pl. 4, fig. 5.

Sub-sp. *E. ramada surjas*, Vollenh.

There is no constant or essential difference between *E. surjas*, Vollenh, and *E. limbata*, Fruhst. (Berl. Ent. Zeitschr. XLIV. p. 140 1898). I have Herr. Fruhstorfer's authority for regarding *E. limbata* (i.e. *E. surjas*) as a sub-species of *E. ramada*. The typical form comes from Malacca the sub-species seems to be confined to Borneo. The female of this species has yet to be determined with certainty Dr. Butler considers A. M. N. H. (7) vol. viii. p. 356 1901) that the female of *E. indras*, Vollenh is undoubtedly the female of *E. ramada*, whereas Herr. Fruhstorfer (i.e. p. 124 regards it as the female of *E. bipunctata*, Vollenh. Either authority may be right for the females of the species of *Nora* are most remarkably similar, but any opinions as to the correct pairing of the various species must be pure guess work until the respective sexes are actually captured in coitū. For reasons stated below I do not consider it at present advisable to sink the name *E. indras*, Vollenh. as a synonym of any other species.

180. *Euthalia (Nora) laverna*, Butl.

*Adolias laverna*, Butler, Cist. Ent. i. p. 29. (1870) ♀ ;  
Lep. Exot. p. 174, pl. 60, fig. 5 (1874) ♂.

*Euthalia lavernalis*, de Nicéville, Journ. Bombay N. II.  
Soc. 1893, p. 45.

From Borneo and the Malay Peninsula.

R. A. Soc., No. 45, 1905.

Butler now regards (A. M. N. H. (7) vol. viii. p. 357<sup>c</sup> 1901) his type female as equivalent to *E. somalera*, Feld. a species described in 1867 from a single female specimen said to come from N. India and the male of Felder's species he considers to be *E. cordelia*, Fruhst. even though Fruhstorfer has described that species from both male and female specimens. Moore (Lep. Ind. vol. iii. p. 110) considers both the male and female of *E. laverna* Butl. to be the same as *E. somalera*, Feld. All this is the purest guess work and for the present I prefer to let Butler's name stand and to exclude *E. somalera* from the Bornean fauna until further evidence of its habitat is forthcoming. So far as I know Butler having relegated to *E. somalera* his type ♀ *laverna* has not described what he considers to be the true ♀ of the species.

In Northern Borneo, the bluish-green colour on the upperside of the hind-wings in the males becomes replaced by violaceous and the hind-wings of the females also become slightly tinged with this shade, whereas in South country females the hind-wings are brown; it is interesting to note that in the genus *Tanecia* there is a similar tendency towards a violet colouration of the hind-wings in species from Northern Borneo, Southern forms being more or less unicolorous.

181. *Euthalia* (*Nora*) *Cordelia*, Fruhst.

*Nora cordelia*, Fruhstorfer, Berl. Ent. Zeitschr. XLIV. p. 121, (1899).

Confined to Borneo.

This species with its aberration *ilka* from Kina Balu is very close, perhaps too close to the preceding species, but it occurs in the same area with it and is constantly different from it though only slightly.

182. *Euthalia* (*Nora*) *indras*, Vollenh.

*Adolias indras*, Vollenhoven, Tijds. Ent. p. 194, pl. 11, fig. 2, (1862).

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Confined to Borneo.

The species was described from a female specimen, which as already stated has subsequently been associated with *E. ramada*, Moore by Butler and with *E. bipunctata*, Vollenh. by Fruhstorfer. Here occurs in Borneo however a species, represented in the Sarawak Museum by a series of seven male specimens for which no name can be found; the species is allied to *E. laverna* but is abundantly distinct from it and in conjunction with the late Mr. de Nicéville I regard this as the male of Vollenhoven's species. As already emphasised the pairing of species of *Nora* from cabinet specimens can only be provisional speculative and it is equally probable that (i) Vollenhoven's type female is a distinct species or (ii.) the female of *E. ramada*, Moore. It certainly is not the female of *E. bipunctata*, Vollenh. for that species has a female very like the female of *E. merta*, Moore also a *Nora*. The insect that I consider to be the male of *E. indras*, Vollenh. is now described:—

*Upperside*.—Uniform olive-brown with the following markings:—

Forewing, an angulated submarginal series of sagittæ, white outwardly bordered with fuscous, the white becoming obsolescent towards the external angle of the wing; a series of five white hastate markings internal to the submarginal series but fusing with it in the upper discoidal interspace; the fuscous lines in and below the cell are arranged as in *E. laverna*, Butl. Hind-wing, a submarginal series of fuscous sagittæ bordered both internally and externally with a shading slightly paler than the ground colour; markings in the cell as in *E. laverna*, Butl.; below the costal nervure and occupying the basal costal and basal subcostal interspaces is a distinct patch of blade androconial scales which show up very clearly against the olive-brown of the rest of the wing. *Underside*.—Almost the same as in *E. laverna*, Butl. but less ochreous and the outer border of all the

wings tinged with lilaci: on the hind-wing the sub-marginal sagittæ are much more clearly defined.

The hind-wing is more quadrate than in *E. laverna*, Butl. and the anal angle much more rounded. Expanse 49 mm. (*laverna* 52 mm.

183. *Euthalia (Nora) indistincta*, Butl.

*Nora indistincta*, Butler, A. M. N. H. (7) Vol. viii. p. 366; (1901).

Confined to Borneo.

This is yet another species described from a single female specimen. Butler suggests the possibility of this being "the female of an insect which has been regarded as the male of *N. indras* but which is much darker and redder on the under surface, and decidedly larger than the male of that species might be expected to be." The male alluded to by Dr. Butler and compared by me with specimens in the Sarawak Museum is quite a different species from the male just described as the male of *E. indras*, Vollenh. It is much larger, expanding 65 mm., the hind-wing is not so quadrate and the anal angle not pointed; the markings and colouration of the two species are very similar, though in the larger species there is a shading of green at the external angle of the forewing above. The species is even closer to *E. laverna*, Butl. than is *E. indras* ♂ mihi and it might well be a seasonal phase of that species. Butler's type female is certainly distinct from the other female *Noras* found in Borneo, but there is no particle of evidence to shew that it is the opposite sex of the male alluded to by Butler.

184. *Euthalia (Nora) bipunctata*, Vollenh

*Adolias bipunctata*, Vollenhoven, Tijd. Ent. 1892, p. 191, pl. 10, fig. 5.

From the Malay Peninsula, Borneo and Banka.

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There are specimens in the Sarawak Museum agreeing well with Vollenhoven's description and with Distant's figure (Rhop. Malay, pl. XLIII fig. 3). The female is very like the female of *E. merta* Moore as figured by Distant (l.c. pl. XLIII fig. 2).

185. *Euthalia (Nova) tanagra*, Staud.

*Felderia tanagra*, Staudinger, Iris. 1889, p. 76.

Butler (l.c. p. 365) records this species from Borneo as well as from Palawan.

Sub-genus *Sonepisa*.

186. *Euthalia (Sonepisa) Kanda*, Moore.

*Adolias Kanda*, Moore, Trans. Ent. Soc. Lond. 1859, p. 69, pl. 4, fig. 5.

From Burma, Tenasserim, Malay Peninsula, Borneo, Sumatra.

Sub-genus *Euthalia*.

187. *Euthalia (Euthalia) adonia*, Cr.

*Papilio adonia*, Cramer, Pap. Exot. III, pl. 255, figs. C. D., (1779).

Sub-sp. *E. adonia whiteheadi*, Grose Smith.

Fruhstorfer considers *whiteheadi* to be a sub-species of *E. lubentina*, Cr. but this is incorrect. Grose Smith associated with his male type the female of another species of this group of *Euthalia*, a species subsequently described by Fruhstorfer as *E. adonia montana*.

The females of these two species have been confused with each other, which after all is not surprising both species occupying the same area viz., Mt. Kina Balu and other mountains in Borneo; *whiteheadi* is however also found, though rarely, in the low-country and the Sarawak Museum collection contains a male and female

caught together, close to Kuching; the female is very like Distant's figure of *Euthalia adonia* ♀ (Rhop. Mal. pl. XIX fig. 11) and there is therefore no doubt that *whiteheadi* is a local race of *adonia*, not of the very different species *lubentina*.

The typical form of *adonia* occurs in Java and Sumatra *whiteheadi* is confined to Borneo, other sub-species are found in the Malay Peninsula, Lombok and Palawan.

188. *Euthalia (Euthalia) adonia*, Gr. Sm. and Kirb.

*Euthalia adonia*, Grose Smith and Kirby, Rhop. Exot. p. 13, Euth. pl. 4 fig. 5, 6 (1894).

Confined to Borneo.

189. *Euthalia (Euthalia) djata*, Dist.

*Euthalia djata*, Distant, A. M. N. II. 1889, p. 53.

Confined to Borneo, with a sub-species in Palawan.

190. *Euthalia (Euthalia) lubentina*, Cr.

*Papilio lubentina*, Cramer, Pap. Exot. II, pl. 155, figs. C. D. (1777).

Sub-sp. *E. lubentina montana*, Fruhst.

Owing to Grose Smith's original error Fruhst. describes as the female of *montana*, the female of *E. whiteheadi* and regard the sub-species as a local race of *E. adonia*, Cr.

The typical form of *lubentina* occurs in India, Ceylon, Burma and the Malay Peninsula, *montana* is found on Bornean mountains and other sub-species in Java, Bawean and the Philippines.

191. *Euthalia (Euthalia) garuda*, Moore.

*Adolias garuda*, Moore, Cat. Lep. Mus. E.I.C.T. p. 186, pl. 6, figs. 2 and 2A (1859).

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Sub-sp. *E. garuda sandakana*, Moore.

The typical form occurs in India to Malay Peninsula, and Sumatra, with sub-species in Borneo and Bawean.

192. *Euthalia (Euthalia) jama*, Feld.

*Adolias jama*, Felder, Reio. Nov. Lep. III, p. 431 (1866).

Occurs in India, Assam, Burma, Malay Peninsula, Sumatra, Borneo.

193. *Euthalia (Euthalia) euphemia*, Staud.

*Euthalia Euphemia*, Staudinger, Iris. 1896, p. 238, pl. V. fig. 6.

Confined to Borneo.

194. *Euthalia (Euthalia) apicalis*, Voll.

*Adolias apicalis*, Volle hovin, Tijd. v. Entom. 1862, p. 186, pl. 10, fig. 1.

Found in Burma, Tenasserim, Malay Peninsula, Borneo, Sumatra.

195. *Euthalia (Euthalia) aconthea*, Cr.

*Pepilio aconthea*, Cramer, Pap. Exot. II, pl. 134, figs. C. D. (1779).

From Java and Borneo. It will probably be found that the Bornean race is distinct from the Javanese form.

196. *Euthalia (Euthalia) parta*, Moore.

*Adolias parta*, Moore, Cat. Lep. Mus. E. I. C. T. p. 185, (1857).

Confined to Borneo.

197. *Euthalia (Euthalia) zichri*, Butl.

*Adolias zichri*, Butler, Cist. Ent. T. p. 6, (1869).

From Tenasserim, Malay Peninsula, Borneo.



198. *Euthalia (Euthalia) eriphyle*, de N.

*Euthalia eriphyle*, de Nicéville. Journ. Bomb. Nat. Hist Soc. 1891, p. 353. pl. F. fig. 7.

From the Khasias, Tenasserim, Sumatra and Borneo.

The Sarawak Museum collection contains a specimen that I believe to be the female of this species; it is like the female of *E. parta*, Moore but is smaller and darker in colour.

Pryer and Cator in the British North Borneo Herald 1894 give the following new species of *Euthalia* from N. Borneo:—*E. halimah*, *E. resta*, *E. abayah*, *E. lakayah*, *E. borneensis*, no descriptions accompany these names which can now be dismissed as valueless.

Genus *Tanaccia*.

Butler in a recent paper on this genus (A.M.N.H. (7) vol. viii. p. 356, 1901) admits no less than fifteen species from Borneo xxi of which he describes as new, three being described from single specimens; I cannot help thinking that this list is far too long a one and that many of the species are mere varietal forms or aberrations. It is impossible however to judge without a careful comparison of the types aided by dissection of the male genital armature, and I quote therefore on Butler's species with one or two slight modifications.

199. *Tanaccia orphne*, Butl.

*Tanaccia orphne*, Butl. A.M.N.H. 1870, p. 362.

Confined to Borneo. Fruhstorfer considers *T. orphne* to be the male of *T. valmikis*, Feld. but Butler denies this, the British Museum collection containing both sexes of the species.

200. *Tanaccia consanguinea*, Dist.

*Tanaccia consanguinea*, Distant, Entom. 1866, p. 11.

Confined to Borneo.

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201. *Tanæcia lutala*, Moore.

*Tanæcia lutala*, Moore, Trans. Ent. Soc. Lond. 1859, p. 71, pl. 6, fig. 3.

Confined to Borneo. I believe that all these three species will eventually be proved to be one and the same.

202. *Tanæcia subochrea*, Butl.

*Tanæcia subochrea*, Butler, A.M.N.H. (7) vol. viii. p. 363. (1901).

Confined to Borneo. Very doubtfully distinct from *T. lutala*.

203. *Tanæcia margarita*, Butl.

*Tanæcia margarita*, Butler, A.M.N.H. (7) vol. viii. p. 363 (1901).

Confined to Borneo.

204. *Tanæcia valmikis*, Feld.

*Adolias valmikis*, Felder, Reise Nov. Lep. III. p. 434 (1867).

Confined to Borneo with a sub-species in Nias.

205. *Tanæcia apsarasa*, Voll.

*Adolias apsarasa*, Vollenhoven, Tijds. Ent. 1862, p. 198, pl. 11, fig. 3.

*Forma typica*, in South Borneo.

Sub-sp. *T. apsarasa munda*, Fruhst. in North Borneo.

Sub-sp. *T. apsarasa martigena*, Weym. in Sumatra.

206. *Tanæcia frühstorfferi*, Butl.

*Tanæcia frühstorfferi*, Butler, A.M.N.H. (7) vol. viii. p. 361 (1901).

B. A. Soc., No. 45, 1905.

Confined to Borneo. This and the next two species appear to be nothing but varietal forms of *T. apsarasa*.

207. *Tanœcia evanescens*, Butl.

*Tanœcia evanescens*, Butler, A.M.N.H. (7) vol. viii. p. 361, (1901.)

Confined to Borneo (Labuan).

208. *Tanœcia albifasciata*, Butl.

*Tanœcia albifasciata*, Butler A.M.N.H. (7) vol. viii. p. 361, 1901).

Confined to Borneo.

209. *Tanœcia pelea*, Fab.

*Papilio pelea*, Fabricius, Mant. Ins. p. 53, (1787).

Sub-sp. *T. pelea crowleyi*, Butl.

The typical form occurs in Malay Peninsula, Singapore, Billiton *crowleyi* is confined to Borneo, other subspecies are found in Java, Lombok and (?) Sumatra.

210. *Tanœcia clathrata*, Voll.

*Adolias clathrata*, Volleuhoven, Tijd. v. Ent. p. 205, pl. 12 fig. 5 (1862).

*Forma typica*, Borneo, low-country.

Sub-sp. *T. clathrata caerulea*, Grose-Smith—Borneo, Mountains.

Sub-sp. *T. clathrata nicévillei*, Dist.—Malay Peninsula, Sumatra.

The form *caerulea* is quite abundant on Mts. Matang and Santubong, Sarawak, whereas in the low-country the typical form abounds; a pair of the latter taken *in coitu* are in the Sarawak Museum collection.

Fruhstorfer suggests that *Tanœcia varuna*, Voll. recorded originally from Java occurs in Borneo only.

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Sub-genus *Passirona*.

- 211.
- Tanæcia*
- (
- Passirona*
- )
- amisa*
- , Grose-Smith.

*Euthalia amisa*, Grose-Smith, A.M.N.H. 1889, p. 315.

From Mt. Kina Balu, North Borneo.

Genus *Vanessa*.

- 212.
- Vanessa canace*
- , Joh.

*Papilio canace*, Johanssen, Amœn. Acad. vi. p. 406 (1764).Sub-sp. *V. canace perakana*, Dist.The typical form occurs in the Indian region, *perakana* is found in the Malay Peninsula, Java and Sumatra and other sub-species in Sumatra, Luzon, Japan, Corea.Genus *Rhinopæpa*.

- 213.
- Rhinopæpa polynice*
- , Cr.

*Papilio polynice*, Cramer, Pap. Exot. III. pl. 195 fig. D. E. (1780).

From Malay Peninsula, Sumatra and Borneo with sub-species in Burma, Assam, Java, Nias and Luzon.

Genus *Symbrenthia*.

- 214.
- Symbrenthia hippoclus*
- , Cr.

*Papilio hippoclus*, Cramer Pap. Exot. III. p. 46, pl. 220, fig. C. D. (1779).Sub-sp. *S. hippoclus marius*, Fruhst.The typical form is confined to Amboina, *marius* to Borneo, other sub-sp. occur in Sikkim, Siam, Tonkin, Assam, China, Philippines, Java, Sumatra, Lesser Sunda Is., Celebes, Moluccas, New Guinea and adjacent isles.

215. *Symbrenthia hypselis*, Godt.

*Vanessa hypselis*, Godart, Enc. Méth. ix. Suppl. p. 818  
(1823).

Sub-sp. *S. hypselis ba'unda*, Staud.

This sub-species occurs on Borneo mountains, other races occur in Java (typical form), Sumatra, Malay Peninsula, Nias, Palawan, Khasia, Himalayas, Assam, Burma, Tenasserim.

216. *Symbrenthia hypatia*, Wall.

*Laogona hypatia*, Wall.

Sub-sp. *S. hypatia hippocrene*, Staud.

This sub-species is found in Borneo, the typical form was described from Java and another sub-species occurs in the Malay Peninsula and Sumatra.

[The species of the genus *Symbrenthia* mimic the yellow and black *Neptides*; they fly in the same jerky manner with the wings held out quite flat so as to display to the best advantage the colouring of the upper surfaces.]

Genus *Cyrestis*.217. *Cyrestis nivea*, Zink.--Somm.

*Amathusia nivea*, Zinken—Sommer, Nova. Acta. Acad.  
N.C. 1831 p. 138, pl. 14, fig. 1.

Sub-sp. *C. nivea nivalis*, Feld.

The typical form occurs in Java, sub-species in Burma, Tenasserim, Malay Peninsula, Sumatra, Borneo, and Sumba.

218. *Cyrestis seminigra*, Grose Smith.

*Cyrestis seminigra* Grose. Smith, A.M.N.H. 1889, p. 313.  
Confined to Borneo.

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219. *Cyrestis cocles*, Fab.

*Papilio cocles*, Fabricius, Mant. Ins. ii. p. 7, (1787).

Sub-sp. *C. cocles sericens*, Butl.

The typical form occurs in the Indian region to Malay Peninsula other sub-species occur in Indo-China, Andamans and Borneo (*sericens*).

220. *Cyrestis theresæ*, de N.

*Cyrestis theresæ*, de Nicéville, Journ. As. Soc. Bengal, 1894, p. 18, pl. 5 fig. 8.

From Sumatra and Borneo.

221. *Cyrestis neela*, Swinh.

*Cyrestis neela*, Swinhoe, A.M.N.H. (6) xiv. p. 430 (1894).

From N. Borneo. This may be synonymous with the preceding species.

Sub-genus *Chersonesia*.222. *Cyrestis (Chersonesia) rahria*, Moore.

*Cyrestis rahria*, Moore, Cat. Lep. Mu. E.I.C. i. p. 147, pl. 3A fig. 2, (1857).

The species occurs in the Malay Peninsula, Great Sunda Is. Nias with sub-species in Burma and Tenasserim Celebes and Sula Is. The species is extremely variable in size.

223. *Cyrestis (Chersonesia) peraka*, Dist.

*Chersonesia peraka*, Distant, A.M.N.H. 1884, p. 199.

From Tenasserim, Malay Peninsula, Sumatra and Borneo.

Genus *Kallima*.224. *Kallima inachus*, Boisdu.

*Paphia inachus*, Boisduval, Crochard's Edit. Cur. Rég. Anim. Ins. ii. pl. 139, f. 3, (1836).

R. A. Soc., No. 45, 1905.

Sub-sp. *K. inachus buxtoni*, Moore.

Fruhstorfer (Berl. ent. Zeitschr. XLIII. 1898 p. 193) divides this species into twelve local races occurring in the Indian region Chira, Japan, Malay Peninsula, Sumatra, Borneo and Nias; *buxtoni* is confined to Borneo and Nias. The species is very rare in Borneo.

Genus *Doleschallia*.

225. *Doleschallia bisaltide*, Cr.

*Papilio bisaltide*, Cramer, Pap. Exot. ii. pl. 102, fig. C. D. (1779).

Sub-sp. *D. bisaltide borneensis*, Fruhst.

Fruhstorfer (l.c. XLIV. 1899 p. 27A) divides the species into seventeen local races of which *borneensis* is confined to Borneo; other sub-species occur in India, Ceylon, Tenasserim, Malay Peninsula, Great and Lesser Sunda Is., Celebes, Moluccas, New Hebrides, Viti, Guadalcannar, Philippines.

Genus *Eulepis*.

226. *Eulepis schreiber*, Godt.

*Nymphalis schreiber*, Godart, Enc. Méth IX. Suppl. p. 825, (1823).

Sub-sp. *E. schreiber malayicus*, Rothsch.

This race is found in Borneo, Sumatra, Malay Peninsula, Banca, Billiton; other races occur in India, Assam, Burma, Java, Nias, Luzon.

227. *Eulepis hebe*, Butl.

*Charaxes hebe*, Butler, P.Z.S. p. 634, n. 46, pl. 37, f. 39, (1865).

Sub-sp. *E. hebe ganymedes*, Staud.

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The species ranges from the Malay Peninsula through the great and Lesser Sunda Is. ; *ganymedes* is confined to Borneo.

228. *Eulepis moori*, Dist.

*Charaxes moori*, Distant, Rhop. Mal. p. 108, n. 6, pl. 13, f. 3, (1883).

Sub-sp. *E. moori heracles*, Rüber.

From Assam, Burma, Malay Peninsula, Sumatra, Nias, Natuna Is. Borneo (*heracles*). Java.

It is practically certain that the sub-species *E. moori sandakanus* does not occur in Borneo (of Novitates Zoologicae VI. p. 243, 1899).

229. *Eulepis athamas*, Drury.

*Papilio athamas*, Drury, lu. Ex. lus. I. p. 5. pl. 2 f. 4 (1773).

Sub-sp. *E. athamas wiazus*, Rothsch.

From Sumatra, Borneo and Natuna Is., with other races in India region, Indo-China, S. China, Malay Peninsula, Java, Philippines, Palawan, Timor.

230. *Eulepis julyus*, Feld.

*Charaxes julyus*, Felder, Reis. Nov. Lep. p. 438, pl. 59 f. 5, (1867).

From Burma to Borneo and Sumatra.

231. *Eulepis delphis*, Doubl.

*Charaxes delphis*, Doubleday, Ann. Soc. Ent. France (2) I. p. 217, pl. 7, (1843).

Sub-sp. *E. delphis concha*, Vollenh.

The species occurs in Assam (forma typica), Burma to Sumatra (*concha*), Java (*cygnus*), Palawan (*niveus*)



Fruhstorfer regards the Bornean representatives as yet another race (*delphinion*).

Genus *Charaxes*.

232. *Charaxes durnfordi*, Dist.

*Charaxes durnfordi*, Distant, Entom. XVII. p. 191, (1884).

Sub-sp. *C. durnfordi everetti*, Rothsch.

The female of this sub-species is now described for the first time:—

♀ *Upperside* much paler than in the male; forewing, the discal white markings enlarged, the cell closed by a double dark line, the sub-marginal white sagittæ much larger than in the male; hind-wing, the sub-marginal ocelli are not completely encircled by a whitish ring as in the male, as outwardly the "iris" of each ocellus merges in the heavy brown marginal line, the "pupil" of the innermost ocellus is suffused with blue.

*Underside* very much paler than in the male, median interspaces deep brown.

*Expanse* 110 mm; length of outer tail 8 mm.

*Hab.* Kuching; taken in a trap baited with rotten bananas.

The species occurs in Burma, Tenasserim, Malay Peninsula and Great Sunda, Is., *everetti* is confined to Borneo.

233. *Charaxes distanti*, Honr.

*Charaxes distanti*, Honrath, Berl. Ent. Zeitschr. XXIX. p. 277, (1885).

Tenasserim, Malay Peninsula, Natunas, Borneo, Sumatra.

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234. *Charaxes polyxena*, Cr.  
*Papilio polyxena*, Cramer, Pap. Exot. I. p. 85, pl. 54, fig. A. B. (1775).  
 Sub-sp. *C. polyxena repetitus*, Butl.  
 Indian region, China, Malay Peninsula, Sumatra, Banka, Billiton, Borneo, Java, Nias, Palawan.
235. *Charaxes harmodius*, Feld.  
*Charaxes harmodius*, Felder, Reis. Nov. Lep. p. 445, (1867).  
 Sub-sp. *C. harmodius infernus*, Rothsch.  
 Java, Sumatra, Palawan, Borneo (*infernus*).
236. *Charaxes borneensis*, Butl.  
*Charaxes borneensis*, Butler, Lep. Exot. p. 16, pl. 6, fig. 2 (1869).  
 Malay Peninsula, Sumatra and Borneo.
237. *Charaxes fabius*, Fab.  
*Papilio fabius*, Fabricius, Spec. Ins. II. p. 12, (1782).  
 Sub-sp. *C. fabius echo*, Butl.  
 This sub-species is found in the Malay, Peninsula, Sumatra and Borneo. Other sub-species occur in India, Ceylon, Tenasserim, Burma, Philippines, Sula Is., Celebes.

Genus *Prothoë*.

238. *Prothoë calydonia*, Hew.  
*Nymphalis calydonia*, Hewitson, Exot. Butl. i. p. 86, pl. 43, fig. 3, 4, (1855).  
 Malay Peninsula, Sumatra, Borneo.  
 There are four species in the Sarawak Museum, all taken in traps baited with rotten fruit.

B. A. Soc., No. 45, 1905.

239. *Prothoe francki*, Godt.

*Nymphalis francki*, Godart. Enc. Méth. IX. Suppl. p. 825,  
(1823).

Sub-sp. *P. francki angelica*, Butl.

*Angelica* occurs in Tenasserim, Malay Peninsula, Borneo, Sumatra, and Billiton; other sub-species are found in Java, Banca, Nias, Palawan and Philippines.

Fam. LEMONIIDAE.

Sub-fam. LIBYTHAEINAE.

Genus *Libythea*.

240. *Libythea myrrha*, Godt.

*Libythea myrrha*, Godart. Enc. Méth. ix. p. 171, (1819).

This occurs in the Great and Lesser Sunda Is., with sub-species in India, Ceylon and Malay Peninsula.

The species is not found in S. Borneo at all, but is apparently not uncommon in the North.

Sub-fam. NEMEOBIINAE.

Genus *Zemerus*.

241. *Zemerus flegyas*, Cr.

*Papilio flegyas*, Cramer, Pap. Exot. III. pl. 280, figs. E.F.  
(1872).

Sub-sp. *Z. flegyas albipunctata*, Butl.

This sub-species is found in the Malay Peninsula, Sumatra and Borneo, other races occur in Indo-China, Tenasserim, Burma, Siam, China, Java, Nias.

242. *Zemerus emesioides*, Feld.

*Zemerus emesioides*, Felder, Wien. Ent. Mon. IV. p. 396,  
(1860).

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Sub-sp. *Z. emesioides eso*, Fruhst.

This Bornean race is separated by Fruhstorfer from the typical form which flies in the Malay Peninsula and Sumatra.

Genus *Dodona*.

243. *Dodona deodata*, Hew.

*Dodona deodata*, Hewitson, Entom. Month. Mag. xiii. p. 151, (1876).

Sub-sp. *D. deolata pryeri*, Moore.

The sub-species occurs in Borneo, the typical form in Burma.

244 *Dodona elvira*, Staud.

*Dodona elvira*, Staudinger, Deuts. Ent. Zeitschr. 1896, p. 239, pl. 5, fig. 6, ♂. Shelford, Journ. As. Soc. Straits Br. No. 33 p. 258 ♀.

Confined to Borneo. A female aberration from Kina Balu is termed by Fruhstorfer ab. *pura*.

Genus *Taxila*.

245. *Taxila thuisto*, Hew.

*Taxila thuisto*, Hewitson, Exot. Butl. ii. Tac. pl. 1. figs. 5, 6, (1861).

In Burma, Tenasserim, Malay Peninsula, Sumatra, Borneo.

246. *Taxila haquinus*, Fab.

*Papilio haquinus*, Fabricius, Ent. Syst. iii. p. 55, (1793).

Malay Peninsula, Java, Borneo, Burma, Tenasserim, Siam, Mergui Archipelago, Palawan.

R. A. Soc., No. 45, 1905.

247. *Tacila zemara*, Butl.

*Abisara zemera*, Butler, A.M.N.H. 1870, p. 363

Borneo.

Fruhstorfer regards this as the local race of *T. haquinus*; the two species—as I prefer to regard them—fly together, though *zemara* is much the rarer of the two; the females are quite different from each other, the yellow apical fascia being a salient feature of *zemara* ♀, whilst the blue markings on the underside are larger.

Genus *Laxita*.248. *Laxita orphna*, Boisd.

*Emesia orphna*, Boisduval, Spéc. Gén. Lép. i. pl. 21, fig. 4, (1836).

Sumatra and Borneo with a sub-species in the Malay Peninsula.

249. *Laxita teneta*, Hew.

*Tacila teneta*, Hewitson, Exot. Butl. ii. Tax. pl. 1, figs. 3, 4. (1861).

Borneo.

Fruhstorfer refers this to the genus *Taxila*.

250. *Laxita telesia*, Hew.

*Taxita telesia*, Hewitson, Exot. Butl. ii. Tax. pl. 1, figs. 1, 2, (1861).

The typical form occurs in Borneo and on Mt. Kina there is a distinct race:—Sub-sp. *L. telesia ines*, Fruhst.; a second sub-species occurs in the Malay Peninsula and Sumatra.

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251. *Laxita nicevillei*, Rüber.

*Laxita nicevillei*, Rüber, Ent. Nachr. No. 10, p. 149, 1895.  
Borneo.

The species which appears to be known only from females is unknown to me.

252. *Laxita damajanti*, Feld.

*Abisara damajanti*, Felder, Wien. Ent. Monat. iv. p. 397,  
(1860).

Sub-sp. *L. damajanti lola*. de N.

The typical form occurs in the Malay Peninsula and Sumatra, the sub-species in Borneo.

253. *Laxita hewitsonii*, Rüber.

*Laxita hewitsonii*, Rüber, Ent. Nach. No. 10, p. 150,  
(1895).

Borneo.

Genus *Sospita*.

254. *Sospita saritri*, Feld.

*Abisara saritri*, Felder, Wien. Ent. Monat. iv. p. 397,  
(1860).

Sub-sp. *S. saritri sciurus*, Fruhst.

Sub-sp. *S. saritri striv.*, Fruhst.

The first of these two sub-species occurs in the low-country of Borneo, the second on Mt. Kina Balu. The typical form occurs in the Malay Peninsula.

Genus *Abisara*.

255. *Abisara Kausambi*, Feld.

*Abisara Kausambi*, Felder, Wien. Entom. Monats. iv. p  
397, (1860).

R. A. Soc., No. 45, 1905.

Tenasserim, Malay Peninsula, Sumatra, Borneo with sub-species in Nias, Palawan, Java.

256. *Abisara Kausambioides*, de N.

*Abisara Kausambioides*, de Nicéville, Journ. As. Soc. Beng. 1895, p. 442.

Sub-sp. A. *Kausambioides tera*, Fruhst.

The sub-species is confined to Borneo, other races occur in the Malay Peninsula, Sumatra, Nias, Java.

## An expedition to Christmas Island.

BY HENRY N. RIDLEY.

The expedition to Christmas Island undertaken by Dr. Hanitsch and myself accompanied by the two Assistant Taxidermists, De Fontaine and Ahwang, the plant collector Kassar and two boys, started for Christmas Island on September 20th, 1904, in the S.S. "Islander," and reached Anjer Point on the 23rd. The weather was bright and fine with a fairly strong breeze. Little of note occurred on the way except that I may record seeing no less than eleven *Attagen minor* together at one point in the Banka Straits, a moth, *Ophideres* sp. flew on board when we were nearing Anjer and well out of sight of land, and a snippet probably *Tringa* sp. flew round the ship.

The boat arriving at Anjer at night 7.30 remained till 11 but it was too late to go on shore. After passing Anjer Point the sea became very rough and we only reached Christmas Island on Sunday (25th) evening at five o'clock, too late to land baggage. That evening we remained on board till next day when all was safely landed and conveyed to a house kindly put at our disposal by Mr. Macpherson.

During the transit from Anjer the beautiful orange tropic bird *Phaethon fulvus* appeared first about midway between Java and Christmas Island. This bird was originally described from specimens of unknown locality. It appears to be almost confined to Christmas Island, but is said to fly as far as Southern Java. A large brown shark and a turtle were also seen on the way over.

After landing our baggage we made an excursion up towards the waterfall as far as the first Reservoir, collecting plants and insects, and on the following day I walked to the



waterfall, Dr. Hanitsch finding quantities of interesting specimens did not go as far. The walk about five miles is very picturesque. After passing through the Settlement one rises across two raised reefs, past the tram line which conveys the phosphate to the tip whence it travels by overhead wires to the wharf, and above the first reservoir arrives at the plateau. Here the flora is quite different from that of the reefs, or terraces as Andrews calls them. The seashore trees *Guettarda*, *Gyrocarpus*, *Berrya*, *Kleinhorvia* disappear together with the *Abutilons*, *Croton caudatus*, *Acronychia* etc. The plateau forest chiefly consists of *Eugenia*, *Barringtonia*, *Pisonia*, *Cryptocarya*, *Sideroxylon*, while *Randia*, *Saprosma*, *Corymbis*, *Ardisia* and ferns form the undergrowth. The soil is dark brown and powdery, but here and there masses of coral reef protrude. The big crab, *Birgus Latro* and the smallest burrowing red crab, *Gecarcinus* are very abundant. Sea birds are absent though occasionally they may be seen crossing above the forest. The large pigeon *Carpophaga* is abundant and its cooings can be heard far and wide. The hawk, (*Astur*) is frequently seen, and the ground pigeon *Chalcophaps* and the thrush are abundant. Whiteeyes *Zosterops*, the swift *Collocalia* and in the evening the small bats only occur along the cleared tracks, and in more open places. The lizards too do not frequent the shadier parts of the forest.

After crossing the plateau one descends a steep slope to an open flat spot above the sea where are a few native houses for the men employed at the pumping station by which the water is pumped in iron tubes to the Settlement along the track. The water comes out abundantly flowing as it seems always to do from spots where the coral reef overlies the basalt. There are three more small streams along the coast to the north. Where the water comes out of the rock a small pool has been made in which are numerous small freshwater crabs and prawns, not previously recorded from the Island. The flora of this point includes numerous plants not met with on the other coast—*Calophyllum inophyllum* big trees with more straight and tall stems than one usually sees, *Ochrocarpus ovalifolius*, *Wedelia*, *Cyperus pennatus*, a shrub suspiciously

like *Clerodendron inerme* but of which I could never find a trace of flowers or fruit, *Crinum asiaticum* and *Ipomea pes-capræ* were abundant there also.

Next day was devoted to the flora of the Cove and beyond Smith Point. Here just beyond the Magistrate's house there is a short track to the point, a mass of sharp-pointed coral with the regular seashore trees, *Pisonia grandis*, *Ochrosia*, *Ficus retusa*, *Pandanus nativitatis* forming dense thickets while on the barer rocks overhanging the sea are bushes of *Pemphis acitula* and *Scoevola* with much of the grass *Ischaemum*, and *Euphorbia hypericifolia*, and I added to the flora here *Cyperus Iria*, and a small *Selaginella* of which one or two bits were found growing in a hole in the rocks over the sea. Further search on several occasions was not rewarded by a single scrap more of this unexpected find. The great and continued hot and dry weather had dried up many of the smaller herbaceous plants, and this plant should be carefully sought again in damper weather. There is a fine view from Smith Point both into Flying Fish Cove and to North West Point and it is possible to push along the cliff edge by tracks used by fisherman for some way.

Dr. Hanitsch meanwhile had found a small puddle of water on the top of a rock containing Copepoda, which were carefully collected. A number of interesting plants were collected including fruiting specimens of *Acronychia Andrewsii*. The fruit, not previously described, is a small juicy flesh-coloured berry *Erythrina indica* was in flower and visited by numerous white-eyes which sought for insects among the scarlet blossoms. The tree appears not to be common now and I saw it nowhere else but here and round the Cove. I picked up flowers of it in the same district when I visited Christmas Island fourteen years previously. Among the rocky woods beyond Smith Point I found a large puffball about 4 inches tall with a broad stalk and a rounded top,  $3\frac{1}{2}$  inches through. It was of a pale fawn colour outside, but when the outer coat was rubbed off bright yellow beneath, the flesh was white. There were a good many of the soft fungi to be found in the earlier part of our visit, in shady places, but as the country got dryer

they were more scanty. Among them I several times found two species of *Coprinus* both resembling species I have met with in Singapore, but these are so delicate and fugacious that before we could get them home they had utterly perished. *Polypori*, *Polysticti* and other woody fungi were very abundant on decayed wood and a large number were collected. I noticed in them a great scarcity of beetles. Usually these woody fungi are the prey of innumerable beetles of several different groups, but here I could find few or no traces of these insects even in old specimens. Two of the fungi here are eaten by natives. One is *Hirneola Anriculae-Judae*, the well-known Jew's ear fungus, known to Malays as chendawan Telinga.

The other is a white agaricus which is very common on dead wood, a very poor kind of food.

In the evening I walked along the cemetery road collecting.

On the next day, 29th, I walked with Mr. Macpherson to Phosphate Hill, and examined the quarries. Many of the introduced weeds from Flying Fish Cove have found their way up here already, the seeds carried up doubtless on the clothes of the coolies, but besides these I found the common grass *Setaria glauca* and the little yellow *Convolvulus Ipomea chrysaoides* there which I found nowhere else, both new records for the Islands. Pigeons were very abundant here, as the trees on the fruit of which they particularly feed were bearing heavily. These trees are *Sideroxylon* and *Cryptocarya*. The coolies here were felling many trees to clear the ground for further excavations, and this gave me an opportunity of getting good specimens of the above; mentioned trees.—*Hernandia* and a common tree with bipinnate leaves and rather hard green drupes. Of this latter I was never able to procure flowers, and have not yet identified \* but it was not obtained apparently by Andrews. Passing through the coolie lines, we went along a track which had been cut for drainage and abandoned, and came to the edge of a high cliff from which could be obtained a beautiful view of North East Point.

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\* *Tristiriopsis nativitatis* Hemsley

Looking down on the two great terraces lying below and running parallel with the coast line it was difficult to believe that we were looking down on the tops of trees over 100 feet tall. So dense and equal were they, that one seemed to be looking on grass and bushes. The cliff is about 600 feet above sea level, and nearly vertical, but it might be possible to descend it. The three terraces are distinct to the North but one runs out a little beyond the point where we were to the South where apparently at some time a good deal of stream denudation has taken place. This track was said to have been first made by Mr. Andrews so that we named its terminus Andrew's Lookout. Here grow several plants of interest. Just above the Lookout, were a number of gigantic smooth barked trees bare at the time of my first visit but at the end of our stay revisiting the spot they bore pinnate leaves, red when young, and panicles of small white flowers, with blackish drupes  $1\frac{1}{2}$  inch long with acid yellow flesh. They were a species of Hog plum *Spondias*. The trees were too big to climb but we managed to get fallen flowers and fruit and a bough of leaves. This was an interesting discovery as the Hog plums are rather characteristic of Polynesian Islands. None were seen on any other part of the Island, nor on the lower cliffs of the North East Point. The ground was strewn with fallen fruit which was apparently not touched by any birds, or the fruit bats. They were much too far from the sea for the seed to have been washed up into that position, in the present condition of the Island, and the circumscribed area which they occupied, and the piles of untouched fruit beneath the trees seemed to suggest that no bird at present on the Island could act as seed-disperser. On the rocks of the cliff edge, were *Colubrina pedunculata* Baker, a large straggling shrub, just coming into leaf and bearing only the dry capsules of last season, and *Premna lucidula* Miq., a shrub of which we got fruit and flowers later. The common *Croton caulatus* formed troublesome thickets along the edge. It apparently flowers but seldom here, but its brilliant red withering leaves brighten up the woods and make it very conspicuous. *Ficus saxophila* a truly rock or rather precipice loving tree about twenty feet tall, had bright yellow figs on it,

but the figs of a tree at Steep Point were bright red. *Crinum asiaticum* a quite typical form is abundant here and all along this coast, growing in holes in rocks in rows on the precipices, a most unusual locality for this plant which one is accustomed to see in the sea sand. I returned by the branch pipe line to the Irvine Hall Reservoir on the waterfall track. In the evening collected among other plants at the wharf, *Ipomea grandiflora* a convolvulus like a poor and small form of the moon flower, *I bona-nox* and found also the pretty moth *Deiopeia pulchella* an insect which contrives to get all over the world, even to England where however it is considered very rare. It is common on the open rocks above the sea, and one came into light on one occasion. The lizard *Lygosoma atrocostatum* is common here, I saw it also on the sea rocks at the waterfall and at the further end of Flying Fish Cove. It never seems to go far from the sea and seldom appears till the evening.

Next day (29th) was spent in collecting in Flying Fish Cove and its vicinity and the following day I started up Phosphate Hill to go to the North East Point by way of the new drainage track from the coolie lines. The descent from the top of the upper terrace is over a mass of talus of coral rock rather steep and slow going, then through sloping woods, chiefly of *Celtis* and *Randia* to the sea cliff edge through a band of *Pandanus*, a fisherman's track. The scrub is too dense to get far along the cliff edge so we had to go through the wood along the coast line in a northerly direction. Having been informed that it was possible to get round North East Point and return by the cemetery track except for a barrier; which might be and indeed had been successfully passed we went as far as time would permit towards the North East Point intending to return the way we came. Passing through these woods a white egret was seen (*Demigretta sacra*?) on a spot which appeared to have been a stream. Soon the base of the second terrace was reached, and a troublesome mass of tall sharp rocks covered with a dense grove of pandans was crossed. By no means impossible though rough and wearying; expecting to come to the "barrier" we pushed on to a thick but more open bit, whence we returned, and eventually discovered

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that this mass of rocks and pandans was the terrible barrier, its difficulties having been greatly exaggerated. In fact it is, though a stiff walk, quite possible to walk round the coast from the Settlement round North East Point to the waterfall and so back in the day without much trouble.

On Monday the 3rd October I went with the plant-collector past Rocky Point along the cemetery road to North East Point till we came to the Pandan Scrub again. *Hibiscus vitifolius* a tall mallow with primrose coloured flowers with a pink eye occurs here scantily. It has not been found elsewhere in the Island. A large shrubby plant like a *Triumfetta*, 6 feet tall with very adhesive capsules covered with viscid hooks, grew in masses. No flowers were seen. I found a mass of its burs adhering to my sock when I got home so sticky were they. *Celtis* was coming into flower as were *Macaranga* and *Grewia*. At one point fishermen or runaway coolies had burnt the scrub towards the sea the result of which was a dense upgrowth of *Gyrocarpus* seedlings now about 8-10 feet tall to the exclusion of almost every thing else. While taking lunch a whiteeye flew and settled on my bag where it dropped an ornamental red black and white cricket, new to our collections.

October 4th. This morning Dr. Hanitsch and I with the Plant Collectors and Taxidermists, as well as a Chinese pigeon-catcher, Ah Soo, started to explore the plateau ascending by a somewhat difficult passage up the rocks at the Northwest corner of the Cove, known as Tom's Ladder. This rock cleft was formerly easier on account of a big fig root which served as a hand hold, but it was now dead and rotten and broke in two. However by taking off our shoes with the aid of Ah Soo we succeeded in climbing up. The ground above was a steep earthy slope, with large bushes of *Colubrina* and a short tufted grass. *Panicum* n. sp. new to the flora occurred here, above the plateau is level, and we went along a pigeon-catcher's track till it joined the Murray Hill Road and brought us out on the pipe-line at Irvine Hall. Ah Soo climbed one of the trees and caught three of the large pigeons with a noose on the end of a long stick, and could

have caught two more had we permitted it. The birds which sat together in the top of the tree did not seem the least alarmed at their companions being caught. We were informed that during high wind they never coo, and indeed they certainly were more quiet when the wind blew at all strongly. I may say that I never but twice saw any on the ground. One at the waterfall appeared to be sick or injured, the other was a strong healthy bird. Ferns are abundant on this part of the plateau the ground being covered in parts with a dense carpet of *Aerostichum*. I sought carefully for the *Trichomanes parrulum* but only found its prothalli, perhaps the adults had dried up owing to the heat. In the evening I succeeded in catching the humming bird hawkmoth *Macroglossa* which I had tried several times before to get. It frequented the flowers of *Morinda* at dusk. This far ranging insect had not previously been taken in the Island. The next two days were occupied in exploring Phosphate Hill, and the coast beyond Smith Point. The shore terrace here is very barren the flora being very monotonous, and the greater part of the way covered with pinnacles of coral rock very troublesome to cross.

On the 7th all started to the waterfall to camp there for a few days. We obtained through the kindness of Mr. Mcpherson a number of Chinese coolies and the use of a pack pony. For shelter we took two Government tents which were very fine affairs but utterly unsuited to the country, as it required 13 men to carry them which with the very limited number of coolies ever available, makes their use almost impossible. The first plant of note obtained was a grass which made a close soft turf often 6 inches or more deep, on the cliff tops above the sea. It proved to be *Lepturus filiformis* and I was told that it was a good fodder grass for horses, who would not however eat it until it had been well washed to get rid of its salinity. A number of small brown and green grasshoppers frequented it and were seen nowhere else. They were coloured so like the leaves and stalks of the grass that they were not easy to see and often when pursued dived down among the stems where they could not be caught.

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In the afternoon I went with Kassan through the woods along the shore to the south towards Steep Point, and after passing through a mass of lofty and picturesque rocks, found a fisherman's track which ran along a projecting point of rocks and ended in a very pretty little bay, with a white coral beach beyond which the big rollers broke over great masses of coral reef, where were many of the splendid large blue fishes which seem constantly to haunt the broken water on the reefs. On the right of the bay facing the sea the rocks were low and broken up into sharp pinnacles, troublesome to walk over. *Tournefortia*, *Scoevola* and a curious form of *Pemphis acidula* were the characteristic plants. The *Pemphis* formed large shrubs more or less erect except where exposed to heavy winds, where they were quite prostrate covering the rocks with a close mat of twigs and foliage, but the most remarkable point about this form was the very thick fleshy leaves, quite unlike those of the common form round Flying Fish Cove, which had the usual rather hard and dry leaves. Its appearance, especially that of the prostrate form, was so different that I took it at first for a distinct species, but the flowers and fruit are identical with those of the ordinary form. A few seaweeds and some fine cowries were obtained on the reef, and then we ascended the higher promontory on the North side of the bay by a fisherman's track. It was covered in part with a mass of the yellow flowered composite *Wedelia*, with bushes of *Tournefortia*, *Pandanus*, etc., but the terminal portion of this promontory consisting of the same brown pinnacles of rock as on the other side produced only the pink-flowered fleshy plant *Sesuvium portulacastrum* not previously recorded from Christmas Island. An old Javanese woman at the Waterfall told us that the Sepit as she called it was delicious when cooked and that she was a great hand at cooking it. Though abundant so close to the Waterfall she had no idea that there was any to be got. A day or two later we collected a quantity and had it boiled. It was indeed excellent, tasting like something between French beans and spinach. It requires however a good deal of washing previously as otherwise it is very saline. The plant is one of very wide distribution and occurs on most



tropical sea coasts in the Old and New Worlds, growing on rocks or mud always close to the sea. From this headland a good view of Steep Rock and South Point can be got. Sea birds were abundant here, and the common boobies were nesting among the pinnacles of projecting rock. The nests were placed on the ground and consisted of bits of stick, birds bones, scraps of *Sesuvium*, etc. The eggs were two, chalky white and usually dirty. One nest contained two unfledged birds, one of which was dead, Revisiting the spot later I found the dead bird gone and the other apparently dying. Though there were generally two eggs in the nest I never except on this occasion saw more than one young bird in a nest, whether the female bird is unable to bring up more than one at a time I do not know. In or close to the nest was usually a fish to be seen, brought by the parents. The hen bird usually sat alone on the nest, feebly pecking from side to side at nothing when a stranger approached. Occasionally the male sat by her also, but except for the feeble demonstration of anger described they made no attempt to defend the nest. The female when approached too near tumbled and flapped along the ground as if either too stiff with sitting or feebly pretending to be injured. In the trees in the bay a number of young boobies in white plumage sat so tame that they could easily be touched by hand, although they could readily fly. Dr. Hanitsch photographed a group. The small black heron and white egret were also seen in this bay. On our way back to camp Kusan discovered a plant of a species of *Balanophora* entirely pale yellow. This was a most unexpected find, as these parasitic plants were not recorded from any oceanic Island previously. Careful search for more produced no result here but I later found another above Steep Rock, and one in the centre of the Island. The plant was growing in loose soil on the shore terrace which was wooded with the ordinary shore terrace trees and covered with an undergrowth of *Dicliptera* and *Asystasia*.

The next day (8th) I started northwards to the first freshwater stream, a thin flow of water over rounded muddy rocks covered thinly with moss. Here grew the fern

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*Nephrodium truncatum* and there were abundance of the blue crab with white claws *Cardisoma carnifex*. This crab is only to be met with round these freshwater streams, and their presence shows the proximity of water. I found some however in the forest about a quarter of a mile from the Waterfall, where no water was visible above ground but there was said to have been a stream there at one time. This is the only crab eaten by the natives, who often bring baskets of them into the Settlement and even take them as far as Singapore. Leaving the wood I went along the coast for a considerable distance and found two more streams similar to the first. In many places the pandans which fringed the coast had been burnt evidently by fishermen to get at the sea cliffs for fishing, and they were often replaced by patches of the saltgrass. At one spot was quite a grove of fine Arengas, the ground beneath being almost bare of vegetation. Epiphytic plants are much scarcer in these shore woods than further inland. A few *Saccolabiums* only were seen. The grass *Ischaemum foliosum* so abundant on the cliffs of the North part of the Island, is very scarce on the East and South Coast.

On the following day I started with the Plant Collector for Steep Point, a great vertical cliff to the south, being especially desirous of finding "*Asystasia coromandeliana*" said to have been collected by Andrews there. As this plant commonly cultivated in Singapore occurs wild only in Africa and India it seemed highly probable that there was a mistake in the identification of Andrews' plant. I was quite unable to find a scrap of it wild or cultivated anywhere in the Island, but a very distinct species of the genus is abundant on the shore terraces near Waterfall and elsewhere. Having walked to the Whitebeach we made our way along the coast over the sharp pinnacles of coral reef to a stream bed coming down over basalt rocks but quite dry at that time. The rocks were covered with the prostrate fleshy-leaved *Pemphis* with tussocks of *Fimbristylis cymosa* in the hollows. Then we pushed through a very bad bit of thick scrub which had grown up since the whole of this place had been burnt about a year and a half previously. After climbing up a steep rock face on to a spur

parallel to Steep Point, we found it was necessary to cross to the main hill through a dense mass of scrub composed chiefly of interlaced *Wedelia* over blocks and pinnacles of coral reef. It was intensely hot, and there was no shade, and the work was extremely arduous and exhausting. Then we had to force our way up the great masses of coral rock covered densely with pandans with cudrania and other climbing plants. The whole of this part of Steep Rock to the edge of the cliff is covered with great masses of rock with deep hollows between and covered with thick growth of climbers, Pandans and Ficus and other trees. After a short rest and a drink of cold tea quite inadequate to allay my excessive thirst we felled an Arenga Palm for the sake of the refreshing cabbage of the bud and sought in vain for the *Asystasia*. Another plant of the *Balanophora* was found, fruit of the big tree *Ochrocarpus*, and some other botanical desiderata. Then crossing the ridge northwards and descending a steep slope of loose blocks of coral reef we made our way across the upper part of the dried up stream, hoping to find water as the streams usually break out at the junction of the coral reef and basalt and then after a short distance go underground again. No trace of water was seen, but pushing on through the forest we met with the fisherman's track and in an hour or so got to the Waterfall and lost no time in slaking our thirst at the stream. There is doubtless an easier way of getting to Steep Point than either the way we went or returned, but it would be necessary to go a good deal further inland well above the source of the stream, and in any case it would be a stiff walk.

10th—Next day, we went along the coast to the South East, descending to the shore where it was possible, which it is at several spots, not far from the promontory which bounds Waterfall Bay on this side. The first descent was made over the basalt outcrop. The basalt here is somewhat columnar and in parts in balls or nodules surrounded and aggregated by crystalline carbonate of lime. A number of seaweeds, *Sargassum*, *Turbinaria*, etc., were collected in the rock pools and *Marisecus albescens* almost out of flower and burnt up by the drought was found, a new record for Christmas Island though

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it is one of the most widely distributed of sea-shore sedges. In another small bay were found three shells of nautilus, and a rhizome and several cut bamboos, which must have been drifted for a long distance there being no bamboo on the Island. The pieces of bamboo were all dry and the rhizome was probably dead when it reached the Island. Although I sought constantly for washed up seeds, etc., on the shores of the Island I could find very little. Seeds, dead, of *Terminalia Catappa* and *Guetarda speciosa*, both common plants on the sea coast and one broken shell of a seed of *Pungium edule* a native of Java were all I could see. Drift wood was also not common. Perhaps when storms occur more seeds and wood are drifted across from Java and elsewhere. Many years ago I received from Mr. Ross an extensive series of seeds drifted up on Cocos Island and one can hardly doubt that many of the trees and shrubs inhabiting Christmas Island are descended from seed drifted there from more distant localities. I was, however, surprised to find so few drift seeds on the beaches. After dark a Malay man captured a large yellow tabby male cat, which said to have escaped a few years ago from an European had become feral. It was extremely savage and bit and scratched the Malay severely, having grown very large and powerful. Although it had been for some time in the forest it had not wandered far from the Waterfall Settlement, and though there was plenty of food in the way of rats and birds in the forest, it had become a nuisance by killing the chickens belonging to the coolies. After it had been confined in a box for a short time it became quite tame again and before we left was quite quiet and merely kept on a string to prevent its taking again to the woods. When Andrew's book on Christmas Island was published there were no cats on the Island and he deprecates their introduction on the grounds that if it were to increase to any extent the sea-birds would probably be destroyed or diminished in numbers. There are plenty of cats on the Island now but except this one it does not appear that any have taken to the forest, and should they do so they are more likely to destroy the ground pigeon, thrush and whiteeye which are more terrestrial birds

than the seabirds which only roost in the higher branches of the big trees and never come low enough for a cat to catch them. Far more dangerous would be the introduction of the civet cats (*Paradoxurus*, etc.,) as these animals are arboreal and would cause great havoc with the pigeons which they could easily catch. Malays often carry these animals about as pets and some one might perhaps introduce a pair, which would be very regrettable.

On October 11th we all returned to the Settlement, On the way I found *Pittosporum nativitatis* in flower for the first time. It is a common little tree on Phosphate Hill and parts of the plateau. The fully developed inflorescence is not as compact as it is figured and described in Andrews' book. It is a short but well branched panicle. The butterfly *Junonia villida* was first seen this day, and thence till we left was common though very active and difficult to catch.

Next day was occupied in collecting along the Cemetery Road, and at low tide in the afternoon in collecting seaweeds, shells, etc., on the reef in the Cove. The first *Hypolimnas misippus* was seen this day after which it became very abundant, evidently bred in the Island as the specimens were in excellent condition. Two days later a white butterfly *Pieris* sp. appeared. Specimens were caught later. It was not previously recorded from the Island. The next two days were spent in collecting round Rocky Point, Phosphate Hill and the Cove, and packing live plants to transit to Singapore by the "Islander" which had arrived. The whole of the neighbourhood was so dry that not only orchids but palms and ferns were sent dry in wooden boxes and arrived safely and in good condition.

On the next two days arrangements were made for an expedition to cross the Island over Murray Hill to the West Coast were at Hugh's Dale it was expected to find water. No one on the Island apparently had ever been to Murray Hill by that route, but there was a track for some way known as the Murray Hill Track, starting from a little beyond Irvine Hall. Accordingly tents and provisions were brought to Irvine Hall, and with a number of Chinese coolies the expedition started

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on Monday morning 17th at 8 o'clock, Mr. Macpherson and Messrs. Jones and Jackson of the Phosphate Company accompanied the expedition and they with myself preceded the coolies to cut the track and blaze the trees. The track is quite level and goes due west at first and except for a few big fallen trees could be used by ponies, but it was more overgrown further on. At 3 o'clock we cleared a piece of forest and pitched camp, the coolies and Messrs. Macpherson, Jones and Jackson returning to the Settlement.

18th—Messrs. Jones and Jackson came up about 9 o'clock, but the coolies delayed so long that they did not arrive till 1 p.m. We then went on for about 1½ hour and pitched camp again. Messrs. Jones, Jackson and I went a long way on what was supposed to be the right track starting from a spot where encampments had previously been made and where there were traces of four tracks going respectively south, south west, north west and north. The Southwest Track well marked, was the one taken. The yellow *Ipomea* was very abundant here, and very showy. From the old encampment, supposed to have been used by Ross, one of the party affirmed he saw the sea to the south. The track went southwest chiefly and descended to about 700 feet. The coolies were sent back to the previous camp for the night to come on in the morning. *Birgus* was more troublesome this night, coming into the tents several times. One stole a saucepan, others took away old tins. Pigeons were abundant here, and the hawk is not uncommon. Our water supply was rather short and had to be used with care, and only for drinking and cooking. Close to where the camp was pitched we came upon the very fine *Hibiscus (abelmoschus) Friesianus* a tall herb about 12 feet tall densely covered with pungent bristles and with large yellow flowers with a deep claret coloured eye. Also a number of plants of a small ground orchid *Zeuzine* and a single plant of a saprophytic orchid *Didymoplexis*; *Dendrobium* was common here and a *Thelasis* apparently identical with a Javanese species was found on fallen boughs of trees. *Ipomea peltata* with its large yellow flowers was climbing up the smaller trees. The common plateau trees,

*Eugenia*, *Sideroxylon*, *Barringtonia*, *Laportea* with *Randia* formed most of the forest, and *Guttarda* and *Ochrosia* which do not generally occur on the plateau were both here. A little rain fell during the night. The robber-crabs, *Birgus latro*, invaded the tents and stole a boot, and a killing bottle, which was found next day broken under a pile of cut bushes.

19th—Messrs. Jones, Jackson and I with Kassan started early, leaving the coolies to follow along the track we had marked yesterday. After a short way we noticed we were descending, and eventually the track disappeared, pushing on we came to a ridge of phosphate of alumina and iron, a curious rock resembling sandstone at first glance. This is the rock abundant at Murray Hill. We then came to an old encampment with a bucket, a tin, a grindstone and a pair of shoes, evidently a very old encampment. The ground descended very abruptly to an old stream bed. We appeared to be near the sea but there were no tracks or blaze marks. As it was obvious we were not near Hugh's dale, we pushed on to find out where we were, and at last got to a cliff edge from which the sea could be seen at our feet. We were on the top of the upper terrace of the south coast about two miles from Egeria Point. The view of this point never yet reached by anyone as far as is known was very fine. The immense vertical cliffs densely covered with trees ran in a curve to the point where we were, Below them was the shore terrace, with at one point as far as could be judged an outcrop of basaltic rocks. Immediately below us was a great densely wooded gorge. It was obvious that no water was to be found here, and it seemed impossible to descend these precipitous rocks. A message was sent back to the Settlement for more water as very little remained. The coolies were sent back and we camped for the night. The forest here was botanically poor, the only plant of interest being *Melochia arborea* of which a large tree was seen over the precipice. Pigeons were abundant. Dr. Hanitsch took photographs of Egeria Point and of a booby on its nest among the rocks. The *Birgus* was abundant here, and constantly entered the tents at night. One seized a towel while dinner was being cooked and during

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the night one conveyed outside the tent a bottle of quinine lying near my head. It was found open but unbroken a short way off.

20th—We decided to retreat to the Settlement without delay leaving the baggage to be fetched by the coolies who would be sent, as there was hardly any water left, and none to be got nearer than Irvine Hall, and all but Dr. Hanitsch who wished to remain till the arrival of the coolies, and his boy, started at daybreak. Messrs. Jones and Jackson went ahead and met the coolies near the first camp and came back with them. I went to the first camp and remained there till the coolies returned, collecting plants in this district. More *Dydymoplexis* and *Balanophora* were found. The whole party having reached the first camp about 2 a quick march brought us clear of the forest and into the settlement before dark. The whole distance appeared to be about 15 miles. As ships were now expected in every day, it was impossible to procure the service of any more coolies till the end of our visit as all were wanted for loading the vessels.

21st—The morning was occupied in changing the herbarium papers and a short walk to Smith Point to try and get more of the *Selaginella*, but I was not successful. *Heptapleurum* was just coming into flower, though it had shewn no signs of buds before we left the Settlement. Another *Laportea* was also flowering, and a large tree with panicles of yellowish berries and very dark green leaves was met with and eventually with some difficulty as the tree was too thick to climb Kassar got specimens of it. In the afternoon I went to Irvine Hall to bring down some large fruits of the big *Pandanus*, I had left there, and Dr. Hanitsch to Phosphate Hill to fetch away some fossils, &c.

22nd—I went along the rocks beyond Smith Point as far as was possible. It was extremely hot and the vegetation somewhat dried up, so much so that the younger trees of *Ochrosia* were often quite withered the whole day not recovering even after the nocturnal dews. Many of the smaller plants such as *Capsicum* were also drooping even in the woods. On the rocks beyond Smith Point was a pubescent stunted



form of *Physalis minima* looking very different from the tall glabrous plant common in cooler and less rocky spots. In the afternoon among other things the climber *Limacia* n. sp. was found in flower for the first time.

24th—Went up to Irvine Hall with my boy, Kassar, and two boatmen and a gardener to stop there the night and start early for the Murray Hill Track next morning. Accordingly started at 6.15 and walked fast to Ross' camp and started from there along a track to the Northwest, at the commencement of which was an inscription in Chinese stating that it was the road to the big hill and place for water. The track immediately disappeared and the woods proved very dense. Here I noticed upwards of a hundred *Birgus* beneath an *Arenga* devouring the fruit. They had eaten almost every seed rejecting the pulpy outside cracking and eating all the seeds with their powerful jaws. After pushing a long way and finding no track or rise, I thought it advisable to return and found the men behind had neglected to mark the track properly, so that we had some difficulty in finding the way back. After a short rest returned to Irvine Hall and after a cup of tea back to the Settlement. The whole time occupied in walking was ten hours and a half. It is clear that it is practically impossible to get to Murray Hill and back in the day, unless the track was specially opened beforehand. A few specimens of various plants were obtained and the phosphate rock again met with. *Dentrobium* sp. was in flower.

Next day I went to North East Point collecting flowers of *Pisonia excelsa* which are white and scented like almonds, and *Croton caudatus*, just coming into flower.

26th—To Andrews Lookout, crossing Phosphate Hill. Here I found large trees of *Spondias* in flower with fruits also. The trees were too big to climb but we were able to find fallen sprays of flowers and plenty of fruit and to get leaves. *Premna lucidula* a small straggling tree was in flower as was *Crinum asiaticum* but this latter on the face of the precipice was inaccessible. A fine cycad was seen in the wood growing on a rock.

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27th—To the foot of Tom's Ladder in Flying Fish Cove, where *Polypodium Phymatodes* new to the flora was found growing on the cliffs of coral reef, but only a few plants. The way along the foot of these cliffs is troublesome being a steep mass of coral reef talus, after passing which one comes to the outcrop of basalt and ash, with a talus of fine dust often difficult to cross. It was extremely dry here and many of the plants were quite dried up. This is the only place at which I found the peculiar grass *Panicum Andrewsii* which was almost quite withered up. The pink flowered *Boerhaavia* grew upon the rock faces. To add to our difficulties at one place stones were falling from the top of the high cliff. Finally coming to an impassible precipice I descended by a long slope to the Cove.

The next day the "Islander" arrived. I walked over to the Waterfall and got *Ipomea biloba* in flower and *Nelochis* also. The 29th was spent chiefly in collecting plants for cultivation near Tom's Ladder and while so doing I found a single plant of the rare *Asplenium* on the cliff there. Next day explored the cliffs behind the Cove further towards the East, but got but little of interest. Part of this route requires careful climbing as the rocks are often loose and dangerous. A very large rock shifted its position while I was passing it and fell on my leg, but I fortunately managed to get from under it as it fell and escaped with a deep bruise, otherwise it would certainly have broken my leg. Further on we came to a spot where by the aid of fig-roots it is possible to climb up to the plateau where there is a track leading to the pipe-line and so to the Settlement.

28th—The first rainy day since our arrival, raining almost all day. The "Islander" left the next day for Singapore. There were heavy rollers for the first part of the day and steady rain for most of the voyage which ended at about 7 p. m. on November 2nd.

## The Botany of Christmas Island.

The first collection of plants made in Christmas Island was that of the expedition of the Flying Fish under Captain Maclear, in 1886, but a few plants only were then obtained. In 1887, H. M. S. Egeria visited the island and remained ten days during which time Mr. J. J. Lister, naturalist to the expedition, collected plants, animals, and rocks but was unable to penetrate into the centre of the island. The account of the plants obtained on these two expeditions was published by Mr. Hemsley in the Journal of the Linnean Society vol. XXV p 351. They amounted to about 52 specimens of flowering plants, 17 Ferns and Lycopodiaceae, and 8 cellular cryptogams. As previous to this time no settlement had ever been made on the island nor any ships except a few whalers, and other vessels touched there, the flora was in its unaltered primitive state and no weeds of cultivation had made their appearance. The collection however was by no means complete even for the area visited, but many of the endemic plants were collected.

In 1888 (November) Mr. Clunies Ross settled there, and from this period dates the introduction of the weeds and plants generally introduced by human agency.

In 1890 I visited the island in the gunboat "Redpole" landing at Flying Fish Cove, and spent about 10 hours there, during which time I collected as many plants as I could, in the Cove and up as high as the Plateau. As I was chiefly interested in the indigenous plants at that time I paid less attention to the introduced species, but noted *Hibiscus abelmoschus*, and *Spilanthes acmella* neither seen since; *Paspalum sanguinale* and *Eleusine-indica*. An account of this trip was published in the Journal of the Straits Branch of the Asiatic Society, vol. 22, p.123.

During their residence the Ross family introduced a number of useful and ornamental plants many of which are still to be found in the Settlement and with these a number of weeds must have been introduced.

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In July 1897 Mr. C. Andrews, visited the island and remained for upwards of a year, during which he made extensive collections, and explored a good portion of the island. The account of his expedition appeared in 1900 as "a Monograph of Christmas Island" published by the trustees of the British Museum. He added a large number of species to the known flora; many indigenous ones, and about a dozen introduced plants or weeds which had more or less established themselves.

At that time clearings were being made and roads cut, and since the opening up and development of the Phosphate quarries, there has been an influx of Chinese, who have brought in their train a number of cultivated plants and weeds. Practically however the greater part of the island is quite unaffected by these arrivals, which have only spread in Flying Fish Cove, along the Cemetery road, and round the Phosphate hill quarries, and also on the cleared ground at the waterfall. At the time of Mr. Andrew's visit no herbivorous animals except one goat had been introduced, but since then a few cattle and some horses have been brought, and these perhaps are responsible for the appearance of some weeds, such as *Amaranthus viridis*, and *Panicum colonum* which not rarely spring up where the dung of these animals is dropped. In the collections made by myself in 1904 there are a number of introduced weeds not obtained by Mr. Andrews, as well as some indigenous plants which were either overlooked by him or not in flower at the time of his visit.

The collection although made at a very dry time of the year, as not a drop of rain fell till quite the close of our visit, contained nearly all the flowering plants and ferns previously collected, as well as the novelties alluded to.

The plants not seen by me on this occasion were *Spilanthus acmella* and *Hibiscus abelmoschus*, introduced and fugacious weeds; *Cerbera odollam* found by Andrews at Rocky Point, which has since been much cleared for coolie lines, and the tree perhaps destroyed; *Remusatia vivipara* in the old path to Phosphate hill, which has perhaps been destroyed by the formation of the tip for the Phosphate, at the end of the

tram lines, or the plant may still be there and simply dried up at the time of our visit for I sought carefully for it in vain. *Lastrea intermedia* collected by Lister, and apparently not by Andrews I did not see, nor *Sagenia polymorpha* found by him, not common at North West point, a locality I could not get to. Some other plants mentioned in previous lists are obvious and others doubtful misidentifications. Lister's collections are preserved at the Royal Gardens Kew and Andrews' at the British Museum and I have not had the opportunity of seeing them.

The collections made in 1904 included as can be seen a good many additions to what was previously known and contained the first collection of marine Algae from the island. It is only possible to get to the sea in a very few places, on account of the height of the cliffs, and the impossibility of using a boat with any degree of safety. In many places from the top of the cliffs one can see the rocks beneath the surface clothed with masses of *Turbinaria*, *Sargassum* and many other Algae, far out of reach, and doubtless there are many yet to be collected. I have to thank Mr. and Mrs. Gepp of the British Museum for identifying the Mosses and Algae, and some other plants. The fungi and some of the Lichens were identified by Mr. Massee of Kew Gardens and other plants by Mr. Hemsley of Kew. A few plants were met with without any trace of flowers or fruit, one a shrub closely resembling *Clerodendron nerifolium* near the waterfall; a big liane common in the forest; and a small tree with lanceolate leaves common on the plateau, and of *Tristiriopsis Nativitatis* very common in Flying Fish Cove and which was first collected in fruit by Lister and again in fruit by me, the flowers are as yet unknown.

I do not think it at all probable that the whole of the flora even of the flowering plants and ferns is yet known. Many of the indigenous plants were very local, and considering the large area of the island which is practically inaccessible as yet, especially the south coast, and the fine cliffs of *Egeria* point, one may expect that a number more plants will be found whenever it is possible to explore these parts, and even in the more accessible parts it is probable that many

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small plants will be met with which were dried up at the time of our visit.

*Native Names.* Mr. Andrews in his account of the flora gave a number of native names which he had obtained apparently from the Javanese temporarily employed on the island, but these are of little importance, as nearly all are either blunders by ignorant natives or expressions made up on the spur of the moment. Thus *Pongamia*, well known as Malapari is called Kayu Kwat, simply "strong wood." *Ochrosia* is given as "Gundra Roussa" presumably a blunder for *Gendarusa*, (*Justicia Gendarusa*) from some fancied resemblance of the leaves to those of the *Justicia*; *Berria Ammonilla* is given as Boognor, but it is really known in the island as Bungoh i.e. *Lazerstromia*, no doubt on account of its hard wood; *Pisonia excelsa* is called Jamboe (i.e. Jambu), that is an *Eugenia* (*Jambosa* section). No Malay who knew anything about the plants would make such a mistake as this if he saw the tree, nor would he call *Kleinhovia* Laban i.e. *Vitex pubescens*. A few of the names of very common and well known plants are correct Javanese names, such as Ketapan, Waroo, Dadup.

*Distribution of the species.* In giving the distribution of any given species of plant, writers are apt to be very casual in their localities, Malaya for instance is by some authors made to cover anywhere from Tenasserim to the Philippines, including three or four quite distinct floras, and plants are described as "widely spread in tropics" when in fact their area is circumscribed to a small portion. The importance of distributional notes depends entirely on their accuracy and their value consists in the light that they throw on the origin of the flora. Comparatively little literature and herbarium material is at my disposal as I write this, but I have given as many distributional notes as I can get, and tried to distinguish indigenous plants (i.e. plants which have arrived at the locality without the direct or indirect

aid of man) from those which have been so introduced which I class as *weeds*. In order to make the distinction clear, I have given in all important cases the date of the first collecting of these plants. The earliest list, that of Lister published in 1888 in the journal of the Linnean Society, though only a small collection, contains only two plants which one would suspect to be weeds, viz: *Datura*, and *Fleurya*. There is absolutely no evidence of any one's having settled on the island previously to the visit of the *Egeria*. There may have been wrecks, and doubtless there were and whalers had touched at Flying Fish Cove. Dampier sent a boat on shore on the south west point. But these visits would not be likely to bring introduced weeds, like *Datura* and *Fleurya*, which seem only to occur round Flying Fish Cove, and not in the further side of the island where most of the earlier landings seem to have been made. We may take it then that all the plants collected by the Flying Fish and *Egeria* parties are indigenous, and Christmas Island may be considered the only Oceanic Island of which the flora has been collected when in its original state and before the appearance of man and his concomitant weeds.

The settling of the Ross family not long after dates, the first invasion of weeds. Mr. Ross brought many plants to cultivate both useful and economic. Whether in pots of soil or packing or in other such ways, a number of weeds arrived, most if not all these came from Cocos Island and Java. A number of these were seen or collected by myself in 1890, but the few hours at my disposal on that occasion were more devoted to the indigenous flora. More weeds had appeared by the time Andrews made his visit, and about then commenced the influx of Chinese, who often carry pot plants about with them, as well as vegetable seeds, etc. Then cattle and horses were imported, and these added yet more weeds, both in fodder brought with them and in that which they had eaten on the way. Thus I found in 1904, more weeds than Andrews had collected.

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These weeds though in many cases very abundant now in the Settlement and the clearings on Phosphate hill and by the waterfall have not spread to any distance beyond, not even along the fishermen's regular routes.

The following is a list of weeds of the island, (excluding plants merely planted intentionally which have spread of themselves such as Papaya, Capsicum and Melia ) arranged according of the date of their first record.

1890.

*Hibiscus abelmoschus.*  
*Spilanthes acmella.*  
*Panicum sanguinale.*  
*Eleusine indica.*

1897.

*Gynandropsis pentaphylla.*  
*Ageratum conyzoides.*  
*Synedrella nodiflora.*  
*Ipomea digitata ?*  
*Solanum ferox.*  
*Stachytarpheta indica.*  
*Euphorbia pilulifera.*  
*Phyllanthus Niruri.*  
*Trema amboinensis.*

1904.

*Cleome viscosa.*  
*Cardiospermum Halicacabum.*  
*Ludwigia prostrata.*  
*Turnera ulmifolia.*  
*Ipomea chryseides.*  
*Amaranthus viridis.*  
*A. paniculatus.*  
*Peperomia exigua.*  
*Euphorbia thymifolia.*  
*Cyperus Iria*  
*Paspalum conjugatum.*  
*Panicum colonum.*



*Setaria glauca.*  
*Pteris quadriaurita.*  
*Solanum involucratum.*

*Melia azedarach*, *Carica Papaya* and *Capsicum minimum* introduced doubtless by the Ross family have also spread freely over cleared and partly cleared ground in the neighbourhood of the settlements being dispersed by birds, but are absent from the further parts of the island.

The indigenous flowering plants number about 125 of which 29 are distinct enough to constitute endemic species, with 26 Vascular Cryptogams including 3 endemic species, and 85 terrestrial cellular cryptogams.

#### ENDEMIC SPECIES.

These are the following.

*Limacia nativitatis.*  
*Pittosporum nativitatis.*  
*Abutilon Listeri.*  
*Grewia osmorylon.*  
*Grewia insularis.*  
*Acronychia andrewsi.*  
*Tristiriopsis nativitatis.*  
*Colubrinu pedunculata.*  
*Eugenia gigantea.*  
*Zehneria alba.*  
*Heptapleurum natale.*  
*Saprosma nativitatis.*  
*Hoya aldrichii.*  
*Ardisia pulchra.*  
*Asystasia alba.*  
*Dicliptera Maclearii.*  
*Peperomia Rossii.*  
*Claoxylon caerulescens.*  
*Laportea Murrayana.*  
*Cryptocarya nativitatis.*  
*Dendrobium pectinatum.*  
*Phreatia Listeri.*  
*Ph. congesta.*

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*Saccolabium Archytas.*

*Corymbis angusta.*

*Zeuxine exilis.*

*Arenga Listeri.*

*Pandanus nativitatis.*

*P. elatus.*

*Panicum andrewsi.*

*P. clivale.*

*Asplenium centrifugale.*

*Gymnopteris Listeri.*

*Selaginella rupicola.*

Moss.

*Ectoprotecium micronesiense*

Fungi.

*Favolus albus.*

*Geaster andrewsi.*

*Poria chlorina.*

Alga.

*Halymenia polyclada.*

The affinities of these plants may be said to be with Javanese species except *Cryptocarya* and *Pandanus Nativitatis*, which are allied to Australian and New Caledonian species.

As Oliver (Journ. Linn. Soc. l. c. 352) remarks "most of the plants could not be exactly matched with their congeners from Java but yet do not sufficiently differ to be specifically distinguished, an indication of considerable age of the flora," and indeed this is so, for besides these distinguished as distinct species several others are very unlike the plants as we know them from surrounding countries, eg., *Raulia densiflora*, *Callicarpa longifolia*, *Ochrosia Ackeringiae* and *Lea sambucina*. Still it must be taken into consideration that the locality where these plants grow is very unlike their habitats in Java and the Malay Peninsula. The soil is very rich in phosphates and lime, and extremely porous, so that in the dry season it becomes extremely dry, the water soak-

ing through the ground till it reaches the basalt. Many of the plants grow on bare rocks of coral reef, others in masses of coral detritus. What wonder that plants growing on such soils and with such a climate should differ from those growing in permanently wet woods with rich humus and little lime and phosphate. Compare the damp dark forests rich in humus with little lime which *Carymbis veratrifolia* inhabits with the dry powdery dust of phosphate of iron and alumina and broken coral reef in which *C. angusta* grows; the damp clay banks where *Asystasia intrusa* lives, with the coral talus which *A. alba* frequents; the low lying damp open country inhabited by *Callicarpa longifolia* with the plateau woods where the variety *glabrescens* grows and one can not wonder these forms are very distinct.

It must be remembered that we have as yet no complete knowledge of the floras of the adjacent islands, and it is probable that some of these endemic species will be found again in other Malayan islands. Some of the plants indigenous to Christmas Island and not classed as endemic are as yet only known to occur in one other spot, e.g. *Balanophora insularis* and *Dendrocolla carinatifolia* in Pulau Aur, an island lying off the eastern coast of Pahang, and *Sideroxylon sundaicum*, on Pulau Sangian.

The greater number of the indigenous species however differ little or not at all from the forms known elsewhere, though there seems among the trees to be a tendency to greater size, probably due to some extent to the absence of competition, of the plants found elsewhere than in Christmas Island, nearly all have been recorded from Java. The exceptions are.

<i>Ochrocarpus orailfolius</i>	Admiralty Islands and Timor Laut
<i>Strongylodon ruber</i>	Andamans, Ceylon and Polynesia.
<i>Inocarpus edulis</i>	Polynesia.
<i>Quisqualis indica</i>	Burma, Malay Peninsula.
<i>Blumea spectabilis</i>	India, Ceylon, Malay Peninsula.
<i>Sideroxylon sundaicum</i>	Pulau Sangian.

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<i>Ochrosia ackeringe</i>	Sumatra and Banka.
<i>Convolvulus parviflorus</i>	Africa, India, Ceylon and Australia.
<i>Ruellia ringens</i>	E. Africa, India, Malay Peninsula.
<i>Balanophora insularis</i>	Pulau Aur.
<i>Acalypha wrightiana</i>	Malay Peninsula.
<i>Dendrocalla carinatifolia</i>	Pulau Aur.
<i>Ischamum foliosum</i>	New Caledonia.
<i>Fimbristylis cymosa</i>	Australia.

It is probable however that several of these will be found to occur in Java.

#### CULTIVATED PLANTS ON CHRISTMAS ISLAND.

I made a note of all the plants I saw cultivated on Christmas Island, especially those useful as fruit or vegetables. The importance of these to the coolies working on the Island as well as to the Europeans need not be dilated on.

The fruit trees included :

Pomegranate (more valuable perhaps for its anthelmintic roots). Custard-apple, Bullock's Heart, Sapodilla, Pumelo, Orange and Limes, Papaya, Pineapple (Mauritius pines only); Tamarind, Coconut, Lime-berry and Bananas. All fruit well here, and there was a good supply of most of them. The limes and orange trees were however much attacked by scale insects. Directions for cleaning them were given to the Manager. Mangosteens had been planted and I heard also that Durians had been introduced. A few dying mangosteen seedlings were all I saw. Soil and climate is not suitable for these. Of other fruit trees were single specimens of Jambu Bol, Jack and Mango, none of which had fruited. Coconuts grow and fruit well in the Cove and appear sufficient in number to supply all local needs.

*Vegetables.* The Chinese have one or two gardens for vegetable cultivation in which grow Dolichos Lablab (Karas bean) Kachang Prut Ayam, Luffas, Waxgourd, Bottlegourd, Peria, Chives, Chinese lettuce, Kangkong, Bayam, Sweet-

potato, Brinjals and Indian Corn : Chilies have run wild everywhere. Dal and Haricot beans, mentioned by Andrews as cultivated I did not see and of other plants in cultivation mentioned by him Sugar-cane, Bamboos, Nutmeg, and Cocoa, have also disappeared. The dry calcareous soil is not suited for these plants. A few ornamental plants are cultivated but more might be done in this way. There are a few good trees of Kapok, a candle-nut tree, Liberian Coffee, doing well but the trees are getting old. Lemongrass, and a good supply of Tapioca. The attention of the Magistrate was called to a number of thriving plants of the very undesirable Indian Hemp (Ganja) close to his house carefully planted and protected by his gardener.

Fodder plants for the horses and cattle are practically restricted to *Oplismenus undulatifolius* which is abundant in many of the woods and is collected and brought in by the grass cutters. There is also *Digitaria sanguinalis* and I also found recently introduced *Panicum Colonum* and *Paspalum conjugatum* both in very small quantity. The latter when it gets to the cooler and shadier parts of the island will probably spread, and is a good fodder grass. The rest of the grasses in the island are unsuited for fodder. The horses however eat greedily many of the weedy herbaceous plants such as *Synedrella* and *Ageratum* when young. More might be done in introducing fodder plants as there seems rarely to be sufficient. The soil in a good part of the island is hardly deep enough for much cultivation, but behind the Settlement is a good area tolerably flat in parts of rich brown earth, in which beans, pines, bananas, etc., grow well. A good deal of this is still covered with secondary scrub which could be cleared and used as a fruit and vegetable garden. The difficulty of cultivation in the dry island lies in two factors, the excessive drought in the dry season, accentuated by the porous nature of the soil which does not retain water, and the great mist of sea spray which covers the Cove, and the cultivated area at the Waterfall during the rough seasons. At the latter place where sweet-potatoes were being cultivated the natives told me that the plants were destroyed every year

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in the stormy season by the heavy masses of sea spray thrown up by the waves.

The peculiarity of the soil very rich in phosphate, and lime also must be unsuitable for many plants. The area at present available for cultivation of any trade products is too small for more than experimental work, but a good many more vegetable and fruits might be successfully grown. I brought and gave to Mr. Macpherson who took a good deal of interest in plant cultivation, suckers of pine-apples, and seeds of the cherry tomato. This plant had run wild in Fernando de Noronha, an island very similar in many respects to Christmas Island, just as the Chili has there, and its small sweet fruits were found to be very refreshing, and could be gathered in basketsful from the rocks among which it grew. The birds in Christmas Island would soon disperse the seed and it would probably soon become abundant. The only wild eatable fruits on the island are those of *Sideroxylon* which somewhat resemble cherries and the kernels of the Ketapang and *Inocarpus edulis*, the Otaheite chestnut, which I was somewhat surprised to find no one on the island seemed to know was eatable. When boiled it has quite the taste of a Spanish Chestnut but it is very much larger.

The following is a list of all the plants cultivated at present or previously recorded in Christmas Island. The amount of cultivated land is very small. A number of the plants in this list were introduced by Mr. Ross and others later by the employés of the Phosphate Company, of the trees I saw frequently but one specimen.

1. Fruit trees.

<i>Punica granatum</i>	Pomegranate, grows well.
<i>Anona squamosa</i>	Custard apple     "
" <i>muricata</i>	Bullock's Heart   "
<i>Mangifera indica</i>	Mango. One tree not fruiting.
<i>Artocarpus integrifolia</i>	Jack.             "
<i>Achras sapota</i>	Chicko, several fruiting.
<i>Citrus decumana</i>	Pumelo           "

- |                         |                          |
|-------------------------|--------------------------|
| <i>Citrus aurantium</i> | Orange several fruiting. |
| <i>Citrus medica</i>    | Limes            "       |
- The Limes of which there are plenty were at the time of our visit much affected by scale.
- |                                 |  |
|---------------------------------|--|
| <i>Garcinia Mangostana</i>      | Mangosteen, all dead the dry season and poor soil does not suit them.    |
| <i>Carica papaya</i>            | Papaw, abundant, good seed dispersed by birds.                           |
| <i>Tamarindus indicus</i>       | Tamarind, several and young seedlings noticed along the waterfall trunk. |
| <i>Cocos nucifera</i>           | In Flying Fish bay, two varieties fruiting well.                         |
| <i>Ananassa sativa</i>          | Pineapple grows well. The Mauritius pine is the only variety there.      |
| <i>Triphasia trifoliolata</i> , | Limeberry plentiful.   |
| <i>Musa sapientum</i>           | Bananas do well.   |
| <i>Eugenia Malaccensis</i>      | One tree.  |
2. Vegetables.
- |                                |  |
|--------------------------------|--|
| <i>Dolichos Lablab</i>         |  |
| <i>Cajanus indicus</i>         | Dal. seen by Andrews.                  |
| <i>Phaseolus lunatus</i>       | "                                      |
| <i>Vigna Catiyang</i>          | Cultivated by Chinese.                 |
| <i>Luffa</i> sp.               |  |
| <i>Benincasa cerifera</i>      | Waxgourd.                              |
| <i>Momordica charantia</i>     | Peria.                                 |
| <i>Ipomeea aquatica</i>        | Kankong.                               |
| <i>I. digitata</i>             | Sweet potato.                          |
| <i>Lactuca</i> sp.             | Chinese lettuce.                       |
| <i>Allium scorodo, r. asum</i> | Climes.                                |
| <i>Lagenaria</i> sp.           | Gourd.                                 |
| <i>Solanum Melongena</i>       | Rinjal, yellow variety.                |
| <i>Capsicum minimum</i>        | Chilies established in various places. |
| <i>Zea Mais</i>                | Indian corn grows well.                |
| <i>Andropogon nardus</i>       | Lemon grass.                           |
3. Ornamental and other plants.
- |                            |                                      |
|----------------------------|--------------------------------------|
| <i>Aleurites moluccana</i> | Candlenut. One tree Ross' old house. |
| <i>Orcodoxa regia</i>      |                                      |

<i>Elæis guineensis</i>	oil palm.
<i>Livistona australis</i>	
<i>Cycas revoluta</i>	
<i>Phoenix</i> sp.	Young plants.
<i>Fourcroya gigantea</i>	Two young plants.
<i>Poinciana regia.</i>	
<i>Caesalpinia pulcherrima</i>	
<i>Plumiera acutifolia</i>	
<i>Hibiscus rosa-sinensis</i>	
<i>Cassia siamensis</i>	
<i>Canna indica</i>	
<i>Jatropha curcas</i>	
<i>Jasminum Sambac</i>	
<i>Renanthera arachnites</i>	
<i>Vanda Hookeriana</i>	
<i>Melia azedarach</i>	has spread all over the Cove, and as far as Phosphate hill, giving a great part of the secondary scrub.
<i>Codiaeum variegatum</i>	Croton, a few bushes.
<i>Eriodendron anfractuosum</i>	Two or three trees.
<i>Cannabis indica</i>	
<i>Coffea liberica</i>	does well.
<i>Manihot Utilissima</i>	Tapioca.

The Nutmeg and Cocoa and the Sugar Cane and Bamboos formerly cultivated have quite died out.

#### NOTE ON THE TIMBERS OF CHRISTMAS ISLAND.

The Bastard Teak (*Berria* sp.) is of course the most valuable timber of the island, but though a good deal still exists, the supply is not inexhaustible, as it appears only to occur on the lower terraces on the North Coast. It hardly occurs on the plateau and I saw it not on the other coasts. The timber of the *Eugenia*, the biggest tree on the island is fairly good but is not what would be classed as a first class wood. *Sideroxyton* has a white wood; good for planking, etc., but not as good as the wood of most trees of the order, *Sapotaccae*. *Cordia*, the iron wood of Cocos Island, is a first class wood but



the trees are scanty and small here. *Ochrosia*, *Pongamia* and *Cryptocarya* also give useful woods. The Katapang is larger here and with harder wood than I have seen elsewhere. In fact it appears to be too hard for practical purposes. The so called wild coffee, *Randia densiflora* var. supplies excellent walking sticks and umbrella handles, and as there is often a considerable demand for these they might at some time be an article of export.

#### THE COLLECTION MADE:

Considering the time at our disposal and the difficulty of getting to further parts of the island a very complete collection of the flora was made which not only added a very large proportion to the plants previously known, but has enabled me to correct a number of misidentifications in previously published works, of previously unrecorded species; a certain number, not very large, were plants introduced accidentally after Andrews' visit; the others were plants obviously overlooked by him. I do not think that even yet we have got a full list of all indigenous species as it is probable that in the at present inaccessible parts of the South and West other plants will be found. I met with three trees and shrubs not previously noticed by other collectors on which no trace of flowers or fruits could be found. They were quite common but I failed to identify them, and doubtless there are others in further parts of the island. A large number of fungi too were collected which had not previously been recorded and others of this group will probably be met with in more suitable time of year.

The greater part of the flora is however known now.

#### THE FLORA DICOTYLEDONS.

##### MENISPERMACEÆ.

*Limacia nativitatis*, n. sp.

A tall woody climber with slender branches. Leaves (young) elliptic orbicular, (older) lanceolate subacute mucronate 2-3 inches long  $1\frac{1}{2}$ - $2\frac{1}{2}$  inches wide above glabrous dark green beneath pubescent with yellowish

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hairs especially dense on the midrib, nerves ascending 2 pairs petiole 1 inch long geniculate densely pubescent. Racemes 3 inches long not branched slender, rachis pubescent. Flowers yellow in distant tufts of 5 or 6, shortly pedicelled. Bracts linear pubescent. Sepals 6, 3 outer ones linear spatulate pubescent, 3 inner ones broader obovate obtuse, pubescent on the back. Petals smaller sub-spathulate glabrous. Stamens 6 glabrous, 6 filaments broadly linear, anthers introrse 2 celled, grooved. Fruit not seen.

Common near Flying Fish Cove and towards Rocky point and on the Plateau.

The plant which climbs on the smaller trees covering them with a thick mat of foliage, only came into flower shortly before we left, and I only obtained male flowers.

It seems most nearly allied to *L. borneensis* Miq. and is remarkable for its simple racemes of flowers.

The genus *Limacia* extends from Tenasserim and Cochin China to the Malay peninsula and archipelago. The fruits are drupaceous.

*Tiliacora racemosa* forma, is given without special locality in the Monograph of Christmas Island. It is an Indian plant. I have not seen it here and would suggest the plant referred to this species may perhaps be the preceding.

#### CAPPARIDÆ.

*Gynandropis pentaphylla*, Dec.

*Pedicellaria pentaphylla* Schrank.

Was collected in the settlement by Andrews.

*Cleome viscosa*, L.

A few plants were met with on the coral beach in the Flying Fish Cove.

Both of these tropical weeds occur occasionally in cultivated ground, and often disappear again as quickly as they come.

## CRUCIFERÆ:

*Sinapis nigra*, L.

I found a single stunted plant of what appeared to be this in waste ground near the quarries on Phosphate hill evidently an escape from cultivation.

## PORTULACACEÆ.

*Portulaca oleracea*, L.

The common Purslane is abundant in Flying Fish Cove and also at the Waterfall.

This plant was not obtained by any of the previous collectors and is probably a recent introduction. It is a widely distributed weed occurring in all warm countries on sea shores and sandy or open places. It is described by Hemsley (Voyage of the Challenger, Botany vol. I. p. 35) as certainly sea-dispersed, and so it seems to be as it occurs on almost all oceanic islands, but it is also apparently carried about accidentally by man, and then readily spreads, as it is often abundant in estates and waste ground where there seems no other reason for its presence. Hemsley talks of it too as a cultivated plant, and thinks that its wide distribution may be due to that cause. I have never seen it cultivated in the East, nor used by any native race for food, certainly neither Chinese nor Malays eat it here so still less do they cultivate it. Into Christmas Island it certainly seems to have come as an accidental weed, as it did not occur in any place where other weeds had not already come, or where there had not been some cultivation close by. I do not know whether it has ever been recorded that this plant closes up its leaves at night, like *Phyllanthus* and other such plants.

## PITTOSPOREÆ.

*Pittosporum nativitatis* Baker, was described in the Monograph of Christmas Island p. 171, fig. XVII, from plants collected by Andrews on the plateau on the East Coast. It is

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abundant on the upper terraces at the cemetery, and Phosphate hill and also on the Plateau. It is a small tree 12 to 14 feet tall, with the foliage much like that *P. ferrugineum*, common, near the sea and in dry places inland. The flowers as described by Baker are in compact heads at first but the panicle opens out later and is nearly as wide as that of *P. ferrugineum*. They are of the same yellowish white colour as those of that species. It appears to be fertilized by wasps.

The fruit is a capsule and appears to resemble that of *P. ferrugineum*, the seeds of which are dispersed by birds.

## GUTTIFERE.

*Ochrocarpus ovalifolius*, T. Anders.

A large tree with very coriaceous oblong dark green leaves, and white flowers solitary or in pairs on the bare portion of the branches below the leaves. Fruit oblong conic eventually brown.

Abundant on the first terrace from North East point to steep point, collected on the East Coast also by Andrews. The plant, known as Nyamplon, much suggests *Calophyllum* in habit, but with much larger leaves. The fruits are probably sea drifted. I found a number of them under a rock in the woods at the waterfall which had been carried there and eaten by rats. *Ochrocarpus ovalifolius* is a native of the Admiralty islands, Timor Laut and Pulau Sangian.

*Calophyllum Inophyllum*, L.

This common sea shore tree is not as plentiful as would be expected in Christmas Island being confined so far as I saw to the vicinity of the waterfall, where there were a number of tall trees of it. It was not in flower at the time of our visit, but weeds and fruit were obtained. The locality was on the basaltic outcrop or very close to it, and it was probably due to the volcanic soil or to the neighbourhood of subterranean water that it grew there. This tree is common in the

Polynesian Islands, Malay Archipelago, and Peninsula, India and Mascarene Islands, and is always to be found near the sea, though it will grow in open country inland. The seeds are often drifted about in the sea, but are dispersed inland often by fruit bats.

## MALVACE .

*Malvastrum tricuspdatum*, A Gray.

A low shrubby plant with buff yellow flowers, occurs in Flying Fish Cove. It was also collected by Andrews. I saw it nowhere else. It is widely distributed but absent from many places, occurring in Africa, India, Australia, Cocos, and South America, probably introduced in some of these localities.

*Sida spinosa*, L.

An erect shrublet with buff yellow flowers grew also in Flying Fish Cove near the last species and I also found it along the cemetery road. Not previously recorded. A sea shore plant occurring in America, India, Malayan peninsula and islands. Australia and Africa.

*Abutilon auritum*, Sweet Hort, Brit. 1 p. 58.

A tall shrubby plant 7 or 8 feet high, much branched pubescent leaves ovate cordate obtuse 4 inches long three inches wide edge crenulate light green pubescent, petiole 3-4 inches long. Stipules ovate  $\frac{1}{2}$  inch long. Panicles terminal lax with branches 4 or 5 inches or more long pubescent. Pedicels  $\frac{1}{4}$  inch long. Sepals ovate subacute  $\frac{3}{8}$  inch long green woolly pubescent. Corolla an inch across, petals obovate minutely mucronate bright orange yellow finely striate. Staminal tube much shorter with 6 filaments. Fruit  $\frac{1}{2}$  inch long of 9 carpels.

Common all round Flying Fish Cove to Smith point, and to North East point along the Cemetery road. On the lower terrace. Flowers opening in the afternoon.

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Collected also by myself in 1890 and by Andrews.

This plant is figured (Bot. Mag. t. 2495) with pink buds and stamens, and the *Sidaatropurpurea* Bl. Bijdr. is said to be the same species. There is no pink or purple about the Christmas Island plant and I do not see why Blume gave his name to the plant. He does not describe the colour.

*A. auritum* Sweet, is recorded from Java, Timor, Philippines and Queensland New Caledonia.

*A. Listeri* Baker, fil. Journ. Bot. 1093 p. 269.

A shrubby plant about 6 feet tall, much branched, branches slender scabrid not pubescent. Leaves ovate cordate acuminate minutely stellate hairy on both surfaces but chiefly on the back 4 inches long  $2\frac{1}{4}$  inch wide. petiole slender 2 inches long. Panicles few flowered or flowers solitary axillary on slender pedicels  $1\frac{1}{2}$  inch long, Calyx  $\frac{1}{4}$  inch long lobes ovate acuminate closely pubescent. Petals oblong obtuse  $\frac{3}{4}$  inch long orange yellow, stamens yellow, free portion of filaments as long as the tubular portion. Carpels densely covered with irritating hairs.

Common all round Flying Fish Cove, Rocky point, Cemetery road, and lower part of Phosphate hill, and at the Waterfall. Endemic. First collected by Mr. Lister.

The *Abutilons* are among the showiest plants in the island. They open their flowers in the afternoon.

*Hibiscus vitifolius*, Linn.

A tall slender plant about 6 or 8 feet tall, branched, stems velvety pubescent. Leaves ovate cordate or hastate acuminate or shortly three lobed irregularly crenulate and very variable in size  $1\frac{3}{8}$ -4 inches long 1-2 inches wide light green velvety pubescent. Panicles small terminal. Flowers shortly pedicelled, Calyx tube globular lobes triangular lanciolate grey pubescent  $\frac{1}{4}$  inch long, Corolla  $\frac{1}{2}$  inch long prim rose yellow with a purple

centre. Rare, North East Point on the shore terrace. Collected there also by Andrews.

Rather a small flowered form with the leaves less lobed than usual. This plant seems to be common in Ceylon and India, and occurs in Moa, Java, Timor and Australia but is absent from the Malay peninsula. It is apparently a weed of cultivation in waste ground in Ceylon, but it grows far away from any cultivation in Christmas Island.

*II. Vrieseanus*, Hassk Pl. Jav. Rar 1048 p. 304.

Stems about 12 feet tall  $\frac{3}{4}$  inch through pale green brittle with a large pith inside, densely covered with transparent pungent bristles. Lower leaves cordate suborbicular with 6 acuminate points, edge between waved and serrate, nerves 6 to 8 upper leaves more distinctly lobed 6 inches long seven across, quite glabrous on both surfaces except for some scattered, bristles on the upper nerves, petiole 8 inches long thickly around with pungent bristles. Raceme a foot or nine long bristly. Involucral bracts 1 inch long acuminate lanceolate setose sparingly except the edge which is densely setose. Bracts broadly triangular acuminate  $1\frac{1}{4}$  inch long. Calyx spathaceous. Corolla 6 inches across, lobes rounded expanded, pale lemon yellow with a maroon eye. Pistil conic densely setose. Capsule conic on a 2 inches peduncle, over 2 inches long 5 angled densely spiny setose. Seeds sub-globose pubescent.

In the centre of the island on the track to Murray hill in thick scrub. Also obtained by Andrews, in a valley on the West Coast.

This beautiful Mallow, is I think certainly what Hasskarl intended by his *II. Vriesianus*, a very little known and apparently rare plant. It differs from his description slightly, the leaves can hardly be said to be lobed, and are nearly glabrous and the fruit cannot be described as small. *II. Vriesianus*, was obtained originally in Java, and does not seem to occur elsewhere. The

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plant is undoubtedly indigenous to Christmas Island. It occurs in the dense woods of the interior. It is very difficult to see how it has got there.

*H. Abelmoschus*, L. The musk seed was found by myself at my first visit near the settlement. It is common cultivated plant, and no doubt had been introduced. It has since disappeared.

*H. tiliaceus*, L.

This sea shore tree is abundant in Flying Fish Cove and at North East point and also at the Waterfall, growing as usual close to the sea. It is common on all the sea coasts from Polynesia, to Sandwich Islands, Galapagos, Malay islands, Cocos, Pitcairn Island, to the Malay peninsula. First collected in Christmas Island by Lister, also by Andrews. The seeds are sea borne, and the flowers fertilized by *Megachile* sp.

#### STERCULIACEÆ.

*Kleinhovia Hospita*, L.

A large shrub or tree about 20 feet tall with panicles of rose pink flowers very showy. Fruit capsular, with small seeds. Common on the lower terraces Rocky point, Phosphate hill, etc. First collected by Andrews. The plant is quite typical. The distribution is Philippines, New Guinea, Java, Banka, Malay peninsula, India and Ceylon and East Tropical Africa. In the Malay peninsula where it is not common, it occurs on river banks. I suspect this plant is dispersed by sea but am doubtful as to how it comes to be widely spread. It does not seem to be a typical sea shore plant.

*Triumfetta suffruticosa*, Bl.

A large branched shrub, stems hairy with pale appressed hairs. Leaves alternate ovate orbicular cordate acute crenulate, sprinkled with stellate hairs on both sides



(young leaves densely pilose) 3 inches long and as wide, petiole sub-glabrous  $\frac{3}{4}$  to 3 inches long. (Flowers yellow). Fruit spike 3 to 4 inches long densely crowded. Capsule 4 or 5 celled, about 1 inch across including the bristles, on a pedicel  $\frac{1}{2}$  inch long, cells densely covered with hooked bristles covered with white hairs, cells one seeded seed  $\frac{1}{8}$  inch long ovoid pustular-dotted.

Shore terrace North East point and on Steep Rock. Not previously collected.

I believe this identification is correct, as Blume's description fits the plant, but it was out of flower at the time I collected it. I do not understand however how Dr. Stapf (Flora of Kinabalu) says it is closely allied to the weedy narrow leaved *T. pilosa* Roth, no two plants of the same genus could be more diverse.

The distribution given for the species is Lousiade Archipelago, Solomon Islands, Timor Laut, Java, Borneo (Mt. Kinabalu). The fruit is extremely adhesive, and clings to clothing like burrs. It is doubtless distributed by adhering to birds feathers.

*Melochia arborea*, Blanco.

A soft wooded tree about 15 feet tall with a simple stem and a large head of foliage. Flowers in corymbs, small pink with an ochre spot in the centre. Fruit capsular with winged seeds.

One tree seen in Flying Fish Cove, one at the waterfall and one on the South Coast. Not previously collected. Distribution: Philippines, New Guinea, Java, Borneo, Indian, Malay Peninsula and Mauritius (doubtfully wild).

I am doubtful as to how this plant is disseminated.

TILIACEÆ.

*Berria ammonilla*, Roxb.

A tree with light colored bark; leaves ovate acuminate, base broad truncate or cordate glabrous 3-8 inches

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long,  $1\frac{1}{2}$  to 5 wide, primary nerves 4-5 pairs, petiole slender 1-4 inches long. Panicle 4 inches long, flowers numerous small  $\frac{1}{4}$  inch across white. Pedicels  $\frac{1}{4}$  inch long covered with stellate pubescence. Calyx capsular four lobed, lobes broadly ovate, covered outside with stellate pubescence. Corolla lobes 4 oblong longer obtuse white. Stamens innumerable short, anthers cordate. Capsule 6 to 8 winged,  $1\frac{1}{2}$  inch across the wings, wings in pairs to each cell, papery red brown oblong rounded  $\frac{3}{4}$  inch long glabrous; seeds one in each cell obscurely angled nearly  $\frac{1}{4}$  inch long, fuscous densely covered with stiff red hair.

Common along the shore terraces from Smith point to North East point, much more scanty on the Plateau. This plant was very early observed though it does not appear in Hemsley's list of plants collected by Lister. Its hard wood was mistaken for teak, and from this error apparently arises the statement first made by Hemsley that *Tectona grandis* occurs in the island. So conspicuous a tree as this latter could not have escaped Andrews nor myself, so that it may be considered that there is no evidence that the true Teak, (*Tectona grandis*) occurs or ever did occur in the island. *Berria* I found in flower and fruit in October, and in fruit also on the occasion of my first visit and also received a fruiting specimen from Mr. Keyser collected in August. It is called Bastard-Teak and Bungor (not Boognor as in Andrews' list) which is the ordinary Malay and Javanese name for *Lagerstroemia*. Probably the Javanese considered its wood to resemble that of the *Lagerstroemia*.

Except for the much smaller flowers, little over a quarter of an inch across, I see very little difference between this plant and the typical Ceylon plant, which has flowers  $\frac{3}{4}$  inch across.

The distribution of the *Berrias* and of this species seems very curious. One or two distinct species occur in Tahiti and *Berria amonilla* is found in the Cumber-

land islands, East of Queensland—a distinct variety, Christmas Island and Ceylon and is probably native in Southern India.

The fruit is winged as described, but from what I saw of it does not fly any distance from the tree. When ripe it dehisces letting out its seeds which are covered with appressed hairs. It is not usual to find a winged fruit which dehisces before germination of the seed, and though I would class this among wing-fruited plants, I think it most improbable that the fruit with its seed could have been brought to the island by wind, as it dehisces so soon that the seed would probably be dropped out before it reached the island. It is more likely that the seed is dispersed by sea currents.

*Grewia osmoxylon*, n. sp.

Tree, about 30 feet tall. Leaves lanceolate acuminate with a broad or rounded base serrate—crenate 4-6 inches long 2-3 inches wide, glabrous, nerves 6-7 pairs petiole hardly  $\frac{1}{2}$  inch long sprinkled with a few stellate hairs. Racemes axillary or terminal wider an inch long 4 or 5 flowered, rachis pubescent. Buds globose grey pubescent. Sepals linear oblong  $5\frac{1}{2}$  inch long white, rather coriaceous, pubescent outside. Petals  $\frac{1}{4}$  length rounded base pubescent. Stamens yellow shorter than the sepals very numerous. Fruiting racemes elongated slightly drupes in pairs, pyriform  $\frac{1}{8}$  inch long pulp thin testa bony, one celled one seeded. Rocky point and North East point. "Kayu Wangi." Baker. fl. in the Monograph gives the Kayu Wangi as *Grewia laevigata* Vahl, but this is described very differently by Miquel. In his description, the plant is a shrub with not more than three nerves to the leaf, which is pilose in the nerve axils, and the drupes are puberulous with 4 to 2 pyrenes. I cannot think that this description can possibly apply to the Christmas Island scented wood, nor can I find any description to fit this plant. The fruiting specimens sent me by Mr. Leach, are

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probably not ripe but the seeds are hard and the embryo firm in texture. They are remarkably small for a *Grewia*. The tree was commencing to flower shortly before we left the island and seems abundant along the Cemetery road as far as N. E. point, along the shore terrace.

*Gr. insularis*, n. sp.

Tree about 20 feet tall, shedding its leaves after fruiting, twigs densely stellate hairy. Leaves ovate subacute with a rounded base, crenulate 3 inches long 2-2½ inch wide sprinkled all over but especially on the nerves with stellate hairs, petiole densely stellate pubescent, ¼ inch long. Racemes axillary ½ inch long in pairs or three densely stellate pubescent. Flowers in umbels of 3 on each raceme, pedicels ¼ inch long. Buds oblong pubescent. Sepals linear oblong woolly pubescent ¼ inch long yellow. Petals oblong ½ of the length of the sepals pubescent at the base. Stamens ¾ the length of the sepals. Fruit not seen. North East point, fairly common. I cannot identify this with any other described species.

#### RUTACEÆ.

*Acronychia Andrewsii*, Baker. fil. Monogr. Christmas Island P. 174.

A small tree attaining a height of about 20 feet and sometimes more, bark pale. Leaves bright green trifoliate flowers in short axillary panicles. Fruit a small pale pink berry.

Common, Smith point, Cemetery road. Endemic. The fruit doubtless eaten by birds.

#### MELIACEÆ.

*Melia azedarach*, L.

This tree is evidently introduced; the biggest specimens occurring at the police quarters close to *Cassia*

B. A. Soc., No. 45, 1905.

*siamea* and *Eriodendron*, but it has spread abundantly all over Flying Fish Cove and up Phosphate hill and round the coolie lines there. It forms with *Trema* *Boehmeria* etc., a great portion of the secondary jungle which springs up after fallowing. The drupes are certainly eaten by birds and the seeds so disseminated. It is absent from all parts of the forest which have not been cleared, and is certainly not native.

*Dysoxylum amoeroides*, Miq. Ann. Mus. Bot. v. 4, p. 16.

A very big tree, 60 to 90 feet or more, tall leaves 18 inches long, leaflets glabrous membranaceous, 6 pairs, the lowest smallest, oblong lanceolate acuminate inaequilateral, alternate 6 inches long by 2 inches wide "Panicle extra-axillary, the branches spike-like or branched with few branches. Flowers sessile. Calyx 5 sepalled villous outside. Petals yellowish pubescent outside" Capsule 1-1½ inch long pyriform or subglobose coriaceous wrinkled orange, 4-split, seeds ½ inch long ovoid angled indian red with thin testa.

Common in the forests of the plateau and descending to Flying Fish Cove. The tree was fruiting at the time of our visit and the ground in some places was strewn with the seeds. Obtained first by Lister, but too incomplete for identification by Hemsley, who describes the tree as 13 feet through. I never saw any nearly as big as this.

Distribution, New Guinea and Java.

The seeds are certainly eaten by birds ;

#### BURSERACEÆ.

*Tristiriopsis Nativitatis*, Hemsley.

Tree 40 to 60 feet tall with grey bark. Leaves bipinnate, in young plants much branched about 2 feet long, adults 6 inches long, leaflets alternate 6 pairs or fewer oblong lanceolate petioled, young serrate, adult

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entire coriaceous, 2 to 4 inches long  $\frac{3}{4}$  to  $1\frac{1}{2}$  inches wide, nerves about 9 pairs, petiole  $\frac{1}{4}$  inch long. All glabrous except for tufts of hair in the axils of the nerves on the back. Inflorescence in leaf opposed panicles. Flowers not seen. Peduncles in fruit  $\frac{1}{2}$  inch long. Calyx persistent 5 lobed to the base lobes  $\frac{1}{8}$  inch ovate obtuse pubescent. Drupe 1 inch long green ovoid beaked, base stalked, 3 celled, pericarp thinly pulpy, cell walls woody, hairy within.

Flying Fish Cove, Phosphate Hill, Plateau No. 67.

This was mentioned by Hemsley in Journ. Linn. Soc. XXV. (1890) p. 353, as "*Burseracea?*" Flowers have not yet been obtained and though it is common in Christmas Island, Andrews does not appear to have collected it. Identified by Mr. Hemsley.

#### CELASTRINEÆ.

*Celastrus paniculatus*, Willd.

A small tree, Rocky point (Andrews). I saw what I suppose to be this plant in the same locality but it was flowerless and also without fruit.

Distribution Indo-Malaya.

#### RHAMNACEÆ.

*Colubrina pedunculata*, Bakes fil. Monog. Christmas Island 195.

A straggling tree, with ovate leaves and flowers in axillary cymes, on long peduncles. Fruit subglobose capsular dehiscing irregularly  $\frac{1}{4}$  to  $\frac{1}{3}$  inch long; seeds hemispheric with a rounded back and broad inner faces, bright brown polished and very smooth.

North coast, (Andrews) abundant on the upper cliff above Flying Fish Cove, and at Andrews Lookout on Phosphate hill. In dry places. It was in fruit at the time of our visit, Andrews found it in flower in February, Endemic. This is a plant of very different habit

from *Colubrina asiatica* the common Malayan species, being a much bigger and more tree-like plant, with very different leaves as well as its much longer inflorescence. It appears to shed its leaves almost completely after fruiting. *C. asiatica* is a sea shore and open sandy country plant.

#### AMPELIDÆ.

##### *Cissus repens* Lam.

A common vine over the bushes in Flying Fish Cove Rocky point.

Collected first by Andrews on Phosphate Hill.

Distribution India, Andaman Islands, Malay Peninsula, Java.

##### *Cissus pedata* var *glabrescens*.

Stems glabrous more or less flexuous obscurely 4 angled, internodes 3-4 inches long. Tendrils branched opposite the inflorescence. Leaves when young more or less pubescent adult glabrous, petiole 2 inches long pubescent when young, glabrous in old leaves, limb 5 to 7 foliolate lobes unequal, central one ovate with a broad base, on a petiolule  $1\frac{1}{2}$  inch long, thin crenulate dentate 4 inches long 3 inches wide, nerves 8 pairs, sparingly pubescent, lateral lobes oblique inaequilateral narrower, and more distinctly crenate. Cymes small, opposite to the leaves  $1\frac{1}{2}$  inch or little more long, peduncle  $\frac{1}{2}$  inch long (lengthening in fruit). Flowers green glabrous very small. Calyx shortly 4 lobed. Corolla ovoid in bud, 4 petals 4 valvate narrowed upwards from a broad base. Fruit  $\frac{1}{4}$  inch through pink, seeds  $4\frac{1}{4}$  inch long angled in front, smooth rounded polished on the back.

Smith Point etc., common.

This is no doubt the plant collected by Andrews and so identified in the monograph of Christmas Island, but it differs from the description by Planchon in the Mon. Phau. p. 558. in the form of its leaves, and its

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much more glabrous habit. I have a somewhat similar form from New Guinea.

*Cissus pedata* Lam. is distributed over India, Siam and Java but appears to be quite absent from the Malay Peninsula. Fruit as large as a pea, pink; flowers green fertilized by *Polistes Balder* Kirb.

*Leea sambucina* var *intermedia*.

A tree or large shrub 20 feet or more tall, young stems smooth glabrous green fluted, internodes one foot long, sprinkled over with scattered thorns, adult stems thornless covered with a red, scaly bark. Leaves 12 inches or more long, leaflets oblong lanceolate acute crenulate 3 inches long  $1\frac{1}{2}$  inch wide, glabrous except for a tuft of reddish hair in the axils of the nerves on the back. Cymes 3 inches long with tufts of hair in the axils, and the ultimate branches pubescent. Bracts lanceolate acute or subacute. Flowers green, calyx cupshaped with 5 short teeth, pubescent. Petals 5 lanceolate subacute hooded at the tip glabrous staminal tube very short and toothed. Fruit globose grey green  $\frac{1}{4}$  inch through when dry, 4 seeded.

This plant is common all over the island, but especially on Phosphate hill, Flying Fish Cove, etc. It is rarer or absent on the Plateau.

It has been referred to the common Malayan species *L. sambucina* and also to *L. horrida* Teyss. It is however not typically either species, but rather intermediate between the two. In general it resembles *L. sambucina* except for its much greater size, smaller corymbs and leaves with tufts of hair in the nerve axils and the presence of distinct thorns on the young stems. In these points it approaches *L. horrida*, which however is much more thorny the thorns being persistent and occurring on the branches, and which does not possess the axillary hairs of the nerves of the leaf.



Distribution of *Leea sambucina* Willd, India, Andamans, Malay Peninsula.

## SAPINDACEAE.

*Cardiospermum Halicacabum* L. A single plant on the coral beach in Flying Fish Cove. This plant occurs frequently as a weed of cultivation and is often cultivated to a small extent as a pot herb.

*Allophylus Cobbe* var *glaber*.

A common small tree, Rocky point. Plateau, Flying Fish Cove, N. E. Point, Steep Point.

This plant was collected first by Andrews. The species as generally described includes a number of forms very different in appearance from low shrubs with small glabrous leaves to small trees with large leaves. The Christmas Island plant is not the common sea shore bush, but a bigger erect little tree, which is usually met with in forests.

## ANACARDIACEAE

*Spondias dulcis*, Forst.

A gigantic tree 100 feet tall and 2 feet through with light grey crackled bark. Leaves pinnate. Flowers in short panicles, small white. Drupe elliptic oblong brownish black crackled 2 inches long, pulp yellow acid.

Woods at Andrew's Look out, local but a fair number of trees together. Leafless when we first arrived later with young reddish leaves and fruit, and just commencing to flower.

The first record of this tree here.

## LEGUMINOSAE.

*Erythrina indica*, Lam.

A smooth barked tree usually of a moderate size, but Andrews met with one 18 feet in circumference.

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Distribution Sunderbuns, Andamans, Malay Archipelago, Polynesia. Seeds of apparently this species sea-drifted to Cocos Island.

*Canavalia ensiformis*, De. C.

Shore. (Andrews).

This plant, the Kachang Parang of the Malays is only known in cultivation and is a well-known native vegetable. It was probably an escape from cultivation when Andrews collected it. I did not observe it.

*C. obtusifolia* var *insularis*.

A strong but slender climber covering bushes with a dense mat of foliage. Leaves trifoliolate, leaflets ovate obtuse, bases nearly equilateral broad rounded 4-5 inches long,  $3\frac{1}{2}$  inches wide, petiole 3 inches long, petiolules of lateral leaflets  $\frac{1}{4}$ , of terminal 1 inch long. Raceme 4 or 5 inches long. Flowers opening singly. Calyx  $\frac{1}{2}$  inch long urnshaped bilobed, upper lobe larger emarginate. Petals dark red rose, standard  $1\frac{1}{2}$  inch long  $\frac{3}{4}$  inch wide, oblong obovate retuse, claw and centre at base greenish white. Wings  $1\frac{1}{4}$  inch long  $\frac{1}{4}$  inch wide oblong obtuse, keel petals broader elliptic oblong. Stamens 10 fertile, anthers rounded ovate dull yellow, style shorter. Pod oblong beaked 4 inches long  $1\frac{1}{2}$  inch wide, the rib close to the upper suture, seeds 2-4 subglobose, slightly flattened, dark brown.

This abundant bean climbing over bushes on the Cemetery road and Phosphate hill differs much in appearance from *C. obtusifolia*, in the more oblong standard, and in Christmas Island in its red not rose colored petals. In plants cultivated in Singapore the petals were more rose colored.

*Strongylodon ruber*, Vogel.

A climber with slender stems leaves trifoliolate. Flowers red. Pod oblong turgid with large round seeds.

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Common in Flying Fish Cove. and Phosphate hill ; collected also by Andrews. This was not in flower at the time of our visit but in fruit. Distribution, Ceylon, Andamans, Australia and Polynesia. The seed probably sea borne. Seeds sea drifted to Cocos Island.

*Galactia tenuiflora*, W. & A.

A slender climber with trifoliolate leaves  $1\frac{1}{2}$ -2 inches long. Flowers pink on the inner face, green on the back about  $\frac{1}{4}$  inch across. Pod sword shaped : 1-2 inches long, narrow.

This pretty little vetch, climbs over the bushes abundantly at Rocky point and on Phosphate hill.

Distribution Africa East and South, India, Siam, Malay Islands, Australia.

*Pongamia glabra*, Vent.

A tall straight tree in the forest or low bushy straggling one on rocks, with rather thin 5-7 foliate leaves and racemes of pink flowers. Pods one seeded flattened, indehiscent.

Common beyond Rocky point, Flying Fish Cove, North East Point.

Distribution Mascarene Islands, India, Malay Peninsula, and islands, North Australia and Polynesia. A typical sea shore and tidal river bank plant as far as the typical form is concerned some of the trees in the woodlands were remarkably straight and tall and very different in appearance from the common Malay Peninsula plant.

*Inocarpus edulis*, Forst.

A big tree with a remarkably grooved stem, and light colored bark ; leaves oblong very dark green coriaceous. Flowers in short axillary racemes yellow. Fruit flattened orbicular, one seeded. Common, Flying Fish Cove. Distribution Polynesia.

The wood is poor, light colored fawn, the centre darker, rays very fine numerous with many fine transverse bars; pores in short lines, joined together and separated by transverse partitions. Weight 4 lbs per cubic foot.

The red crabs, *Gecarcinus*, seem very fond of the fruit of this tree of which they eat the green husk. As they drag them from some distance to their burrows for this purpose, it is not uncommon to see a dozen or so young plants growing in a circle round the mouth of the burrow. The seed when boiled is eatable, and very good tasting like a chestnut. It is undoubtedly a sea dispersed plant the strong husk protecting the seed from injury, while floating in the sea.

Specimens were first obtained by Lister and from these Professor Oliver (*Icones Plantarum* t. 1837) gave a figure and description of the seed, to correct the misconception of its structure by Gaertner, but as a matter of fact Lister's fruit was very young and Gaertner's that of a fully ripe fruit. The tree has long been cultivated in the Botanic Gardens at Singapore, where it regularly flowers and fruits. The fruits, only 2 or three ripening on one raceme, are flattened pearshaped polished green or yellowish green; when quite ripe 5 inches long, 4 wide and about an inch through. The remains of the style, represented by a very short elevation is more than half way along the upper edge from the stalk. There are often a few small points also in the sides. The stalk is short under  $\frac{1}{2}$  inch and stout. The pod which is indehiscent is one seeded. The exocarp is composed of the thin green epicarp, followed by a fibrous almost woody portion  $\frac{1}{4}$  to  $\frac{3}{8}$  inch thick. Beneath this is a pithy white mass, at first very thick but disappearing as the seed develops, so that when the seed is ripe there is little or none left. The ripe seed is 3 inches long thick orbicular heart shaped, yellow wrinkled, with no albumen.

The fruits of the Christmas Island trees were on the whole smaller than those of the Gardens plants, but I saw few ripe ones and many fallen ones were sterile. The pod with its fibrous coat is well suited for sea dispersal, and is undoubtedly so dispersed. Its laterdissemination over the island is effected in part at least by crabs and perhaps also by the fruit bats. For these animals the eatable part is the green outer coat of the pod. In Singapore the seeds are often destroyed before they are ripe by the squirrels which gnaw through the pod to eat the seed.

*Cassalpinia (Guilandina) bowducella*, Fleming.

A strong thorny climber with pubescent leaflets, and racemes of yellow flowers, with recurved pubescent bracts. Capsule 3 inches long brown spiny containing 1 or 2 round grey seeds.

Common at Smith point, and North East Point collected also by Andrews. In bud at the close of our visit

Distrib. All tropical countries. A typical sea shore plant, the hard seeds of which are sea borne.

*Entada scandens*, Benth.

East coast (Andrews) I did not meet with this big climber anywhere.

Distrib. India Malay Peninsula, Africa South America seeds are often found in sea drift and it is one of the best known sea-dispersed plants. Mr. Chapman found a seed in the sea at Christmas Island.

COMBRETACEAE.

*Terminalia Catappa*, L.

This tree is very abundant over much of the island not only along the lower terraces and on the sea beach but also on the Plateau. Many of the trees are very large with big buttresses. The wood is hard and dark red brown. I have not seen trees as large elsewhere.

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It is however otherwise identical with Malayan forms. The fruit is sea borne, and also disseminated over the island by crabs which eat off the outer coat. Occasionally I saw large quantities of seeds collected together but by what animal I do not know, possibly by fruit bats, which in Singapore are very fond of the fruit and carry it far away.

Distribution. Most tropical countries but often planted, wild only on sea shores.

The wood is very hard, dark red with a satiny lustre, rays fine pores few and large, a very superior timber to any samples I have seen from the Malay Peninsula.

*Combretum acuminatum*, Roxb.

A woody climber common on the shore terraces and on the plateau. I saw neither fruit or flowers of it. The fruit is described as four angled and oblong, like that of *Combretum trifoliatum* which I have found floating in the sea off Singapore.

Distribution India and Malay islands.

*Quisqualis indica*, L. A woody and thorny climber, with bunches of red flowers. Flying Fish Cove on rocks above the bay towards the Magistrate's House, also on North East Point, collected also by Andrews. Undoubtedly wild.

The fruits are probably sea borne, they are somewhat lanceolate in shape acuminate and angled. Distrib. Burmah, Malay Peninsula, on the East Coast.

*Gyrocarpus americanus*, Jacq.

A very large thick stemmed tree with grey rather smooth bark, and soft white wood with very distant rings. Leaves clustered on the ends of the branches rounded ovate acuminate long petioled. Flowers unisexual in large cymes, apetalous, calyx 4-7 partite, stamens 4-7 in male flower, calyx 2 partite in female. Nut bony with two long spathulate wings 3 inches long. Common and

very conspicuous along the lower terraces by the sea. Flying Fish Cove, N. E. Point, Waterfall. The tree sheds its leaves after flowering at at the time of our visit only a few bare bunches of hanging green fruits at the ends of the boughs. Many trees were leafless but a few were beginning to produce leaves again. The settlers call it cabbage tree on account of its soft pithy wood. like that of a cabbage stalk. It is perfectly useless, of a light fawn color with large rings and wavy fibres with few large pores. Distribution. All tropical countries

## MYRTACEAE.

*Eugenia gigantea*, n. sp.

A gigantic tree over 100 feet tall with immense buttresses. Bark light coloured with large thin flakes. Leaves opposite elliptic oblong or lanceolate or ovate subacute lower ones large 6 inches long by 4 inches wide, upper ones 3 inches by  $1\frac{3}{4}$  wide, glabrous subcoriaceous narrowed at the base to the petiole which is  $\frac{1}{2}$  an inch long, primary nerves 11-12 pairs, prominent beneath. Cymes below the leaves 3 inches long, branches slender divaricate. Flowers in trees at the ends of the branchlets, white sessile  $\frac{1}{4}$  inch long, ovary turbinate strongly wrinkled when dry. Calyx cupshaped entire. Petals forming a round shield shaped cap coriaceous. Stamens very numerous short white. Style longer rather stout. Drupe half an inch long subglobose purple.

The biggest tree on the island and the biggest species of *Eugenia* I have ever seen. It is abundant all over the plateau, occasionally descending a little lower as at Flying Fish Cove. Specimens of this tree have been collected by all botanists who have visited the island but no account of it has been published.

*Barringtonia rubra* Miq. Ic. p. 487 *Butonica terrestris* Rumph. Amb. iii. lib. 5, p. 181, t. 115, *Barringtonia racemosa*, Bl. (non Juss.) Van Houttes Flora vii. p.

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23, Miq. Fl. Ned. Ind. 1, p. 486. Baker Flor Christmas Island.

A tree about 30 feet or more tall rather slender and straight. Leaves crowded at the tips of the branches obovate or oblanceolate acuminate narrowed to the winged petiole, 10 inches long by 4 inches wide, edges crenate serrate, nerves about 16 pairs, petiole winged nearly to the base corky  $\frac{1}{2}$  inch long. Racemes pendulous  $1\frac{1}{2}$ -2 feet long, rachis slender. Flowers rather distant on slender pedicels  $\frac{1}{2}$  inch long. Calyx lobes 4 pale green ovate oblong  $\frac{1}{2}$  inch long. Petals twice as long oblong. Stamens 1 inch long white or rose pink. Fruit 2 inches long  $\frac{3}{4}$  inch through green oblanceolate in outline narrowed to the base and shortly beaked, very obscurely four angled.

Common in the woods on the upper terraces, and plateau, and occasionally lower.

Distribution Banka, Patjetan, South Java and Amboina.

This plant has been erroneously referred to *B. racemosa* but as Miers (Trans. Linn. Soc. Sec. II. vol. i. p. 69 has very properly shown, *B. racemosa* of many authors is a mixture of several distinct species, and the original species is Indian only. From *B. inclyta* Miers the common plant of the Malay Peninsula, this species differs in its much thinner and smaller leaves, and much smaller flowers and fruits. *B. inclyta* is a typical sea shore plant and grows in damp muddy spots near the sea. It is included under *B. racemosa* in the Flora of British India and the Materials of the Flora of the Malay Peninsula. *B. rubra* is a woodland plant Rumphius describes it as growing in sulphureous and gravelly soil and it grows in Christmas Island among the detritus of coral reefs. The flowers are either white or rose pink. I was unable to find any other distinction between the two forms, I observed that the fruits were untouched though abundant by any



animal, even the crabs which eat the outer coat of the fruits of *Inocarpus* greedily do not appear to relish that of the *Barringtonia*. The plant has doubtless arrived at the island by sea, as seeds of *Barringtonias* are among the commonest sea drift ones.

## TURNERACEÆ.

*Turnera ulmifolia*, L.

This native of South America has established itself on the sea-beach in Flying Fish Cove. It is a shrubby herb with lanceolate toothed leaves and large yellow flowers.

Probably introduced into cultivation in the East as an ornamental plant it is now well established in sandy places beyond Tanjong Katong in Singapore. It never seems to thrive inland.

## ONAGRACEÆ.

*Lulwigia prostrata*, Roxb.

A common yellow flowered herb abundant in wet spots in many parts of the world. It is rarely prostrate as its name implies but usually erect.

Flying Fish Cove a few plants behind the house, among the bananas. This plant appears to be disseminated by its seeds adhering to the feet or feathers of aquatic birds, and also is spread by streams and rivulets. In this case however I should suggest from its habitat that the seeds have been accidentally brought in rice, and got dropped outside the house.

## LYTHRACEÆ.

*Pemphis acidula*, Forst.

A shrub with a rough barked stem often of considerable thickness, narrow obovate elliptic lanceolate dark green leaves, usually rather stiff, small white flowers and a small acid berry.

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Common on the sea rocks from South point to Rocky point.

*Var crassifolia.* Leaves very thick and succulent. Between Waterfall and Steep Rock. This form is very strikingly different from the common one when alive on account of the very thick leaves but I could see no other difference. It formed very large erect or sub-erect bushes or almost trees along the shore in one place, and where exposed to the heavy sea spray and winds it formed a prostrate dense mat of wiry branches lying over the rocks.

Distrib. Africa and Mascarene isles, Cochin China, Hong Kong, Burmah, Ceylon, S. India, Andamans, Malay Peninsula and islands Australia Polynesia.

FICOIDEÆ.

*Sesuvium portulacastrum*, L.

A succulent creeping herb with fleshy linear terete leaves, and pink star-like flowers. Fruit a capsule with many seeds.

Densely covering rocks on the top of a promontory by the little White Cove between the Waterfall and Steep Rock.

The seeds and probably portions of the plant are dispersed by sea. It is a common seashore-plant in all parts of the Tropics, growing in tidal mud or on sea-rocks. The whole plant when boiled makes an excellent vegetable, and is known to the Javanese as Sesejit. The boobies near the waterfall used branches of it to make their nests.

Distrib. Tropics generally.

CUCURBITACEÆ.

*Zehneria alba*, n. sp.

Stems slender glabrous. Leaves ovate cordate acute entire dark green glabrous, upper surface dotted over with

glands? 3-4 inches long 4-5 across, petiole 1-2 inches long slender, nerves 7 pairs radiating from the base Tendrils long and slender. Male flowers numerous in umbels on peduncles  $\frac{1}{2}$ -1 inch long slender glabrous, pedicels slender  $\frac{1}{4}$  inch. Calyx cupshaped glabrous obscurely toothed. Corolla small  $\frac{1}{8}$  inch long white glabrous lobes lanceolate subacute. Stamens 3, filaments glabrous, anthers elliptic thick, connective not prolonged.

Female flowers 4 or 5 in an umbel, white, ovary narrowed to a beak. Fruit elliptic pink  $\frac{1}{4}$  inch long. Seeds rounded flat smooth margined.

Extremely abundant, Flying Fish Cove Waterfall. Phosphate hill, Plateau, etc.

This is the *Melothria mucronata* of the flora of Christmas Island doubtless, which is identified with *Zehneria Baueriana*, Eudl. but it does not appear to me that it can be even a form of this plant.

*Melothria*, sp. Trailing on rocks east coast (Andrews). There may be another of these small Cucurbitaceæ here, as I found a plant with a single yellow flower on the waterfall track, but could get no more.

*Momordica charantia*, L. This common cultivated plant has run wild about cleared spots. It is of course not native but is the common small fruited form to which the cultivated form quickly reverts.

#### ARALIACEÆ.

#### *Heptupleurum natule*, n. sp.

A long climber with grey stems. Leaves 5 foliate, petiole 3 inches long, leaflets elliptic obtuse or subacute rather fleshy light green, the two outer ones smaller and suborbicular 2 inches long  $1\frac{1}{2}$  wide, central ones 4 by  $2\frac{1}{2}$ , petiolules slender  $\frac{1}{2}$  to 1 inch long. Cymes 3 or 4 inches long branched from the base, lower branches 2 inches long, flowers copious green 10-13

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inches in an umbel, pedicels  $\frac{1}{4}$  inch long slender. Buds oblong obtuse, ovary short turbinate. Petals oblong linear, obtuse 5, stamens 5 alternate.

Fruit not seen.

Very abundant on rocks and trees, all over the island, flowering in the end of October.

This plant is certainly not I think the common *H. ellipticum* Seem. A native of the Malay Peninsula.

#### RUBIACEÆ.

##### *Randia densiflora* var *laxior*, Bak. fil.

A large straggling shrub, stems under an inch through, 10 to 12 feet or more tall. Leaves dark green subcoriaceous lanceolate acuminate acute glabrous 4-5 inches long 2 inches wide nerves 8 pairs, petiole  $\frac{1}{4}$  inch long. Panicles axillary 3 inches long and often as wide, peduncle  $\frac{1}{2}$  inch long. Bracts small lanceolate acute  $\frac{1}{8}$  inch long. Pedicels very short calyx  $\frac{1}{2}$  inch long dilated upwards from a narrow base with very short ovate teeth. Corolla tube  $\frac{1}{2}$  longer thick, lobes linear lanceolate  $\frac{1}{2}$  inch long, white turning yellow, hairs in the mouth of the tube few and short. Anthers linear mucronate.

Berry elliptic red  $\frac{1}{4}$  inch long crowned with the persistent calyx lobes.

Extremely abundant all over the island especially on the lower terraces, but also on the plateau up to 900 feet all and perhaps the most abundant plant on the island, commonly known as wild coffee from its white sweet scented flowers. The stems form excellent walking sticks.

Collected first by Lister and by all subsequent visitors.

This plant is very different from the common forms of *R. densiflora* in many points, but perhaps hardly sufficiently so to be distinguished specifically. The typical plant is a tree 50 to 60 feet tall, with thicker leaves and fewer nerves, a denser corymb of slightly

smaller flowers with a pubescent calyx, and shorter corolla tube. Shrubby forms do occur in the Malay Peninsula also and forms with a quite glabrous calyx. Distribution Malay Peninsula and Islands, Hongkong and North Australia.

*Guettarda speciosa*, L.

A big tree with large sweet scented white flowers, and a green drupe.

Common on the sea coast, Smith Point, Cemetery road, Waterfall, and in the plateau on the Murray hill track, but most frequent near the sea, rarely inland.

The flowers seemed to me to be larger than usual. The fruit is commonly seen in sea drift, and I found several in the sea, but all had sunk.

Distribution Tropics generally.

*Morinda citrifolia*, Linn.

A large shrub with dark green leaves, and white flowers. Fruit a syncarp about an inch long. Baker fil. (Monograph of Christmas Island), says that the Christmas Island form seems somewhat different from the usual form in its narrower leaves and, occasionally, tetramerous flowers. It is however quite the ordinary plant of the Malay islands, the form with well developed whitish bracts and is identical with the common sea coast plant of Singapore.

It is common in Flying Fish Cove and at the Waterfall.

The fruits are sea dispersed and the plant is most commonly met with on rocky places above the sea. The white flowers are visited and fertilized by the wasps. *Odynerus polyphemus* *Polistes balder* Kirb and by the hawk moths *Cepheomodes hylas* and *Macroglossa*, and the bee *Megachile rotundipennis* Kirb.

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Distribution India, Malay Peninsula and Islands, Australia and Polynesia.

*Saprosma nativitatis*, Bak. fil.

A shrub 3-5 feet tall with dark green oblanceolate leaves obtuse  $1\frac{1}{2}$  inches long  $\frac{1}{2}$  inch wide and small axillary pinkish white flowers, sessile, tubular with 4 lobes. This shrub very common in the Plateau has been well described by Baker. It is quite unlike any other species of *Saprosma* known to me, and does not possess the horrible odour when broken that the other species of the genus emit. It is endemic, and was first collected by myself in 1890, and is the *Psychotria* sp. of my list.

GOODENOVIE.E.

*Scaevola Koenigii*, Vahl. A shrub with obovate fleshy leaves and white flowers, fruit baccate white.

On cliffs above the sea. Common. Smith Point, Flying Fish Cove.

First collected by Lister.

Seeds dispersed by sea. Common on sea coasts of India, Malay Peninsula and Archipelago, Australia and Polynesia.

MYRSINE.E.

*Ardisia polchra*, n. sp.

A tall little-branched shrub with a stem about an inch through, leaves elliptic lanceolate glabrous acute narrowed at the base to the petiole, petiole decurrent as two distinct ridges along the zigzag branches which are red scurfy, lamina of leaf 6 inches long 2 inches wide, petiole and midrib red scurfy above dark green paler beneath with scanty red scales; nerves about 24 pairs. Panicle terminal on the ends of branches 4 to 6 inches long, branches slender widely spreading scurfy, ultimate branches an inch long terminating in umbels of 6 to 12 flowers on slender pedicles  $\frac{1}{4}$  inch long, length-

ening to  $\frac{1}{2}$  in fruit. Bracts very small ovate scurfy pubescent. Calyx lobes very short ovate pubescent. Corolla rose pink  $\frac{1}{6}$  inch across lobes rounded ovate mucronulate. Stamens glabrous with short filaments not spiculate. Style twice as long fruit globose white turning to black  $\frac{1}{6}$  inch through finely longitudinally ribbed when dry. *Ardisia complanata*, Hemsl. and Bak. fil. In Monograph of Christmas Island etc. Not of Roxburgh.

Common on the Plateau.

I cannot see how this beautiful and very distinct plant can have been mistaken for *A. complanata*. The winged stems are striking even in the living plant, and more conspicuous in a dried specimen.

#### COMPOSITE.

*Ageratum conyzoides*, Cass.

The common white-weed, with its pale blue or white flowers is common in cultivated ground at Flying Fish Cove

First collected by Andrews. It is common now in all tropical countries as a weed of cultivation, and is partly disseminated by the wind but also by its fruit adhering to cloths etc.

*Blumea spectabilis*, Dec. A tall weedy plant about 6 or 7 feet tall, with yellow flowers.

Common on the plateau in more open spaces in the woods, along paths and wherever the trees have fallen. First collected by Lister and certainly indigenous. Seed plumed and so wind dispersed.

Distribution India, Ceylon, Malay Peninsula.

This is a hill forest plant in the Malay Peninsula and does not grow at all in the low country.

*Wedelia biflora*, Dec. A half scandent rough herb with yellow flowers.

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Common at the Waterfall and beyond to Steep rock always close to the sea, and forming tangled masses very hard to penetrate. The plant seems to be absent from the North Coast. Its fruit is a truncate achene with no pappus and is doubtless seaborne.

Distribution India, Malaya.

*Spilanthes acmella*. L.

A common weed of cultivation with heads of yellow flowers, Flying Fish Cove. Collected by me in 1890, not seen before or since. It is one of the common fugacious herbs which appears and disappears in cultivated ground.

*Synedrella nodiflora*, Gaertn.

A common South American weed with small heads of yellow flowers.

Extremely abundant in cleared ground in Flying Fish Cove, and at the Phosphate hill quarries. First collected by Andrews. Abundant in Singapore and Java, from one of which localities it was probably brought accidentally.

SAPOTACEÆ.

*Sideroxylon sundaicum*, Burck.

A gigantic tree upwards of 100 feet tall with large buttresses at the base, bark grey, exuding a small quantity of latex when cut. Wood white not very hard. Leaves very variable, lanceolate acuminate acute in young trees and on the lower part of old trees; above elliptic or obovate glabrous dark green when adult; covered with ferruginous tomentum when young, four to six inches long,  $2\frac{1}{2}$  to three inches wide, nerves 7 to 10 pairs conspicuous on the under surface when dry, petiole slender  $\frac{3}{4}$  to  $1\frac{1}{2}$  inch long. Racemes numerous in the axils of the leaves  $1\frac{1}{2}$ -2 inches long, red tomentose. Flowers 30 or more on each in distant



tufts of 3 or 4 together. Bracts small lanceolate covered with red tomentum. Pedicels rather stout  $\frac{3}{8}$  inch long, tomentose flowers green  $\frac{1}{2}$  inch across. Sepals 5 ovate obtuse imbricate pubescent. Petals twice as long oblong or ovate oblong pale green glabrous, tube very short. Stamens 5 adnate to the petals and opposite to them, filaments shorter than the petals rather thick and dilated at the base, anthers cordate acute dorsifixed yellow. Staminodes very short acuminate processes alternating with the corolla lobes and adnate below to the tube. Disc thick annular strongly pubescent. Ovary enclosed in disc small conic tapering into a cylindrical style shorter than the filaments, glabrous. Stigma minute. Fruit an orange red berry long obovoid, pulpy and sweet, seeds 1 or more, hard dark brown.

This fine tree is common all over the plateau, but generally scarce or absent from the shore terraces. The fruit is much eaten by the pigeons *Carpophaga* who swallow it whole. I have also seen the white-eyes pecking at it and the red crab eating it.

Distribution Pulau Sangian. (I have been unable to locate this island on any map).

The wood is of a smooth creamy white colour with fairly distinct rings, rays very fine and close with numerous fine transverse bars; pores very small in straight lines parallel with the rays, several conjoined with thin partitions between. Weight 36 lbs the cubic foot. A fine light and pretty wood.

*Ochrosia Ackeringae* var *angustifolia*, Rendle.

Tree about 40 feet tall, 6 inches or more through. Leaves narrow elliptic lanceolate 3 to 6 inches long  $\frac{1}{2}$ -1 inch across acute or subacute acuminate at the base dark green closely nerved. Corymbs 1 to 3 inches long on a 1 inch peduncle. Flowers fairly numerous sessile with a small ovate bract at the base. Calyx short  $\frac{1}{2}$  inch lobes ovate acute. Corolla tube  $\frac{3}{4}$

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inch long lobes linear  $\frac{1}{2}$  inch long narrow white fragrant. Fruit  $1\frac{1}{2}$  inch long fleshy of two yellow cones connate by the base divaricate above.

Common on the lower terraces and also accuring on the plateau.

Distrib Banka.

Seed probably sea-borne as most of the Ochrosias are.

OLEACEÆ.

*Jusminum Sambac* Ait. The bushy jasmine so commonly cultivated by the Chinese is recorded in the Monograph of Christmas Island as if wild. It is only planted round Ross's old house in Flying Fish Cove and at the Waterfall and has not even spread a dozen yards from where it was evidently planted. It is a large flowered single form. I saw no fruit on it nor indeed have I ever seen any on any plant of it.

APOCYNACEÆ.

*Cerbera Odollam* Gaertn, forma.

Was obtained at Rocky point by Andrews. I sought it in vain. Much of this ground has been cleared since for cooly lines, and the hospital, and the woods near by form the handiest place for the coolies firewood supply, so that the tree has probably been exterminated. The Cerberas the fruit of which is well adopted for dispersal by sea require tidal mud usually for their growth, and there is no suitable spot for them in the island, Judging by the note as to the form of the leaves in the Monograph I should suggest that the plant collected by Andrews might be *C. lacturia*.

Distribution India, China, Malay Peninsula and Archipelago, Australia and Polynesia. Seed found in sea-drift at Christmas Island by Mr. Chapman.

## ASCLEPIADEÆ.

*Hoya Aldrichii*, Hemsley.

A lofty climber, stems covered with pale bark. Leaves elliptic or ovate fleshy 4 to 6 inches long light green acute base cuncate, petiole  $\frac{1}{2}$  inch long. Peduncle about 6 inches long. Umbel of flowers  $2\frac{1}{2}$  inches across, pedicels  $\frac{1}{2}$  inch long flowers over  $\frac{1}{4}$  inch across. Petals white or pink. Corona of stamens pink or deep purple pink. Fruit 6 inches long  $\frac{1}{2}$  inch through common all over the island. Endemic flowering October to January. One of the prettiest plants in the island. The flowers are fragrant in the evening. Seed plumed.

## BORAGINÆÆ.

*Cordia subcordata*, Lam. A hard wooded rather low straggling tree, with ovate leaves and tubular orange flowers.

Fruit dispersed by sea. Sea coast on the beach Flying Fish Cove and beyond Rocky point.

Distribution East Coast of Africa, India, Malay Peninsula and Archipelago to Polynesia, a typical coral island tree.

The heart wood is light to dark sepia brown the rings being darker wavy and irregular, rays fine and close, pores scattered scanty. Weight 68 lbs.

*Tournefortia argentea*, Linn. fil.

A large shrub or tree with rough bark, silvery leaves and cymes of small white flowers.

Common on the sea cliffs all round the island. Smith Point, Flying Fish Cove, Waterfall etc. The flowers are fertilized by *Odynerus polyphemus* Kirb.

I saw one plant growing on a rock with large twisted corky roots as thick as a mans body reaching to the sand, after the manner of Ficus roots.

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Distribution Ceylon, Malay islands, Mauritius, Australia.

*Ehretia burifolia*, Roxb.

A shrub with long straggling branches, about 6 feet tall. The leaves vary in size according to habit, those of plants growing in shade being much larger than those of the open dry places. They are stiffly coriaceous scabrid dark green. Flowers white small.

Common at Rocky point and along the coast to N. E. point, and beyond South point. Always near the sea, and so far as I saw absent from the higher parts of the island though Andrews says it forms the worst of the under-growth there.

Distribution India, Malay-islands, Formosa.

CONVOLVULACEAE.

*Ipomea chryseides*, Ker.

A slender creeping convolvulus with small bright yellow flowers, and ovate often trilobed leaves.

Phosphate Hill, one plant. Not previously recorded.

This little convolvulus is common in waste ground, sand banks etc., in the Malay Peninsula. It may be classed as a weed of cultivation.

Distribution Tropical Africa, India, China, Malay Region and Australia.

*I. pes-caproe*, Roth.

The common goat's foot convolvulus with its bilobed leaves and dark pink flowers is common Flying Fish Cove, Isabella Beach and at the Waterfall bay. Most of the plants bore no fruit or flowers, and this was apparently due to the attacks of a caterpillar which ate the buds. A small black hawk-moth caterpillar was found feeding on it at the Waterfall. First collected by myself in 1890.

Distribution all tropics.

*I. digitata*, L.

Large climbing convolvulus with palmate digitate 5-7 lobed leaves, and large dark pink flowers, seeds woolly.

Flying Fish Cove.

It is difficult to say how this plant is spread about, I have never seen it except in places, which have been more or less under cultivation but I never saw it cultivated anywhere.

Distribution South America, Africa, India, Ceylon, Malay Peninsula and Islands and Australia.

*I. campanulata*, L.

Abundant by Rocky point along the Cemetery road. A large convolvulus, with ovate cordate leaves and large pale-pink flowers across, with a darker centre.

Not collected by Andrews.

Distribution, India, Ceylon and Malay Islands, possibly wild in the Malay Peninsula.

*I. peltata*, Choisy.

A very high climber with dark green peltate acuminate strongly nerved leaves 12 inches long and 10 inches across or smaller. The stem of this plant which is milky attains a thickness of four inches. The panicles of flowers are nearly 6 inches long on a peduncle of equal length. The calyx half an inch long and wide, sepals ovate subacute and corolla nearly 3 inches wide with a short tube, of a brilliant yellow.

This fine convolvulus is abundant in the centre of the island on the Murray Hill Park covering trees with a dense mat of stems and leaves collected also by Andrews.

Distribution, Malay Peninsula, Java, Borneo, New Guinea, Amboina, Australia, Polynesia, Mauritius.

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Some of these outlying localities may be doubted, as the Australian and Amboinese plants are said to have white, the Mauritius one yellowish white red spotted flowers. If this is so these are probably distinct. All I have seen have bright yellow flowers.

*I. grandiflora*, Lam.

A climber of no great size with moderately thick stems ovate cordate rather thick leaves, and tubular white flowers, turning yellow soon. The sepals ovate obtuse, corolla tube thick  $2\frac{1}{2}$  inches long, limb flat 1 inch across. Capsule large an inch through and seeds shortly villous.

Climbing over rocks and bushes at the wharf, collected also by Andrews "climbing on trees north coast."

Distribution Africa and islands, India Laccadives and Ceylon, Timor, New Caledonia, Australia and Polynesia.

Some authors have confused this with *I. bona-nox*, the well known moon flower which is utterly different. The flowers of *I. grandiflora* are very much smaller and it is not at all a conspicuous plant. It is evidently a sea shore plant and the seeds probably sea-borne.

*Convolvulus parviflorus*, Vahl.

A small climbing and twining convolvulus with ovate acuminate pubescent leaves  $2\frac{1}{2}$  inches long, and umbels over half an inch across of small pink flowers, calyx densely silky hairy, capsule hardly longer splitting into 5 rather thin lanceate acute valves.

Common near Smith point and Rocky point, collected also by Andrews.

Distribution, India and Ceylon, Java and Australia. I have never seen this in the Malay Peninsula.

This is possibly introduced as a weed of cultivation, but it is difficult to say how it gets dispersed.

## SOLANACEÆ.

*Solanum biflorum*, Lour. A herb 2 or 3 feet tall with white flowers and scarlet berries.

Not rare in open spots on the Plateau and on the track to the Waterfall.

First collected by Lister.

Distribution East Ava, Mergui, Malay Peninsula and Malay islands.

*S. ferox*, L. A shrubby herb very thorny and densely covered with yellow wool. On the road above Flying Fish Cove and Phosphate Hill, (Andrews).

Distribution Indo Malaya.

I did not see this plant, which is a village plant in the Malay Peninsula, more or less cultivated.

*S. involucreatum*, Nees. A plant of similar habit with the broad ovate sinuate toothed leaves thinly covered with stellate hairs. Stem and leaves thorny. Flowers white, calyx in fruit large and thorny concealing the fruit.

Phosphate Hill, and on the track towards Murray Hill. Distribution Java. I have never seen this in the Malay Peninsula. My Javanese plant collector recognized it as a Javanese plant used in local medicine and probably introduced for that purpose.

*Physalis minima*, L.

A common or weedy plant, from a few inches to a foot high, sub-glabrous, pubescent or viscid leaves ovate entire or toothed or lanceolate. Flowers yellow with a dark centre, axillary  $\frac{1}{4}$  inch long. Berry red globose in closed in the enlarged ovoid calyx.

Common in Flying Fish Cove and all cultivated ground, and also on the sea rocks.

Three forms were met with, the erect nearly glabrous plant with nearly entire leaves which is common in waste ground; a shorter more prostrate plant with

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broader pubescent leaves more dentate and rather larger fruit, which occurred on dry hot places near the sea, at the Waterfall; and a more woody prostrate plant densely viscid pubescent with many small round fruits, leaves small and crowded. This grows on very hot rocks above the sea at Smith point.

The plant which is common on waste ground and sandy sea shores in the Tropics of the Old World, is probably disseminated by birds, as also accidentally by man. It was first collected by Lister in Christmas Island.

*Datura alba*, L.

The white *Datura* is abundant along the coast line from Smith point to the Cemetery road. Also at the Waterfall. I did not see this except in the neighbourhood of cultivated ground. Andrews records it on all coasts, and as it was found in the island by Lister it must be classed as a native plant. It is a large flowered single white form.

Distribution Tropical Africa, India, Malay islands.

The *Daturas* probably originating in South America seem to have wandered far over Asia, and I believe from the curious way they have of turning up spontaneously in waste ground the seeds are dispersed by birds in spite of their poisonous nature. I have never seen any really wild in the Malay Peninsula, but *D. fastuosa* is commonly grown in medicinal gardens and is accidentally spread.

ACANTHACEAE.

*Asystasia alba*, n. sp.

An erect herb about a foot tall and little branched. Leaves opposite in distant pairs  $1\frac{1}{2}$  to 1 inch apart blade lanceolate or ovate lanceolate acuminate at the tip, and cuneate at the base, thin light green sprinkled



on both surfaces with pale bristles, especially abundant on the midrib, back of the leaf covered with small pustules, nerves 9 pairs ascending conspicuous, 4-inches long  $1\frac{1}{2}$  inches wide, petiole setulose  $\frac{1}{4}$ - $\frac{3}{4}$  inch long. Raceme terminal 1 to  $1\frac{1}{2}$  inches long. 6-7 flowered, flowers opening singly, rachis setose. Bracts  $\frac{1}{2}$  inch long lanceolate acuminate. Pedicel little longer. Calyx split into five narrow lanceolate acuminate lobes nearly to the base  $\frac{1}{2}$  inch long glabrous. Corolla one inch long hardly  $\frac{1}{2}$  inch across tube narrow, gradually dilated in the upper part sparingly pubescent pure white. Stamens 4 equal, filaments long slender glabrous, anthers lanceolate minutely cuspidate at the tip, shortly prolonged into two blunt lobes at the base. Capsule woody narrow  $\frac{3}{4}$  inch long dilated upwards 1-2 seeded.

This plant is very abundant on the lower terraces below Phosphate Hill and beyond the Waterfall. I suppose it to be the plant recorded in the Flora of Christmas Island by Mr. Baker as *Asystasia coromandeliana* forma the distribution of which is given as India and Malaya, Africa and Arabia. It would be interesting to know where in Malaya this plant is wild. It is often cultivated in gardens, and occasionally escapes along road sides in villages and towns, but it is certainly not native of the Malay Peninsula nor has it even established itself as a denizen. The only species of *Asystasia* which is indigenous to the Malay region which I have ever seen or heard of is *A. intrusa* Nees, which ranges from Celebes to Singapore, and the Christmas Island plant is certainly allied to that species and not to *A. coromandeliana*. I have a scrap of an apparently identical plant from the Tenimber islands (Timor Laut) collected by Mr. Pereira. The plant differs altogether in habit from *A. intrusa* Nees, which is a scrambling diffuse weed in hedges, and thickets and in its larger pure white flowers, those of *A. intrusa* being

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violet. The seeds of *Asystasia* are dispersed by the exploding of the capsule as in so many *Acanthaceae* but this of course would not account for the plant's reaching Christmas Island. They are too heavy probably for wind dispersal and were probably sea borne to the island. It grows in the lower woods near the sea, on soil chiefly formed of broken coral reef.

*Ruellia prostrata*, Lam. var *dejecta* Clarke.

A low spreading herb about 6 inches tall. Leaves ovate or lanceolate acute base cuneate 2 inches long and one inch wide sprinkled with white hairs on both sides especially on the nerves, petiole half an inch long hairy. Flowers solitary axillary opening in the afternoon. Corolla little more than half an inch long light violet dilated upwards. Capsule  $\frac{3}{4}$  inch long base narrowed half its length then dilated pubescent. Seeds numerous orbicular flat margined above covered with minute white processes.

Flying Fish Cove common (Andrews) I could find only a few plants on some boulders close to Ross' old house.

Distribution East Africa, India, Ceylon, Malay Peninsula (type).

The variety *dejecta* is extremely different from the typical form, which is more compact with much smaller leaves, flowers much more dilated and at least twice as large. Mr. Clarke however has seen intermediate forms.

Possibly accidentally introduced, but may be dispersed by the adhesion of its minute slightly hooked seed processes, or may be sea borne.

*Dicliptera maclearii*, Hemsley.

A weedy plant 2 or 3 feet tall branched, growing in masses with lanceolate leaves pointed at both ends 1 to 3 inches long  $\frac{1}{4}$  to 1 inch wide pubescent on both sides, petiole  $\frac{1}{4}$  inch long or less flowers crowded in the

upper axils, outer bracts needle-like  $\frac{1}{4}$  inch long inner bracts, broadly orbicular stalked ending in a sharp needle-like point,  $\frac{1}{4}$  inch long green. Calyx very small sepals linear pubescent, corola  $\frac{1}{4}$  inch long narrow two lipped pink. Capsule very small.

Very common on the lower terraces, Flying Fish Cove, Waterfall, Cemetery Road etc. Endemic and first collected by Capt. Maclear.

When ripe the whole of the fruit including the broad spring bracts breaks off and adheres strongly to cloth etc., by which means the seed included between the bracts is carried about.

#### VERBENACEAE.

##### *Callicarpa longiflora*, Lam. var *glabrescens*.

A shrub about 6 feet tall leaves opposite ovate lanceolate acuminate 7 inches long 3 inches wide edge denticulate glabrous except for some stellate tomentum on the midrib on both surfaces and on some of the main nerves, petiole  $\frac{3}{4}$  inch long tomentose. Panicles about 2 inches long tomentose. Flowers numerous white small. Calyx cup-shaped glabrescent, corolla lobes glabrous. Drupe globose  $\frac{1}{4}$  inch long white.

Common on the Plateau, also the lowest cliffs and near Flying Fish Cove, collected first by Lister.

Distribution of *C. longifolia*, Lam. India, Malay Peninsula and Australia.

The common form of this plant has very tomentose leaves, covered with tufts of woolly hairs arranged stellately, its flowers also are pale lavender in color. The Christmas Island plant differs in its nearly glabrous larger and thinner leaves and white flowers.

The seed is dispersed by birds the small drupes being pulpy and sweet.

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*Stachytarpheta indica*, L.

A low shrubby plant with brilliant blue flowers produced one or two at a time on a long erect raceme.

A few plants in Flying Fish Cove, collected also by Andrews. I met with one plant with white flowers.

Distribution all the Tropics

This occurs as a weed or cultivated plant all over the east, but seldom if ever except in waste ground.

*Premna Lucidula*, Miq.

A small straggling tree with obovate glabrous leaves narrowed at the base to a petiole, 3 inches long 2 inches wide or less, petiole  $\frac{1}{2}$  inch long. Flowers  $\frac{1}{2}$  inch across in a small terminal corymb shorter than the leaves 1 inch across tomentose. Calyx cup shaped. Corolla small white. Drupes  $\frac{1}{2}$  inch long black.

Rocky places above Andrew's Lookout : collected first by Andrews, on "the first inland cliffs."

Distribution Java.

## LABIATAE.

*Anisomeles ovata*, R. Br. A coarse much branched herb 2 or 3 feet tall, with a coarse scent.

Common Flying Fish Cove, Waterfall, cemetery road Phosphate Hill etc., in cleared ground or in open woods.

Distribution India, Malay Peninsula, and islands and China.

A more robust form than one generally meets with. First collected by Lister.

*Leucas mollissima*, Wall.

Herb about 2 feet tall, branched, leaves opposite ovate obtuse crenulate, shoots and both sides of the leaf especially lower surface pubescent. Flowers crowded in axillary whorls 11 or 12 in a whorl. Calyx  $\frac{1}{2}$  inch long with alternate large and small teeth pubescent

Corolla not twice as long, white upper lip white pubescent, lower one glabrous.

Flying Fish Cove, Cemetery road.

Distribution Malay Islands, India.

First collected by myself in 1890.

APETALE.

NYCTAGINTEÆ.

*Barhaavia repens* var *diffusa*.

A branched prostrate herb branches 2 feet long pubescent. Leaves fleshy obovate rounded lower ones an inch long  $\frac{1}{2}$  inch across entire with 3 pairs of strong nerves on the back upper leaves much smaller, all pubescent on the edges. Flowers very small pink crowded in terminal very lax panicles with few slender short branches pubescent. Perianth pubescent. Fruit  $\frac{1}{8}$  inch long and 4 lobed aciniform viscid pubescent stamens 2 anthers very broad.

Flying Fish Cove on the beach, and along Cemetery road, and high upon bare rocks above the Cove.

Distribution all the Tropics.

This form is more robust and with thicker foliage than the Singapore seashore form, but it appears to be a very variable plant. With the typical form grew one with very condensed leafy branches, the panicle branches very short and flowers a little larger. It seems to be a monstrosity due to some insect attack.

*B. repanda* Willd is recorded by Hemsley from the summit. This species has not since been seen, and perhaps was an error for *B. repens*.

*B. caespitosa*, n. sp.

Whole plant forming a big tuft with a prostrate mass of branches two or more feet long, tips obscurely pubescent.

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cent. Leaves ovate to almost orbicular thinner than in preceding 1 inch long  $\frac{1}{2}$  inch wide or much less glabrous pale, nerves 2 or 3 pairs deeply sunk on the upper surface when dry. Panicles lax terminal and axillary with few branches slender viscid. Flowers very small white crowded in small terminal heads viscid. Perianth short campanulate with 5 very short lobes, subacute. Stamens two much shorter, anthers globose. Style stout stigma large thick peltate. Fruit  $\frac{1}{8}$  inch long oblong narrowed to the base with several ribs, viscid. Flying Fish Cove.

I can quite imagine this plant, very distinct when alive, being confused with *B. repens* when dried material only is seen. It differs entirely in habit from any form of *Boerhaavia* I have seen, the flowers are invariably white. Stamens much shorter and stigma larger the fruit is ribbed but not distinctly angled as in the common plant. I have never seen it elsewhere.

*Pisonia grandis*, R. Br.

A big tree with a very thick stem covered with rather smooth grey bark, branchlets pale grey fragile. Leaves crowded at the ends oblong light green glabrous except the petioles, which are tomentose. Corymbs of green flowers fragrant about 3 inches long pubescent  $\frac{1}{2}$  inch long. Flowers  $\frac{1}{2}$  inch long tube short conical hardly lobed pubescent. Stamens 8 shortly exsert on fili-form filaments. Style as long pubescent stigma peltate.

Common close to the sea on rocks. Smith Point. Flying Fish Cove etc.

Distribution Australia and Polynesia, also on Cocos Island probably. (Forbes. Wanderings).

The fruit which I have not seen is said to be spiny and glutinous adhering to the feathers of birds, and is doubtless so conveyed about by the sea birds. The seeds of the Cocos Island plant often prove fatal to the herons by adhering to their feathers (Forbes lc. 30).

*P. excelsa*, Bl. A fairly big tree with deep green shining elliptic obtuse or acute leaves narrowed and often inaequilateral at the base 8 inches long 3 inches across, petiole 1 inch long, glabrous except for the base and axillary buds which are tomentose. The leaves are often whorled. Panicle terminal of a few umbelled branches, 1-2 inches across, on a pubescent peduncle 2 inches long. Flowers green  $\frac{1}{4}$  inch long on pedicels  $\frac{1}{2}$  inch long all pubescent. Perianth tube elongate conic, with very short rounded recurved blunt lobes. Stamens 8 filaments barely exsert, anthers small. Style as long stigma peltate. Fruit over 1 inch long,  $\frac{1}{4}$  inch through, linear 4 angled, glabrous green exuding a very sticky gum, 1 celled.

Common on the Plateau, and the lower terraces. Flying Fish Cove etc. Not however a sea shore tree like the last.

Distribution Andaman Islands, Malay Peninsula, and islands.

This is not a very large tree, much more slender than the preceding species, the long slender fruits when ripe split and exude a very sticky substance which adheres firmly to cloth etc., and doubtless to bird's feathers.

The occurrence of this plant in the Malay Peninsula is curious as it occurs only so far as I know at Kuala Dipang in Perak, on the limestone rocks, a long way inland, but there is a native tradition that within historical times the sea came up to these limestone cliffs.

The flowers which are fewer and longer than those of *P. grandis* do not seem to have ever been previously described.

#### AMARANTACEÆ.

*Dceringia celosioides*, R. Br.

A half shrubby plant usually scandent about 12 or 14 feet long leaves alternate light green ovate or ovate

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lanceolate acute 6 inches long and three inches across petiole 1 inch long spikes axillary and terminal, 6 or 7 inches long. Flowers white crowded sessile, sepals 5 oblong stamens 5, stigmas 2-4. Fruit a ribbed crimson scarlet pulpy berry  $\frac{1}{2}$  inch long.

Very common all along the coast over the sea, forming thickets.

Distribution India Malay Peninsula and Malay islands, New Guinea, Siam, China and Australia.

The flowers are white not red as stated Rendle. The fruit is bright red pulpy and sweet, and doubtless dispersed by birds. In the Malay Peninsula it only so far as I have seen grows on the limestone rocks in Perak, and this form has usually short inch-long spikes nearly all axillary. A plant inland at Bangtaphan collected by Dr. Keith had he says white fruits.

*Achyranthes aspera*, L.

A large weedy plant often quite shrubby 3 or 4 feet tall. Leaves ovate lanceolate or lanceolate acuminate at both ends pubescent 6 inches long by 3 wide. Spikes terminal and axillary 4 to 6 inches long, dense flowered bracts and bracteoles subulate with a short wing at the base, straw colored. Sepals 4 or 5 subulate  $\frac{1}{2}$  inch long stamens.

Very common shore terraces, all along the coast.

Distribution Africa, India, Malay, Peninsula, Java, New Guinea, Australia and America.

The common form of this plant in the Malay Peninsula is a weed of cultivation the var *porphyrotachys* with longer and more slender spikes smaller rounds and more tomentoso leaves.

The seeds are dispersed by the adhesion of the sharp sepals and bracteoles to cloth, bird's feathers etc., the whole flower breaking off.



*Celosia argentea*, L.

A common garden plant, grows in Flying Fish Cove by the old house etc., and also along the Cemetery Road, evidently introduced for ornament. It is visited by *Megachile rotundipennis*, *Odynerus polyhemus* and a syrphid fly.

*Amaranthus viridis*, L.

A common green weed occurring everywhere in waste ground where it is warm enough for it, is very abundant in Flying Fish Cove. Phosphate Hill etc.

I believe this plant is commonly dispersed by cattle and horses which eat it and pass the seed. It comes up very commonly in manure.

*A. paniculatus*, L.

A tall plant with a stout stem and large lanceolate blunt leaves narrowed at the base. Spikes some axillary but most crowded into a dense erect conic thyrse 6 inches long, pale green spikes horizontally spreading 1 inch long or less, acicular; bracts squarrose; seeds deep brown or black lenticular and margined. This plant is introduced as a cultivated one and has spread a little in Flying Fish Cove. It does not seem to be typical *A. paniculatus* which is practically only known in cultivation and is very variable. I have the same form from Kuala Lumpur in Selangor.

Neither of these Amaranthi previously recorded.

## BALANOPHORACEÆ.

*Balanophora insularis*, n. sp.

Rhizome rather small about 2 inches through or less with one or more—about 5 stems, nodular and warted. Volva irregularly split into 4 or 5 rounded lobes. Stems 3 or 4 inches tall, entirely lemon yellow, fleshy  $\frac{1}{4}$  inch thick. Leaves oblong linear blunt at first appressed,

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later spreading,  $\frac{1}{2}$  inch long  $\frac{1}{4}$  inch wide upper ones smaller, subacute, margins towards the tip often denticulate. Inflorescence one inch long base with scattered male flowers for  $\frac{1}{2}$  inch, apex elliptic ovoid in outline blunt bisexual portion a little longer  $\frac{3}{10}$  inch through. Male flowers about  $\frac{1}{8}$  inch across nearly sessile. Perianth lobes oblong subquadrate truncate upper and lower ones larger than the lateral ones, at the base where the staminal thecae are numerous, linear oblong and equal above where there are few. Androecium transversely oblong, thecae 7-8 or fewer hexagonal. Female flowers shortly stalked with numerous obovate tailed spadicels, ovary obovoid obtuse minutely pustulate.

Rare, on the shore terrace south of the Waterfall, on the top of Steep rock, and in the centre of the Island on Murray Hill track, a single plant at each place, growing in soil overlying detritus of coral reef. Also collected in Pulau Aur, on the east coast of the Malay Peninsula by Mr. Fielding in 1892.

The occurrence of a *Balanophora* in Christmas Island was most unexpected, and is interesting from many points of view. The species is allied not as might be expected to any Javanese species but to *B. Hildebrandti* Rehb. fil a native of Tahiti, and the Comoro islands, from which it differs in its smaller size, fewer anthers, and shortly stalked male flowers. The bisexual yellow *Balanophoras* have a curious distribution, ranging from the Polynesian islands, to Salayer Island.

Tenimber, Christmas Island, Pulau Aur and Comoro Island; the species being.

- *B. fungosa*, Forst.
- B. Hildebrandti*, Rehb. Tahiti and Comoro.
- B. Micholitzii*, Ridl. Tenimber Laut.
- B. Zollingeri*, Fawe. Salayer.
- B. insularis*, Ridl. Christmas Island and Pulau Aur.

*B. abbreviata*, Bl.

All seem to be insular plants. The seeds are very light, and in *B. insularis*, a puff of wind blew those of a ripe plant away like the seeds of an orchid. The plant is doubtless wind dispersed, and although it grows very low on the ground hardly projecting more than 2 or 3 inches, in thick woods so that one would hardly expect the winds to drift its seeds high enough to cross the sea, still it has a parallel here, in the little woodland plants *Zeuzine* and *Didymoplexis*. The occurrence of the plant in Pulau Aur as well is of interest as that little island is also the only other known locality of *Sarcophilus carinatifolius*.

I could not determine what tree this plant was parasitic on. The first gathered was nearest to a *Barringtonia*; another below a *Ficus retsa*.

## PIPERACEAE.

*Peperomia lavifolia*, Miq.

A small green succulent branched herb with alternate rhomboid lanceolate bright green fleshy leaves pale beneath, an inch long spikes very slender 2 inches long with minute flowers. Fruit globose minute brown closely pustular.

On tree trunks on the Plateau Common.

Distrib. Mt. Salak, and Tjapus river, Java.

*P. exigua*, Miq.

A small branched succulent herb, erect or half prostrate 3-10 inches long succulent stems slender pinkish branched. Leaves alternate ovate, or ovate cordate shining light green  $\frac{1}{2}$ - $\frac{3}{4}$  inch long and broad pale beneath. Spikes axillary erect very slender 1- $\frac{1}{2}$  inch shortly peduncled. Flowers distant. Bract ovate subacute. Fruit globose not distinctly beaked ribbed and warted.

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Flying Fish Cove on rocks close to Ross' House.

This little plant has been widely spread over the east in cultivated ground especially in gardens where it come up every where, but I have never seen it wild. It occurs thus all over the peninsula, also in the Philip-pines and New Guinea (and is the *P. ruderalis* Schumann) and is also met with in Burmah.

*P. Rossi*, Rendle.

This which I did not meet with described as 3-4 inches tall with opposite leaves elliptic petioled, obtuse, black dotted with thick dense flowered spikes, round peltate bracts and a sub-globose apiculate punctate fruit.

No locality is given for it, but it is endemic.

The minute seeds of the Peperomias, might be wind borne, and most of them are more or less sticky so that they might be dispersed on bird's feathers

#### LAURINEAE.

*Cryptocarya Nativitatis*, Rendle.

A big tree with ferruginous woolly shoots. Leaves elliptic or ovate lanceolate coriaceous shortly petioled 4-6 inches by  $1\frac{1}{2}$ - $2\frac{1}{2}$  inches wide. Panicles terminal 1-2 inches long, many flowered. Flowers greenish white small. Fruit globose shining black.

Common on the Plateau, and upper part of Phosphate Hill. Endemic allied to an Australian species.

The fruit is one of the great food supplies of the pigeon, though it has only a very scanty purple pulp.

*Hernandia peltata* Meissa.

A very big tree with ovate peltate long-stalked leaves, and corymbs of dull greenish flowers. The black globular ribbed fruit is enclosed in the yellowish white calyx enlarged to a bladder shape, but open at the top. It is 2 or 3 inches through. The fruit is doubtless sea-dispersed as the large bladdery calyx

would easily float and, owing to its being weighted at the bottom with the fruit it would float upright with the aperture upwards.

It is common on the Plateau, but I did not see it on the lower terraces.

Distribution Andaman Islands, Ceylon, Lankawi and a few other places on and round the Malay Peninsula, Malay islands, North Australia, Polynesia, South Africa and Madagascar. Always a sea shore and generally an island plant.

EUPHORBIACEAE.

*Euphorbia thymifolia*, Burn.

A low prostrate herb common in Flying Fish Cove, on Phosphate Hill and near the Waterfall. Not previously recorded. All Tropical countries.

*E. pilulifera*, Linn.

An erect weed, abundant in Flying Fish Cove, Waterfall Cemetery road etc. A somewhat diffuse and more flaccid form occurred in woods near the waterfall.

Distributed over all the tropical and sub-tropical countries. First recorded by Andrews.

*E. atots* Forst.

A shrubby plant 2 or 3 feet tall.

Common on the bare cliffs above the sea Flying Fish Cove, Smith point, Rocky point etc. Distribution India, Malaya, China, Australia.

*Phyllanthus Niruri*, L.

A common weed about a foot tall.

Flying Fish Cove.

Distribution all the tropics except Australia. A weed of cultivation usually.

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*Croton caudatus*, Geisel.

A woody climber with rough ovate leaves which turn orange red long before falling, making the plant very conspicuous. Flowers in short racemes, yellowish white.

Very abundant and often troublesome to get through. Phosphate Hill, North East Point, Andrew's Look-out etc., and on most of the shore terraces near the sea. I only met with it in male flower as did Andrews. It certainly does not seem very floriferous here.

Distribution India, Ceylon, Malay Peninsula, Java, Philipines.

This is not typically a sea shore plant. The fruit may however be dispersed by sea.

*Claoxylon cœrulescens*, n. sp.

A large bush with white stems. Leaves light green ovate acute or acuminate crenulate dentate 6 inches long, 3 inches wide, pubescent on the back, especially on the nerves, turning indigo-blue when withering. Flower spikes woolly axillary  $\frac{1}{2}$  inch long. Calyx 4 lobed, lobes ovate woolly green, ovary pubescent. Hypogynous scales shorter than the sepals linear entire, stigmas entire recurved. Fruit obconic  $\frac{1}{2}$  inch long, hairy outside and in the cells green soft obscurely trilobed. Seed sub-globose wrinkled.

Common, Rocky Point, Phosphate Hill.

The fruits, seed and ovary when dried and poisoned with spirits become of a pink color. This plant is obviously the one recorded by Rendle as *Claoxylon rubescens*, Miq. based on a plant of Zollinger's collected in Java, Miquel's description is short and differs from the Christmas Island plant in most respects, thus the peduncle and petiole are described as rubescent, the top of the petiole glandulous, the base of the leaf acute, the leaf itself glabrous, the spikes graceful, and soon glabrous,

not one of which characters fits this plant. There seem however to be indistinct traces of glandular structure covered with hair at the top of the petiole.

The reddish color noticed by Miquel may be due to some post mortem treatment with corrosive subhinate, for he did not see the plant alive, the bases of the leaves which are distinctly pubescent on the back, are rounded, the spikes are remarkably short, and hairy even in fruit. He gives practically no other characters which are not common to nearly all Claoxylons, so that having only his description to go on, which after all is more important than a type specimen, I consider it advisable to give the plant, a new name, alluding to the deep blue colour of the withering foliage.

*Macaranga tanarius*, L.

A tall tree, with peltate leaves 6-18 inches long ovate subacute gland-dotted and hairy on the nerves beneath, glabrous above, petiole long glaucous. Flower spikes paniced green. Panicle 6 inches long, male flowers very numerous and small, about 8 or more in a head surrounded by a broad entire cupshaped pubescent viscid bract nearly as long as the flowers. Capsule  $\frac{1}{4}$  inch long sub-globose with 4 or 5 tails  $\frac{1}{2}$  inch long from the upper end; all covered with sticky viscid glands exuding a yellowish gum.

Common on the shore terraces Smith-Point, Cemetery, and below Phosphate hill on both sides, Waterfall etc.

Distribution Andamans, Malay Peninsula and islands.

The Macarangas in the Malay peninsula are usually bird-dispersed, the small pigeons being very fond of the seed. The stem of this plant is solid, though nearly all the allied species have hollow stems tenanted by ants.

*Cleidion javanicum*, Bl.

A shrub or small tree, leaves oblanceolate acuminate, narrowed towards the base, usually more or less den-

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tate, glabrous bright green 6 inches long by 3 inches wide. Male spikes paniced terminal slender 3 or 4 together pubescent 2 or 3 inches long. Flowers distant tufts very small yellow. Calyx lobes ovate obtuse 4. Stamens 4 filaments very short, anthers large globose. Female panicles axillary or terminal. Fruit sub-globose 3 lobed  $\frac{1}{2}$  inch long smooth. Seed sub-globose oblong slightly flattened on one side smooth grey.

Common Rocky point, Plateau, Phosphate hill.

Distribution India, Ceylon, Penang, Java.

Very variable in the form of its leaves which are usually toothed, but a very distinct looking form along the Cemetery road had all its leaves entire.

*Acalypha fallax*, Muell. Arg.

*A. Wightiana* Muell. Arg.

A common herbaceous weed about a foot tall, very hispid. Leaves ovate acuminate crenulate dentate hispid  $1\frac{1}{2}$  inch long 1 inch wide, petiole  $\frac{1}{2}$  inch lower leaves smaller. Spikes very numerous green  $\frac{1}{2}$ -1 inch long axillary. Male flowers terminal very small. Females enclosed in a broad toothed hairy bract. Capsule hairy very little longer than the bract.

Common in Flying Fish Cove.

Distrib. India, Ceylon, Malay Peninsula, Sumatra, Java.

This weed is common in waste ground round towns etc., and is probably introduced into Christmas Island accidentally by man.

URTICACEAE.

*Celtis cinnamonea*, Lindl.

A moderate sized or tall tree with very foetid old wood. Leaves deciduous before flowering ovate acuminate or subacute, with crenulate edges, bright green, nerves 3 prominent beneath pubescent, petiole and branches



pubescent 2-4 inches long  $\frac{3}{4}$ -3 inches wide. Flower spikes  $\frac{1}{2}$  inch long dense-flowered on the bare parts of the branches yellowish. Flowers  $\frac{1}{8}$  inch long shortly pedicelled, pedicels and peduncles woolly hairy. Sepals 4 oblong glabrous. Stamens 4 filaments slender surrounding a woolly disc. Drupe green  $\frac{1}{4}$  inch long obpyriform, base narrowed, and apex pointed, on long slender axillary peduncles 2 inches long.

Common Flying Fish Cove, Phosphate Hill, North East Point, Plateau etc.

Flowering October, and one tree fruiting the same time.

Distribution India, Ceylon and Malay Islands, absent so far as is known from the Malay Peninsula.

The seeds are probably dispersed by birds as those of the allied *Gironniera* certainly are. The horrible odour of the dead wood is caused by scatol, which is often deposited in crystals in cracks in the bark. I observed a number of pigeons (*Carpophaga*) in a flowering tree apparently eating the young flowers.

*Trema amboinensis*, Bl.

A common shrub or almost a tree about 12 or 14 feet tall. Very abundant in Flying Fish Cove and at the lower part of Phosphate hill, forming a great part of the secondary scrub after clearing. The small red drupes are eaten by birds, but as this appears to be a comparatively late introduction into the island, and has spread no further than cultivated ground it may have been accidentally introduced by man.

Distribution India, Siam, Andamans, Malay Peninsula and Islands, Australia, Polynesia.

*Ficus retusa* var *nitida*.

A large spreading tree with very many strong aerial roots. Leaves small coriaceous dark green shining

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oblong or elliptic blunt or rounded at the tip or subacute, base cuneate 2-3 inches long 1-1½ wide. Figs globose as big as small peas, green. The flowers are mostly distinctly pedicellate.

Common over the whole island. Fine trees occur about Flying Fish Cove and on the Plateau, and also near the Waterfall. It is very abundant too on Steep rock.

Distribution India, Assam, Burmah, Malay Peninsula and Islands, Philippines, South China, New Caledonia and Australia. The var *nitida* India, Burma and Malay region.

Sir George King describes it as having "a few aerial roots" but it produces very many of large size.

*F. saxophila*, Bl.

A short stout much branched tree about 20 feet tall. Leaves quite glabrous thinly coriaceous ovate cordate at the base and subacute or blunt at the tip 5 inches long 3 inches wide, petiole 3 inches long. Figs clustered in the upper axils sessile half an inch long, yellow or crimson scarlet shortly beaked, bracts ovate pubescent. Achenes keeled or angled fusiform dark red. Female flowers with 4 lanceolate acute narrow sepals.

On Andrew's Look-out, and also on steep rock, and about Flying Fish Cove, on rocks.

This differs from *F. saxophila* of King's Annals of Calcutta Garden vol. I. p. 17, pls 12 and 8. in the blunter leaves, much larger figs, and the bracts being pubescent which he does not mention, but he says that the plant is not well represented in herbaria. It is however doubtless the plant intended by Blume.

Distribution Java Timor and Buru. The fruits in the tree at Andrew's Lookout though apparently ripe were yellow, those at Steep Rock of a brilliant red.

*Laportea crenulata*, Gaud.

A shrub or small tree with grey white bark and hollow branches. Leaves deep shining green glabrous above and often beneath except for a few stinging hairs, edge usually undulate or almost crenulate, blade broadly oblong ovate base rounded to oblong lanceolate narrower 10-15 inches long 5 to 8 across, petiole 2 to 6 inches long. Male panicles 1-2 inches long axillary below the leaves, armed with stinging hairs. Flowers in small clusters globose, stinging. Females panicles much longer lax a foot long or less covered with stinging hairs. Flowers very small green 4 sepals hairy, style longer. Achene discoid  $\frac{1}{8}$  inch long flat wrinkled or warted.

Common in Flying Fish Cove, Phosphate Hill Waterfall etc.

Distribution India, Malay Peninsula, Siam, Sumatra, Java, Borneo.

Apparently very variable in foliage if all the forms included are of this species. It is well known from its stinging powers which however vary a good deal some being very severe stingers, others sting hardly at all. The Christmas Island one stings somewhat severely.

*L. Murrayana*, Rendle.

A tree about 20 feet tall with pale bark branches hollow. Leaves ovate or orbicular peltate acute or obtuse 3-7 inches long 2-4 wide nearly glabrous light green. Male panicles 2 inches long glabrous. Flowers in small distant clusters, buds globose, sepals four obovate obtuse glabrous. Stamens very short 4. Pistilode globose. Female panicles 3-5 inches long much more diffuse. Flowers very small in small tufts. Stigma much longer. Achene discoid  $\frac{1}{8}$  inch across margined.

Flying Fish Cove, on rocks near the magistrate's house, apparently unsexual. I only saw two or

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three trees, which flowered at the end of October. The leaves sting and the flowers are green. Rendle says it is near *L. laxiflora* of Java, which has leaves pubescent beneath and the female inflorescence larger than the petioles, but in my specimens the inflorescence of the female plant is certainly longer than the petioles.

*Cudrania javanensis*, Trecul.

A big woody climber, with pale branches and strong  $\frac{1}{2}$  inch spines. Leaves very variable from lanceolate acuminate to elliptic obtuse 1-3 inches long  $\frac{1}{2}$ -1 $\frac{1}{2}$  across, glabrous, petiole and branchlets pubescent and the nerves of very young leaves also. Male flowers in small yellow balls  $\frac{3}{8}$  inch across leaves shortly peduncled pubescent. Sepals cuneate hairy; stamens 4. Female heads twice as large style. Fruit a fleshy head of drupes.

Very common Rocky point, Phosphate hill, Plateau etc.

Distribution East Africa, Ceylon, India, Malay Peninsula and Archipelago, Australia.

An abominably spiny plant with deep green leaves forming a bush in open places but a big climber with a stem as much as 4 inches through in the forest. The style in all the specimens I have seen from Christmas Island is simple.

*Fleurya ruderalis*, Gaud.

A common weed about a foot tall herbaceous with ovate crenate subacute leaves 2-4 inches long, sparsely hairy or nearly glabrous with rather long petioles. Panicles axillary lax but numerous much branched 1 inch or less long, the flowers in small peduncled tufts. Achenes very small, smaller than in *Fl. interrupta* ovate flattened edge thickened and ribbed, beaked.

Common, Flying Fish Cove, Smith Point.

Distribution Java.

This plant was first collected by Lister and as no one had lived on the island previously it may be taken that it was not introduced by man, but I could not find it on Christmas Island except in cleared cultivated spots, and at places where fishermen went to fish off the rocks. On frequented tracks it often occurred but not off the tracks, so that it is certainly now carried about by man.

The common species in the Malay Peninsula is *Fl. interrupta*.

*Boehmeria platyphylla*, Don.

A shrub or very soft wooded tree about 18 feet tall, branches pubescent hairy. Leaves soft green ovate acuminate crenulate dentate base rounded 3-6 inches long 3-4 inches wide, sprinkled with short hairs above, silky pubescent beneath, petiole 1 to 3 inches long. Male panicles 1 to 3 inches from the axils of the upper leaves, branches an inch or less long. Flowers small globose clustered in distant heads. Calyx cupshaped pubescent with four short acute lobes. Stamens 4. females rather longer and slender. Flowers much smaller silky pubescent stigma very slender. Achene minute ovoid or fusiform, angled covered with sticky pubescence.

Common Flying Fish Cove, Phosphate Hill.

Distribution Africa, India, Ceylon, Sumatra, Java.

This shrub stings about as badly as the *Laportea*.

*Proctis pelunculata*, Wedd.

A succulent herb hardly shrubby with bright green fleshy stems and leaves. Leaves 5-6 inches long  $1\frac{1}{2}$  inch wide entire obliquely lanceolate acuminate, shortly petioled, nerves 4 pairs alternate, opposite leaves reduced to a oblong lanceolate or ovate lamina  $\frac{1}{2}$  inch long male panicles 1 inch long, peduncles slender branches 3. Flowers very small in cymes green.

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Female flowers in small sessile heads  $\frac{1}{4}$  inch through. Achenes small lanceolate acuminate punctate brown.

Abundant on the shore terraces and Plateau growing on rocks.

Distribution Mascarene Islands, Malay Islands, Polynesia.

#### UNIDENTIFIED PLANTS.

A. A big tree about 80 feet tall with thick stem covered with flaky bark, branches smooth. Leaves alternate ovate or elliptic acute glabrous deep shining green, 6 inches long 4 inches wide, nerves 6 pairs anastomosing within the margin petiole one inch long, Panicles terminal. Flowers minute  $\frac{1}{8}$  inch long, sepals 5 free nearly to the base ovate pubescent, petals 5 as long subspathulate or ovate pubescent. Pistil superior. Fruit a yellow berry  $\frac{1}{4}$  inch long, sepals persisting below, globose ovary 2 celled 2 ovuleds.

Not common, Flying Fish Cove, and along road to Cemetery.

This fine tree appears to be a *Mappia* (*Olacinaeae*) but I was unable to get complete flowers of it. There is a small piece of what appears identical with this plant in the Singapore herbarium apparently collected by Mr. Cantley in Singapore, but I have never seen the tree elsewhere in the Peninsula.

B. A big woody climber, climbing to the tops of the trees on the plateau. Branchlets stout covered with a deciduous ferruginous tomentum. Leaves alternate or subopposite elliptic subcoriaceous 6 inches long by four inches wide obtuse base broad glabrous above; midrib beneath elevated red tomentose, and lamina finely gland dotted, nerves about 10 pairs alternate elevated, reticulations transverse distinct when dry, petiole thick  $\frac{1}{4}$  inch long red tomentose. Flower spike

axillary peduncled, but too young to give any further information about it.

This is a very common liane all over the plateau, but all search for flowers or fruit was in vain except of a very young spike once found. It does not seem to have been collected by any previous botanists.

C. A medium-sized tree, branches slender covered with rather stiff appressed pale hairs. Leaves opposite lanceolate acuminate 4 inches long, one and a half inch wide, nerves about 8 pairs not very distinct, dull green nearly glabrous except for a few hairs on the midrib beneath petiole  $\frac{1}{2}$  inch long.

Common in the Plateau woods and on Phosphate hill, I could find no trace of flowers or fruit.

D. A shrub abundant at Waterfall bay on the rocks in the wood, very closely resembling *Clerodendron inerme* and possibly it, but I could not find a trace of flowers or fruit though I visited the place at several periods.

#### MONOCOTYLEDONS.

##### ORCHIDÆ.

*Dendrobium pectinatum*, n. sp.

*D. Macraei* Rendle (not of Lindley).

Creeping stems  $\frac{1}{2}$  inch through closely jointed, branches numerous 6-12 inches long greenish yellow pseudobulbs elliptic oblong flattened  $1\frac{1}{2}$  inches long  $\frac{1}{2}$  inch wide. Leaf lanceolate obtuse coriaceous 3 inches long 1 inch wide. Flowers opening singly  $\frac{1}{2}$  inch long pale yellow sepals lanceolate acute. Petals narrower lanceolate. Lip shorter, claw narrow linear, blade somewhat dilated, slightly retuse with numerous very narrow linear filaments on each side.

Abundant on trees on Phosphate Hill and the Plateau, flowering October.

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*Dendrobiums* of the section *Desmotrichum* are very difficult to describe from dried specimens, as the flowers are of thin texture and very fugacious, and as they only open for a few hours in the morning and are withered by midday. It is not often that collectors can procure good specimens. These are no doubt the reason why there has been so much confusion over these plants and for the identification of the Christmas Island plant with *D. Macraei* Lidley a species apparently confined to Ceylon, and utterly different, belonging indeed to a different, subsection.

In the Flora of British India, a number of different species are recorded as synonymous with *D. Macraei*, including the Himalayan *D. Rabani* and Javanese *D. flabellum*, a plant with large red spotted flowers. *D. pectinatum* is more nearly allied to the *D. calopogon* Rihb. fil, Xenia, Orch. p. 23 pl. 109, fig. 1. 2. of unknown locality but differs in the form of pseudobulb and narrow claw of the lip, and I cannot identify it with any described species. A considerable number of Javanese *Desmotrichums* were described by Blume in the *Bijdragen*, but as in most of his early work so badly that it is utterly impossible to guess at what he meant, and thus they had better be relegated to the class of *nomina nuda* and ignored.

*D. crumenatum*, Sw.

Common all over the island especially on trees on the Plateau. The plant which is quite typical, was scantily in flower at the time of our visit. I obtained it in 1890 and Andrews also got it.

Distribution, Malay Peninsula and Islands, Southern Siam.

*Phreatia Listeri*, Rolfe.

A small orchid with greenish white flowers in slender spikes. Common on trees on the Plateau.

Endemic. Collected also by Lister and Andrews.



*Ph. congesta*, Rolfe.

A small orchid with tufted spikes of white flowers.  
Common on trees on the Plateau. Endemic.

*Saccolabium Archytas*, Ridley.

Very common especially on the trees of the lower Terraces. Endemic. This pretty plant grows in masses on the bare trunks of the *Gyrocarpus* and other trees. The flowers are white with pink spots.

*Dendrocolla carinatifolia*, Ridley.*Sarcochilus carinatifolius*, Ridley.

Less common than the last, and chiefly on the trees on the Plateau. One plant I found had the petals of a pale ochre colour.

Collected also by Andrews. It occurs also on Pulau Aar, an Island off the East Coast of Johor.

*Thelasis elongata*, Bl? A quantity of plants of a *Thelasis* resembling *Th. elongata* Bl. occurred on trees in the plateau near Murray Hill, no trace of flowers, was to be seen, and I have failed to flower it in the Botanic Gardens. *Thelasis elongata*, Bl. is a native of Java.

*Corymbis angusta*, n. sp.

Stems 2-3 feet tall slender woody. Leaves lanceolate acuminate acute, dark green 8-11 inches long 2-2½ inches wide sheaths ribbed. Panicles 2 or 3, 4 inches long lax. Bracts ovate lanceolate acute ½ inch long. Pedicels ¾ inch long rather slender. Flowers white smaller than usual. Sepals 1½ inch long very narrowly linear. Petals similar. Lip as long, claw very long and narrow channelled, limb ovate shortly cusped edges crisped, ¼ inch across and little longer. Column slender 1 inch long, anther lanceolate blunt. Stigma ovate triangular. Rostellum very small narrow deeply bifid. Chinandrium sides winged. Fruit 1 inch long as long as the column costae very narrow.

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Common on the plateau and occasionally descending to the lower reefs, in forest. Flowers fragrant.

The genus *Corymbis* includes about six or seven species ranging from tropical Africa to Australia. All it is true are closely allied, and the differences are so slight in many that one would be almost inclined to consider them as forming one species only. There are few forms however as distinct specifically as the Christmas Island plant. In habit it is slender and weak, very different from the tall stout *C. veratrifolia* Bl. with which it has been confused by Rendle, but this might have been due to the peculiarly dry locality in which it grows. The flowers are smaller, and the extremely narrow petals and sepals, long narrow claw to the lip, the limb of which is more ovate and much smaller, and the different form of the clinandrium which has thin elevated wings on either side, and of the small narrow rostellum and broader stigma, make it quite distinct from the Javanese and Malayan species.

*Didymoplexis pallens*, Griff.

A small terrestrial orchid. Stem slender 4 inches long in flower becoming stouter and growing to 8 inches tall in fruit. Leaves  $\frac{1}{4}$  inch long ovate. Flowers 2 or 3, shortly pedicelled flesh-colored. Sepals oblong obtuse. Petals ovate obtuse. Lip entire with 3 nerves not elevated, numerous scattered papillae and a raised mass at the tip of crowded papillae, apex broad crisped denticulate. Column broad, anther rounded flat papillose. Wings obscure. Stigma transversely elliptic. Pedicels lengthening in fruit to 6 inches long. Capsule globose, with slender ribs  $\frac{1}{4}$  inch long.

Woods in the centre of the island towards Murray Hill. This plant is always difficult to find. I got 3 specimens in flower and one in fruit, growing among a carpet of *Acrostichums*.

I cannot distinguish this plant from the *C. pallens* of India and the Malay peninsula. It is probably a native too of Java, but I am doubtful as to the *D. pallens* of Smith in the Ic. Bogor, found at Buitenzorg.

*Zeurine exilis*, n. sp.

Whole plant 12-18 inches tall succulent, rhizome shortly creeping, roots fleshy. Leaves lanceolate acute light green 1-3 inches long  $\frac{1}{2}$ - $\frac{3}{4}$  inch wide glabrous, shortly petioled, sheaths papery  $\frac{1}{2}$  inch long. Stem white-hairy, peduncle (portion of stem above leaves) 3-6 inches long, raceme many flowered 1-3 inches long. Bracts lanceolate acuminate hairy. Sepals reddish hairy lanceolate acute  $\frac{1}{2}$  inch long. Petals thin white adnate to the upper sepal. Lip base saccate with broad wings, then narrowed, limb broadly bilobed, lobes broad oblong divaricate edges crenulate, processes in the base of the lip 2. slender subulate curled, whole lip white with a central yellow bar. Column short, anther lanceolate beak up curved dull red, pollinia elongate pyriform, disc large oblong. Rostellum lobes linear acuminate. No accessory processes. Capsule pubescent elliptic  $\frac{1}{2}$  inch long.

Centre of the island, among ferns not rare.

Endemic.

AMARYLLIDAE.

*Crinum asiaticum*, L. The common white *Crinum* of the Indo-Malayan shores, is abundant on the rocks in many places, e.g. Andrews Look-out, N. E. point, at the Waterfall and Rocky point. It grows in clefts in rocks often in somewhat inaccessible places over the sea, and occasionally on the more inland terraces. The form is quite typical. It commenced to flower at the close of our stay and fruit were also found. It is a natural flowering plant, and a certain attraction for *Sphinx Convolvuli*, of which insect I took two or

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three at the flowers of plants growing in the Settlement at Flying Fish Cove, this being the first record for this almost ubiquitous hawkmoth in the island. The large corky seeds are sea-dispersed being well adapted for this. Plants however occur often abundantly in hollows in rocks far from the sea at the present time, and at a great height above it, suggesting that the ancestors of these plants were there at the time when these now inland reefs were close to the sea. The plant though doubtless rapidly dispersed by sea, moves but slowly inland and apparently climbs up the rocks in the following manner. The long peduncles after flowering droop as the fruit develops till it reaches the ground when the seeds all fall and usually lie in a pile on the ground, where some at least germinate. On the sloping rock-faces the peduncles which fall towards the upper slope drop their seeds thus about four feet above the parent-plant, and so it creeps gradually up. Seeds from peduncles which droop downwards over the precipice either fall into the sea, or into the woods at the base of the precipice where they can seldom grow. Around the Malay coasts the plant almost invariably grows in sand or mud, close to the sea, but there is hardly any suitable place for this on Christmas Island as all the shores are mere masses of coral fragments turned over by the waves in the seasons of gales, and with no soil beneath. It grows however well enough where there is soil in Flying Fish Cove.

*Crinum Asiaticum*, L. is distributed over India, Ceylon, the Malay Peninsula and Islands Admiralty Isles, Japan and North Australia, Polynesia, Fiji Islands.

#### PALME.

*Arenga Listeri*, Becc.

A single stemmed palm about 30-70 feet tall and 6-15 inches through, grey and distinctly ringed.

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Spathes 4 or 5 lanceolate acuminate coriaceous pale brown ribbed and keeled towards the tip 6-8 inches long  $1\frac{1}{4}$  inch across, spadices numerous about 2 feet long with numerous spikes 18-24 inches long male flowers, calyxlobes 3 rounded imbricate. Petals  $\frac{1}{4}$  inch long spathulate woody yellow.

Stamens shorter about 40, filaments connate at the base, free about half their length, slender filiform, anthers linear oblong.

Fruit oblong elliptic  $\frac{1}{4}$  inch long pink, 3 seeded. Common all over the island but chiefly on the upper terraces. When the tree has fruited all the leaves fall off and the dead or dying stem with the inflorescences persisting has a most curious appearance. The spadices are in threes 2 males and 1 female. They are only produced about half way down from the top not down to the base as in the other species of the genus. The flower has a musky scent.

Endemic, and not closely resembling any other species. The fruit is much more like that of a *Didymosperma* being small elliptic and pink with 3 seeds elongate flattened acute at both ends, pale brown. It is very difficult to get ripe seed of this plant, as soon as the fruit is ripe hundreds of the large robber crabs swarm round the tree and devour the seeds, crushing them in their jaws. They do not eat the pulp of the fruit. Hardly one seed is left and only those survive which have fallen into cracks, or got somehow covered up and concealed from the crabs. The young shoot of the palm is excellent either raw or cooked, and formerly I procured some excellent flour made from the stem.

#### PANDANEE.

##### *Pandanus nativitatis*, n. sp.

A bushy pandan with branched stems, about 8-14 feet tall. Leaves six feet or more long 2 inches wide linear

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acuminate edge and keel with close-set pale thorns. Male spadix a foot or more long. Bracts about 10 linear acuminate 2 feet long or less 1 inch wide white. Branches of spadix 2 inches long or less numerous, acuminate not candate. Stamens very numerous in racemes, anthers linear mucronate much longer than the filaments which are very short.

Fruit as big as a man's head orange when ripe, rachis stout 6 or more inches long. Syncarps of 5 to 22 carpels, 2 inches long oblong, top broad,  $\frac{1}{2}$  inch wide irregularly angled. Stigmas little elevated.

Common along the coast edges forming dense almost impenetrable thickets along the whole coast line above the sea. Very near *P. Forsteri* of Lord Howe's Island. This has just the habit and general appearance of *P. odoratissimus*, L. the plant that is so common along the Malay coasts, but it is less glaucous, the leaves and bracts not tailed, the syncarps a little shorter and broader and more deeply grooved. The male flowers are indistinguishable.

*P. elatus*, n. sp.

Stems few together 40 to 60 feet tall 6 inches through very hard with numerous short hard aerial roots at the base, grey and sparingly thorny, above with a few erect branches. Leaves when young 6 to 10 feet long, adult 6 feet linear acute 4 inches across thorns at the base and tip very numerous and close bases swollen tip red brown  $\frac{1}{2}$  inch long more distant in the middle of the leaf, and distant on the keel. Male spadix dense about 8 inches long. Bracts over a foot long linear acuminate hardly thorny. Spikes very dense 6 inches long 1 inch through or shorter. Stamens fascicled on a short stem, anthers crowded at the top, filaments short anthers oblong obtuse shortly mucronate. Fruit on a peduncle 2 feet long and  $2\frac{1}{2}$  inches thick, oblong 12 to 15 inches long 7 inches through. Syncarps  $1\frac{1}{2}$  to 2 inches across and  $\frac{3}{4}$  inch

wide. Drupes 9 to 10 or fewer in a syncarp glaucescent bluntly angled tops free, 3 inches long  $\frac{1}{2}$  inch or less through style short. Stigma ovate acute sloping nearly  $\frac{1}{4}$  inch long. Common in the interior on the Plateau. Endemic.

#### AROIDEAE.

##### *Remusatia vivipara*, Schott.

This was obtained by Andrews on the Phosphate Hill Road in January no one has seen it there before or since. I carefully sought both the old road and the new one and the surrounding region in vain for it. But possibly it had temporarily vanished during the hot and dry season. It should be looked for again in the rains.

The plant occurs in India, Ceylon, Siam and Java but is apparently absent from the Malay Peninsula proper.

#### CYPERACEAE.

##### *Cyperus Iria*, L.

Small plants of this very widely distributed sedge were found at Smith Point.

It was evidently a recent introduction, as it was not seen by Andrews, and seemed hardly to have established itself.

##### *Mariscus albescens* Gaud, *Cyperus pennatus*, Lam.

This fine rough sedge with its great tufts of stiff glaucous leaves and panicles of pale brownish spikelets, grows on the basaltic rocks over the sea just beyond the Waterfall. It was nearly out of flower at the time of our visit and had not previously been seen.

It is a common sea shore plant distributed over Tropical Africa, India, Ceylon, Malay Peninsula and Islands, Australia and Polynesia.

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Apparently it would not grow on the limestone rocks, being confined to the basaltic outcrop.

*Fimbristylis cymosa*, R. Br.

A narrow leaved tufted sedge forming clumps resembling those of the Thrift (*Armeria*) in rocky dry spots above the sea. This was first recorded from the island by Hemsley from Lister's collection and was overlooked by Andrews. It is very common on the rocks by the wharf in Flying Fish Cove, Smith Point, beyond north-east point, and at the Waterfall and beyond towards Steep Point. It occurs in Polynesia, and Australia.

GRAMINEAE.

*Paspalum conjugatum* Berg. This grass probably of South American origin, and now abundant in the Malay Peninsula has quite recently been introduced, accidentally, and has hardly established itself yet. It was met with at the wharf, and occurs too in Flying Fish Cove by one of the houses.

*P. sanguinale* var *commutatum*.

Common all over the area cleared for cultivation and along paths. There are three forms of this, one the typical form with broad leaves and several spikes. Another with narrower leaves and narrow finely ribbed glumes. At Flying Fish Cove and Phosphate hill; and a dwarf tufted form with narrow bright green foliage, slender and few spikes and slightly ciliated glumes. This grows on Phosphate hill and in Flying Fish Cove and the Waterfall in dry open spots.

The plant is distributed over nearly all the regions warm enough for it and is very variable, but all the forms here belong to the variety *commutatum*. It had reached the island by 1890 when I saw it there, but was not collected before that, and I do not think it is indigenous.



*P. colonum*, L.

This common grass occurs in Flying Fish Cove in no great abundance. It is probably of recent introduction as it was not collected by Andrews.

It is common all over the tropics and warmer parts of the world.

*P. Andrewsii*, Rendle.

This elegant grass described by Rendle in the monograph of Christmas Island p. 192, and figured on Pl. XVIII of that work, seems to be very local. Andrews gives no specific locality for it, and I sought it unsuccessfully everywhere till I found it on the basalt outcrop above Flying Fish Cove. The plants were almost completely dried up, and those I found were much more elegant than the figure represents. It is more graceful and slender than *P. ovalifolium*.

Distribution Timor.

*Panicum clavale*, n. sp.

A tufted grass with a short creeping rhizome about 6 inches tall, stems slender. Leaves narrow linear acute glabrous 2 inches long  $\frac{1}{8}$  inch wide, ligule ciliate. Panicle slender few branched erect, branches scabrid. Spikelets solitary shortly pedicelled with a sinuous slender scabrid barren branch subtending each, about  $\frac{1}{4}$  inch long. Pedicel of spikelet very short with a cup-shaped top spikelet ovoid barely  $\frac{1}{8}$  inch long. Glume I. ovate subacute small. Gl. II. more than twice as large ovate obtuse 3 ribbed purple. Gl. III. ovate lanceolate twice as large as Gl. II. purple. Glume IV. white crustaceous finely dotted large lanceolate boatshaped Palea thin lanceolate narrower.

Very local on the dry earth above Tom's Ladder. in Flying Fish Cove not previously collected.

*Setaria glauca*, Beauv. A single plant of this almost world-wide weed of cultivation was found by me on Phosphate

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hill on ground cleared by the Chinese for cultivation. It occurs nearly all over the world.

*Oplismenus compositus*, Beauv.

Perhaps the most abundant grass on the island, growing all through the more open woods. It is the best fodder grass on the island and is regularly collected for the horses and cattle. As it is so widely distributed in the island I surmise that it is indigenous, though it was not obtained by Lister. Andrews however collected it and found it abundant. There are two forms here, one tall with long spikes the other more compact. Distribution, all tropical and warm countries.

*Ischaemum foliosum* var *leiophyllum*, Hack.

A somewhat variable usually tufted grass growing on the rocks above the sea, from beyond Smiths' Point to Flying Fish Cove, and along to near the Waterfall but scarcer on this coast. It does not grow inland. Rendle suggests that it is probably only a form of *I. ciliare*, but no two species could be more different in habit and structure. It is the *I. murinum* Forst, of Hemsley's list. The plant varies somewhat. Specimens growing in less exposed places are taller and more flaccid than those of the much exposed places. The spikelets break off when ripe and are drifted along the coast by the wind. One often sees little piles of them in holes on the rocks. Distribution New Caledonia.

*Eleusine indica*, L. This common grass is abundant on Flying Fish Cove and Phosphate Hill and near the Waterfall. It only occurs in cultivated ground, and is evidently introduced. It first appears in Andrew's collection.

Distribution all warm countries.

*Eragrostis plumosa*, Link. A pretty feathery grass forming large tufts, very abundant in dry open places. Flying Fish Cove, Smith Point, Waterfall.

First collected by Lister and doubtless indigenous.

Distribution. Africa, India, Malaya.

*Lepturus filiformis*, Br.

A grass 6-8 inches tall, forming a thick soft mat, stems branched. Leaves linear setaceous  $1\frac{1}{2}$  inch long, narrow glabrous, margins denticulate at tip. Ligule short not ciliate. Spikes solitary fragile very slender 2 inches long, joints articulate deeply excavate on one side, 1 flowered. Glume I. very small linear spatulate. Gl. II. lanceolate acuminate strongly 8 inch nerved tip and margins denticulate  $\frac{1}{4}$  inch long. Gl. III. lanceolate acute shorter base pubescent not nerved. Palea oblong lanceolate obtuse. Grain elliptic oblong smooth. Second rudimentary flower, a small linear spatulate organ.

Abundant near the Waterfall and to the north along the cliff edge, also occurring towards steep point, and sporadically at Smith point.

Distrib. Ceylon, Malay Islands, Australia, Polynesia.

Always a sea shore plant the spikes break up readily into joints and are doubtless sea drifted.

Gymnosperms.

*Cycas circinalis* var *javana*, Miq.

A tall plant about 20 feet high, with rather slender pinnae to the leaves. I did not see fruit or flowers, Andrews says it grows all round the island and is most plentiful on the upper terrace at the west end of the south coast. I found it comparatively scarce, and the plants all isolated, one in Flying Fish Cove, one on Phosphate hill, one near Andrew's Lookout, and one on Steeprock. Except the one in the Cove, all were on the upper terraces a good way from the sea. This is interesting as the seeds of *Cycas* are typically sea disseminated, and these plants though growing on the coral

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rocks formerly washed by the sea, are now far out of reach of the waves, and the plant probably reached the island in its early days. I saw no young plants and it does not appear to be spreading. I am not sure as to the species of this plant but have followed Rendle in the name. The pinnae are much more narrow than in *C. Rumphiana*, the common Malayan species.

FERNS.

*Trichomanes parvulum*, Poiret.

On trees on the Plateau, (Andrews.) I found very young plants of a species of *Trichomanes* probably this, on the Plateau.

Distribution, Madagascar, Malaya, Polynesia.

*Davallia solida*, Sw.

Very common on trees on the Plateau, etc.

Distribution. Malay Peninsula and Islands, Polynesia.

*D. dissecta*, J. Sm. On trees and rocks Plateau, N. Coast, etc.

Distribution Java.

*D. speluncae*, Baker.

One frond brought by Andrews. Common in Flying Fish Cove and on the road to the Waterfall.

Distribution most warm regions.

*Pteris quadriaurita*.

Near houses in Flying Fish Cove and one young plant along the track to the Waterfall. Doubtless a recent introduction. It often turns up in this way in the Malay Peninsula.

*Asplenium Nidus*, L.

Very common on trees on the plateau. First collected by Lister.

Distribution, tropics of the old world.

*A. fulcutum*, Lam.

Common on trees on the plateau. First collected by Lister.

Distribution Africa, India, Malaya, and Polynesia.

*A. centrifugale*, Bak. Journ. Linn Soc. XXV p. 360.

This endemic fern was first found by Mr. Lister. It seems very rare as Andrews did not find it, and I only found a small plant of what I take to be this on the rocks, at Tom's Ladder in Flying Fish Cove. My plant is very small only about 3 inches tall.

*Nephrolepis exaltata*, Schott.

Rocks, West End of Flying Fish Cove.

Distribution, Tropics.

*N. acuta*, Presl. Common on the ground all over the Plateau, etc.

Distribution, Tropics.

*N. ramosa*, Moore. A very pretty fern with a slender rhizome creeping up the trunks of trees on the Plateau near Irvine Hall.

Distribution. Africa, Ceylon, Malaya, Australia.

*Niphobolus adnascens*, Sw. A very abundant epiphytic fern on tree trunks; Flying Fish Cove, Plateau etc.

Distribution, Africa, India, Malaya, Polynesia.

*Pleopeltis irioides*, Lam.

Epiphytic on trees and rocks Plateau. Very fine large plants. One frond forked at the tip was found.

Distribution Africa, India, Malaya, Australia, Polynesia.

*Pl. phymatodes*, L.

On rocky cliffs above Flying Fish Cove, scarce. This form had the sori in two rows only. Not previously recorded. Distrib. Africa, Ceylon, Malaya, Polynesia.

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*Vittaria elongata*, Sw. A common epiphytic fern on trees on the plateau, a large form. Distribution Africa, India, Malaya, Australia, Polynesia.

*Lastraea dissecta*.

A big fern common at Flying Fish Cove and Phosphate hill.

Distribution, India, Malaya, Polynesia, Madagascar.

*L. Blumii*, Nees. *Nephrodium intermedium* Baker.

Collected by Lister, I did not meet with it.

Distribution India, Malaya.

*L. serratulata*.

Flying Fish Cove. Common.

Distribution, India, Malaya.

*Aspidium polymorphum*, (Bak).

North West Point not common (Andrews) I did not get to this locality and saw the plant nowhere.

Distribution, Indo-Malaya.

*Pleocnemia membranacea* (*Aspidium membranaceum*, Hook).

Abundant on the plateau and the sloping talus of Flying Fish Cove. A most attractive bright green fern, Andrew's gives it "on trees everywhere" but it is always terrestrial.

Distribution, Ceylon, Malay Islands, China.

*Nephrodium truncatum*, Presl.

On the wet rocks of the fresh-water stream near the Waterfall. Doubtless the same spot at which Andrews got it.

Distribution, Indo-Malaya.

*Gymnopteris flagellifera*.

Very common all over the plateau densely covering the ground in parts. Andrews gives it as rare but it

grows in very extensive patches and is very abundant  
Distribution India, Malaya.

*G. Listeri*, Bak.

Abundant on the Plateau. This grows like the last in great masses on the ground, often mixed with the other species but more frequently alone, also on Phosphate Hill.

Endemic.

LYCOPODIACEÆ.

*Lycopodium phlegmaria*, L.

Fairly common high up on trees, on the Plateau.

Distribution tropics of the old world.

*Selaginella rupicola*, n. sp.

A slender plant 6 inches tall with few sub-erect branches, rooting for half or more than half its length, stem terete below, angled above. Leaves dimorphous ovate sub-clasping obtuse edges ciliate 1/16 inch long, distant; the others much smaller ovate cuspidate ciliate. Spikes ¼ inch long. Bracts dimorphous, sterile ones boat shaped subacute edges ciliate, fertile ones ovate cuspidate ciliate keeled.

In holes in the rock at Smith Point rare. Endemic.

MOSSES.

Identified by Mr. A. Gepp.

*Fissidens Hollianus* Doz. and Molk. Bry. Jav. I. p. 4 t. 4.

On the Plateau, a new record.

*Leucobryum chlorophyllosum*, C. Muell.

On the Plateau, collection also by Andrews.

Distribution, Sumbawa, Celebes.

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- Leucophanes glaucescens*, C. Muell.  
 With the last, a new record.
- Thyridium fasciculatum*, Mitten.  
 Waterfall, Phosphate Hill common: also collected by  
 Andrews.  
 Distribution Indo-Malaya, Polynesia, Chile, Mauritius.
- Trachymitrium revolutum*, Hampe, Christmas Island, no  
 special locality, collected by Andrews.  
 Java and Borneo.
- Syrrhopodon revolutus*, Dozy. and Molk.  
 Phosphate Hill, new to the flora.
- Orthorrhynchium philipinense*, C. M.  
 Phosphate Hill, new to the flora.
- Neckera Lepineana*, Mont.  
 Plateau, also collected by Andrews.  
 Distrib. Malay Archipelago, Oceania, Mauritius.
- Neckera lorifarmis*, V. D. Bosch.  
 Plateau, new to the flora.
- Callicostella Prabaktiana*, V. D. Bosch.  
 Irvine Hall, new to the flora.
- Taxithelium instratum*, Broth.  
 Common, Plateau, Phosphate Hill, new to the flora.
- Thuidium plumulosum*, Doz. and Molk.  
 Christmas Island, no special locality (Cole Andrews.)  
 Distrib. Ceylon, Malaya, Oceania.
- Hypnum Montagnei*, Lec. Christmas Island, no special locality  
 Coll. Andrews.  
 Distrib. Java.



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*Isopterygium Jelinkii*, (C. Muell.) Fleisch.

Common all over the hill Plateau. (Identified by M. Fleischer.)

*Ectropothecium micronesiense*, Fleisch.

Common Flying Fish Cove. Phosphate Hill, Irvine Hall, etc., a new species.

HEPATIC.

Identified by Mr. A. Gepp.

*Ptychanthus squarrosus*, Mont.

Christmas Island, no specific locality (Coll. Andrews.)  
Distrib. Malay Archipelago.

*Pt. striatus*, Nees.

Plateau, a new record.

LICHENS.

*Leptogium sinuatum*, Kalchbr.

Phosphate Hill, a new record.

*L. phyllocarpum*, Nyl? Christmas Island; no specific locality  
(Coll. Andrews.)

*Usnea trichodea*, Asch.

Common on the Plateau; also collected by Lister.

*U. articulata*, Hoffm.

Common on Phosphate Hill. New to the flora.

*Ramalina callicarpis*, Fries.

Flying Fish Cove, Phosphate Hill, new to the flora.

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*R. fraxinca*, Ach. Christmas Island; no special locality (Coll. Andrews.)

*Parmelia perforata*, Ach.

Phosphate Hill, new to the flora.

*P. tinctorum*, Despr.

Christmas Island; no specific locality (Coll. Andrews.)

*P. appendiculata*, Fee? Christmas Island; no specific locality (Coll. Andrews.)

*Physcialicta*, Nyl. Christmas Island, no specific locality (Coll. Andrews.)

*Lecanora*, sp.

Phosphate Hill, with *Parmelia perforata* Asch.

*L. varia*, Asch. Christmas Island, no specific locality (Coll. Andrews.)

*Lecidia lutea*, Schaer? Christmas Island, no specific locality (Coll. Andrews.)

*Pannaria rubiginosa*, Del? Christmas Island, no specific locality (Coll. Andrews.)

*Pynine sorediata*, Ach. Christmas Island, no specific locality (Coll. Andrews.)

*Graphis*, sp. Christmas Island (Ridley.)

*Nephromium tomentosum*, Nyl. Christmas Island (Ridley) a new record.

*Thelotrema glaucescens*, Nyl.

Flying Fish Cove, a new record.

R. A. Soc., No. 45, 1905.

FUNGI.

Identified by M. G. Masee.

*Basidiomycetes.*

*Favolus albidus*, Masee. A small white agaric luminous at night. Plateau at Irvine Hill.

Endemic, a new species.

*Flammula sapinea*, Fries. Pileus violet above, fulvous orange beneath; a new record.

*Volvaria haplotricnia*, Berk and Broom. A grey agaric. Flying Fish Cove, a new record.

*Pleurotus promethius*, Berk and Curt. A white fungus growing on dead wood; eaten by natives

Common on the Plateau, a new record.

*Lentinus Lecontei*, Fries.

Dark brown, Murray Hill track, centre of Island. A new record.

*L. fulvus* Berk, no special locality, a new record.

*L. velutinus*, Fries.

„

*Lenzites platyphyllus*, Cooke. Common pale fawn above, white below. Waterfall, Phosphate Hill, a new record.

*Schizophyllum commune*, Fr.

A common grey fungus; Phosphate Hill etc., on dead timber. Common all over the world. Collected also by Andrews.

*Polyporus confluens*, Fr. No special locality; collected by Andrews.

*P. subzonalis*, Cook. Fawn colored.

Common Phosphate Hill, Murray Hill track, Flying Fish Cove. On dead wood, a new record.

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*Fomes lucidus*, Fr.

Phosphate Hill, common, on dead wood. Also collected by Andrews.

*Fomes australis*, Fr.

Collected by Andrews and Lister.

*Fomes conchatus*, F. (Collected by Lister without special locality.)*Polystictus flabelliformis*, Kl.

Common everywhere, Phosphate Hill ; also collected by Andrews.

*Polystictus occidentalis*, Klotsch.

Velvety light brown. Phosphate Hill ; a new record.

*P. xanthopus*, Fr.

Common Phosphate Hill, collected also by Andrews.

*P. brunneo-pictus*, Berk. A dark sepia brown fungus, Flying Fish Cove ; a new record.*P. sanguineus*, Fries. Common red fungus on old timber. Flying Fish Cove, also collected by Andrews.*P. luteo-olivaceus*, B. and Br. no special locality, collected by Andrews.*Hexagonia palygramma*, Mont. no special locality, collected by Andrews.*H. similis*, Berk.

Phosphate Hill, Murray Hill road, new record.

*Daedalea tenuis*, Berk. No special locality, collected by Andrews.*D. subcongener*, Berk. pale brown. Flying Fish Cove, a new record.

R. A. Soc., No. 46, 1905.

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*D. paronia*, Berk. ocreous brown with darker rings, Phosphate Hill, a new record.

*Favolus tessulatus*, Berk and Curt.

Light brown, Phosphate Hill, a new record.

*F. boucheanus*, Klotsch, no special locality collected by Andrews.

*Laschia coespitosa*, Berk. no special locality collected by Andrews.

*Stereum lobatum*, Fr. common. Phosphate Hill collected also by Lister.

*Hydnum concrescens*, Fries, no special locality, a new record.

*Lachnocladium furcellatum*, Sw. no special locality a new record.

*Xylaria digitata*, Fr. Black. Flying Fish Cove, a new record.

*X. fistulosa*, Lev. Black. Phosphate Hill, a new record.

*X. hypoxylon*, Grer. Black. Flying Fish Cove, Murray Hill Track, a new record.

*Hirneola polytricha*, Mont. Common used as food by natives. Flying Fish Cove, Plateau ; a new record.

*H. auriculæ—Julae*, Berk, no special locality, collected by Andrews.

*Guepinia sparassoides*, Kalchbr (collected by Andrews.)

*G. spathularia*, Fr. no special locality, a new record.

*Poria chlorina*, Masee. a new species ; a yellow crustaceous fungus on dead wood, Flying Fish Cove, not rare.

*Rhopalopsis heliscus*, Mont. on dead wood, black. Irvine Hall, a new record.

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*Daldinia concentrica*, Cesati. Common everywhere on dead wood, Phosphate Hill, Steep point etc., a new record.

GASTEROMYCES.

*Cyathus montagnei*, Tul. no special locality, collected by Andrews.

*Geaster Andrewsii*, Blackm. Endemic, collected by Andrews.

*Lycoperdon hiemale*, Bull. A large fawn colored puff ball. Smith Point, a new record.

*L. piriforme*, L. Small brown puff balls on rotten wood, Smith point, a new record.

ASCOMYCETES.

*Trichoscypha tricholoma*, Mont. no special locality, coll. Andrews

HYPHOMYCETES.

*Stilbum javanicum*, no special locality, coll. Andrews.

MYCETOZOA.

*Stemonitis splendens* var *genuina*, common Flying Fish Cove and Phosphate Hill (Andrews) Plateau.

*Arcyria flava*, Pers. no special locality, coll. Andrews.

*Lycogala miniatum*, Pers. no special locality, coll. Andrews.

ALGAE.

No algae have previously been collected on the Island.

*Bangia ciliaris*, Carm. Hook. Brit. Flora. II. 316 subspecies *disparis*.

No. 231.

B. A. Soc., No, 45, 1905

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- Halymeniapolyclada*, A and E.S Gepp n. sp.  
Flying Fish Cove (231 on rocks at the West End.)
- Gracilaria corticata*, J. Ag. Sp. Alg. Waterfall Cove.
- Carallina*, sp. Waterfall Cove.
- Jania micrarthrodia*, Lam. Polyp. Flex. p. 271.  
No. 235.
- Rhodophyllia peltata*. Grun. Alg. Tidschr. p. 34.
- Ceramium clavulatum*, Ag.  
Cove near the Waterfall.
- Hypnea pannosa*, J. Ag. Liebm, p. 14.  
Waterfall Cove.
- Bostrychia tenella*, J. Ag. Sp. Alg. II. p. 3.  
In the mouth of the blowhole on the cliff a mile  
beyond the Waterfall.
- Ectocarpus spongiosus*, Dickie Journ. Lam. Soc. XIV. p. 191.  
Cove near the Waterfall.
- Dictyota dichotoma*, Lam. Desv. Journ. de Bot. 1809, p. 42.
- Padina Commersonii*, Bory. Voy. Coquille 41.  
Common, Flying Fish Cove.
- Turbinaria ornata*, J. Ag. Sp. Alg. I. 266.  
Very common, covering the rocks all round the coast.
- Sargassum Wightii*. Grev. J. Ag. Sp. Alg. I 329.  
Cove near Waterfall on rocks.
- Avrainvillea lacerata*, J. Ag. Till. Alg. Syst. VIII. p. 54.  
Common, Flying Fish Cove and Waterfall Cove.

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*Chnoospora fastigiata*, J. Ag. Alg. Lichm.  
Cove near Waterfall.

*Ulva Lactuca*, L. Flying Fish Cove.

*Cladophora repens*, Har. Phycol. Brit. t 236.  
Flying Fish Cove, Cove near Waterfall.

*Caulerpa peltata*, Lam. Journ. de Bot. 1809 p. 145.  
Waterfall Cove.

*Choetomorpha javanica*, Kuetz. Sp. Alg. p. 376.  
Flying Fish Cove.

*Enteromorpha compressa*, Grev. Alg. Brit. p. 180.  
Flying Fish Cove.

*Siphonocladus Zollingeri*, Born. Journ. de Bot. 1887, p. 56.  
Flying Fish Cove.

#### DISSEMINATION OF THE PLANTS OF CHRISTMAS ISLAND.

Christmas Island as far as there is any reason to believe is a true Oceanic Island, that is to say, it has never at any time been connected with the mainland of Java or with any other land. Its geology was carefully studied by Andrews and is described in the Monograph of Christmas Island. He shews it to be an extinct volcano covered with coral reefs of various ages from the eocene period to the present day. This being so it follows that the indigenous plants reached the island by means which enabled them to cross the sea either by their seeds being drifted by sea-currents, or blown there by the wind, or carried by birds or bats.

It is probable that some part of the island was above water, and capable of maintaining terrestrial plants in Miocene times so that some of the plants may have established themselves as early as that period, but no fossil plants have yet been



obtained there, nor are we yet acquainted with the Miocene flora of the neighbouring countries, so as to be able to suggest which of the plants if any belong to that date.

For the purposes of this paper I have classified the plants found in the various islands which are considered to have been always isolated from the mainland according to the methods by which their seeds or fruits can be disseminated and conveyed across a large tract of sea.

In this way plants may be divided into seven classes, viz. 1. *Sea-borne*. 2. *Bird or bat-borne*, by the seeds being swallowed by these animals and eventually deposited uninjured. 3. *Adhesive* (the seeds or fruits being attached to their fur or feathers and so conveyed). 4. *Plumed seed*. 5. *Winged seed or fruit*. 6. *Powder seed*; these last three being conveyed by gales of wind: and 7. *Weeds*, plants dispersed accidentally or more or less intentionally by man. There are some other methods of dissemination on land which cannot come into play in populating islands, such as dispersal by terrestrial animals, and insects, and by streams or rivers, and these may be neglected though they may act in dispersing a plant (the seeds of which have once been successfully landed) over the remainder of the island.

There are a certain number of plants often widely distributed which are certainly disseminated by one of these seven methods, but by which is at present doubtful. Such for instance are the herbaceous *Malvaceae* and many grasses and sedges, and again there are some plants which may reach these islands in more ways than one. *Portulaca obracea* may be an example of this. In some cases it appears to have been accidentally introduced as a weed, while in others it apparently came by sea. In this paper I class it as Sea-borne.

The weeds of human introduction have been already discussed. It remains to deal with the six other classes. (1) *Sea-borne* seeds or fruits. The larger Sea-borne seeds or fruits are tolerably well known for the most part. They have often some adaptation or modification for protection from the action of the sea water, as in the case of the strongly developed bladder-like calyx of *Hernandia* which protects the seed

enclosed in it from the action of the salt water, and also aids to float it, and the corky outer coat of the seed of *Carapa*.

But many of the seeds often sea-dispersed have no more protection than the hard seed-coat. Such are the beans *Canavalia*, *Erythrina*, *Strongylodon*, *Entada*, *Guilandina* etc. It is essential of course that these seeds should float uninjured and it is necessary also that the plant should be able to grow on the sea shore when it arrives; so that the greater number of Sea-borne plants are always to be found on the shores or close to the sea. But there are some, such as *Terminalia Catappa* and *Eugenia grandis* which also can grow for some way at least inland, and their fruits are carried by bats or birds to some distance from the sea, whence they originally landed. Probably a good many plants travel by sea occasionally and arrive in safety at distant islands which one would not imagine to be able to travel so. I have seen plants of *Dendrobium crumenatum* a widely distributed plant floating apparently quite uninjured by sea water in the Banka Strait far from land, and I have been informed by Mr. Ross, that a clump of sugarcane had once drifted up upon Cocos Island where it began to grow and was eventually propagated. Many small seeded plants which commonly occur on sea beaches and shores are almost certainly sea dispersed, but owing to the smallness of their seed they have not been detected in sea drift, and thus one may be uncertain about them. A good deal more information is wanted on this head.

As to the direction of sea-currents in these seas, I have but little information but I may remark that we found plenty of pumice-stone in the eastern corner of Flying Fish Cove and this had doubtless come from Krakatau, which is west of Christmas Island, and in 1890 I saw, in going from the Sunda Straits to Cocos and Christmas Islands, much of this pumice floating in large patches. The pumice also occurred some years ago in quantity on the point known as Tanjong Gol in the extreme south west of Singapore. So that currents capable of carrying pumice-stone run both east and west from Krakatau. Seeds therefore of plants could be brought to Christmas Island at least from Java and Sumatra without

requiring to be drifted to Australia and back. Andrews points out that the Ocean current which passes the island is the equatorial drift which comes down from the Timor sea and receives tributaries through the Straits between Bali and Lombok etc. This would bring down doubtless all the Seaborne seeds of Australian types on the island. But there must be also currents from the north to account for the typically Javanese plants.

The absence of many plants of which the seeds must at times have reached the island is perhaps due to the unsuitability of soil for them. Thus the Mangrove plants, *Rhizophora*, *Bruguiera* and *Avicennia* the fruit of which may be seen in abundance drifting down the Banka Straits are absent, *Cerbera odollam* too seems to have failed to properly establish itself though a tree of this was seen by Andrews. It seems to have disappeared since. There is in fact no suitable ground for these plants which require a muddy soil for their existence. *Pangium edule* a riverbank plant, the seeds of which have been seen in sea drift in other parts of the Archipelago besides Christmas Island where I found one battered seed, has not succeeded in establishing itself as there is no place suited for it.

Some of the plants which have established themselves are very local and only growing special soils, such are *Mariscus albescens*, on the out crop of volcanic rock near the Waterfall, and *Nephrodium truncatum* on the mud by the fresh-water stream in the same locality, both evidently plants which cannot grow on the coral reefs or their detritus.

The great height of the cliffs surrounding the island for its greatest part would also militate against the successful landing of sea-drifted seeds. There are as far as is known only two or three possible landing places for such plants, Flying Fish Cove, the Waterfall bay and a few smaller beaches beyond, the West white beach and a few other possible spots, but in former years there may have been other suitable spots, and during the Monsoon the waves beat up very high on parts of the coast, and seed might be thrown to the top of many of the lower cliffs.

During my stay in Christmas Island I looked for fruits and seeds washed ashore in the bays but could find very few.

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During the heavy storms there might be more. All I could find were *Terminalia Catappa*, *Guettarda speciosa*, (sunk) and the remains of a seed of *Pangium edule*. Portion of a rhizome of a bamboo, long dead however, was found in a bay near the Waterfall. No bamboos are grown on the island. Mr. Chapman however after my departure at my request kindly sought for seeds etc., after heavy storms, and obtained seed of *Cerbera odollam*, *Terminalia*, *Entada scandens*, *Pandanus*, and fruits of *Bruguiera* dead and nibbled by molluscs, and carrying barnacles. Also he found many large bamboos with shoots but dead on the West white beach.

The following is the list of plants probably introduced by sea-currents to Christmas Island.

- Portulaca oleracea.*
- Ochrocarpus ovalifolius.*
- Calophyllum inophyllum.*
- Malvastrum tricuspidatum.* Probably.
- Sida spinosa.* Probably.
- Abutilon auritum.* Probably.
- A. Listeri.* Probably.
- Hibiscus vitifolius.* Probably.
- H. tiliaceus.* Common sea drifted plant.
- Colubrina pedunculata.*
- Erythrina indica.*
- Strongylodon ruber.*
- Galactia tenuiflora.*
- Canavalia.* Common in sea drift.
- Pouqamia glabra.*
- Inocarpus edulis.*
- Gudandina bonducella.* Well known as a sea drift seed.
- Entada scandens.* Well known as a sea drift seed.
- Terminalia Catappa.* Well known as a sea drift seed.
- Combretum acuminatum.*
- Quisqualis indica.*
- Gyrocarpus asiatica.*
- Barringtonia rubra.*
- Pemphis acidula.*
- Sesuvium portulacastrum.*

- Guettarda speciosa.*  
*Morinda citrifolia.*  
*Wedelia biflora.*  
*Scoevola Koenigii.*  
*Cerbera Odollam.*  
*Ochrasia Ackerlingoe.*  
*Tournefortia argentea.*  
*Cordia subcordata.*  
*Ipomea pes-caprae.*  
*I. grandiflora.*  
 Possibly also *I. peltata*, *digitata* and *Campanulata*.  
*Convolvulus parviflorus.*  
*Asystasia alba?*  
*Boerhaavia.* The fruits however are adhesive and may  
 have been brought by birds.  
*Hernandia peltata.*  
*Euphorbia atoto.*  
*Croton caudatus.*  
*Crinum asiaticum.*  
*Pandani.*  
*Mariscus albescens.*  
*Finbristylis cymosa.*  
*Lepturus repens.*  
*Ischoemum foliosum?*  
*Cycasiscinialis.*

Some years ago a number of seeds drifted up in Cocos Island were sent me by Mr. Ross. They included.

- Mucuna* sp.  
*Cynometra.* Pods containing seed.  
*Entada scandens.*  
*Strongylodon ruber.*  
*Guilandina bonduc.*  
*Garcinia mangostana* fruit.  
*Carapa moluccana.*  
*Hodgsonia heteroclita.*  
*Ochrocarpus ovalifolius.*  
*Pangium edule.*  
*Heritiera littoralis.*  
*Terminatra catappa.*

*Alcurites moluccanus*.

*Quercus* 2 species.

*Erythrina* probably *indica*.

*Canavalia lineata*.

*Barringtonia* 2 species?

and several other indeterminate seeds. Most of these were in good condition, and would probably have readily germinated but of all, only two species are established on the island, viz. *Guilandina bonduc*, and *Aleurites moluccanus*. Mr. A. S. Keating in Holmans travels quoted by Mr. Hemsley (Voy. H. M. S. Challenger Botany of South Eastern Moluccas p. 114) records also the "Soap-tree" (probably *Sapindus*) Castor-oil (*Ricinus communis*), and timber from Java and Australia and suggests that the seeds were first drifted to the Australian coasts by the North-West monsoon and then back again by the South-East trade wind. In view of the fact that there are no plants on the island nor seeds in these lists at all characteristic of Australia, and the abundance of specimens of almost all kinds mentioned in Mr. Ross' collection and the absence of the Australian and Polynesian forms occurring in Christmas Island, viz *Inocarpus edulis*, *Ischoemum foliosum* and *Finbristylis cymosa* (represented in Cocos by the Malayan *F. glomerata*.) I should doubt this very much, in spite of the trees of blue gum wood of Australia said to have drifted there.

All the plants recorded from Cocos Island in Forbes' list (introduced plants excepted) occur in Christmas Island, except *Triumfetta procumbens*, *Guilandina Bonduc* (replaced by *G. Bonducella*, *Ochrosia parviflora* (represented by *O. Ackeringae*) *Dicliptera Burmanui*, (*D. macleari* in Christmas) *Fleurya aestuans* (*Urera Gandichandiana*) represented by *Pl. ruderalis* Gaud. *Stenotaphrum lepturoide* (said to be identical with *S. americanum* by Hemsley) and *Finbristylis glomeratus*.

There are however in Christmas Island three noticeable plants of Australian and Polynesian origin only, *Inocarpus edulis*, *Ischoemum foliosum* and *Finbristylis cymosa*. These it is most probable arrived by sea at Christmas Island. It would indeed be unlikely for any bird except sea birds to fly successfully for that distance, nor is it probable that even

plumed seed would be drifted by wind from Australia to Christmas Island.

2. *Bird and bat-borne seed and fruit.* By this class of seed I mean those that are carried about by birds or fruit-bats swallowing the fruit or seeds and afterwards passing the seed in their excreta. Fruits and seeds dispersed by adhering to fur or feathers are classed separately for they may be dispersed by sea birds only, while this class require the aid of frugivorous birds.

Most of the seeds borne by birds and bats internally are enclosed in fleshy drupes, berries, and figs, but it is certain also that a number of seeds of small hard seeds or fruits such as those of the capsular *Euphorbiaceæ* are also swallowed by birds and passed unharmed, though it is hard to see why a hard dry seed such as those of *Macaranga*, and *Sapium sceleratum* (a plant thus dispersed by birds in Fernando de Noronha) should be attractive to birds. Possibly also some of the fruits of the *Cypcracæ* and grasses found in Oceanic Islands have been brought there by birds.

Fruit-bats though fond of large-sized drupes do not usually at least swallow them but flying to a neighbouring tree nibble off the flesh and drop the stone on the spot. They however eat figs greedily, swallowing the whole fruit.

Christmas Island possesses at present as residents the following frugivorous birds and mammal. A fruitbat, two pigeons, *Carpophaga whartoni* and *Chalcophaps natalis*, the white-eye *Zosterops natalis* and an occasional fruit or seed-eater *Merula erythropleura*. All are endemic, but the *Chalcophaps* is hardly distinct from the common Malay one. The white pigeon *Myristicivora* has been seen on the island, blown over in heavy gales, and a minah (*Acridotheres*) was shot on the island during our visit but may possibly have been brought over by a native. How many more birds have been driven on to the island by the heavy gales and either perished or managed to fly back again no one can say. Many waders, as well as wagtails and a duck seem to come over regularly from Java.

In the commencement of the afforestation of an Oceanic Island, it is obvious that the first terrestrial birds who bring the seeds of such fruit as they eat must perish of starvation or less probably fly on to other places where they can get food. It is only when food has become plentiful by the growth of the seeds birds have brought that the frugivorous birds can settle down in an island.

In Cocos Island there seem to be no frugivorous birds, nor can the *Pteropus* occasionally finding its way there survive its voyage. (Forbes wanderings p. 32). *Pteropus* however can subsist very well on shoots of trees as well as fruits.

In Cocos Island there are no fruits suitable for frugivorous birds except those of a few introduced plants so that birds requiring food of this nature would hardly be likely to survive a long voyage to the island.

I made some experiments in the Botanic Gardens in Singapore with fruit-eating birds, to discover if possible how long they retained the seed of fruits they had swallowed before passing them.

A Cassowary was fed with fruits of the *Cocoplum* (*Chrygobalanus Icaco*) at 9.20 a.m. and passed the seed after 8 p.m. but before morning.

A Hornbill fed with *Cocoplum* passed the seed at the same time as the Cassowary. It ate berries of *Rhodamnia trinervia* at 10 a.m. and passed some of the seed at 12, and the rest at 2 p.m. It ate fruits of *Carissa carandas* at 7 a.m. and passed some at 8 a.m. the rest at 1 p.m.

*Myristicivora*, the white pigeon known as the Rawai was unable to swallow seed of the *Cocoplum* or that of the Rambutan, *Nephelium lappaceum*. It ate *Rhodamnia* fruits at 10 a.m. and passed all the seed at once at 1 p.m. It ate fruits of *Pinanga kuhlii* at 8.30 a.m. and began to pass them at 10 a.m. continuing till it passed the last at 4 p.m. *Carissa* fruits, it swallowed at 7 and passed the seed at 8 a.m. and 1 p.m. as did the Hornbill.

It was observed that when fed with much fruit, and these birds passed the seed more slowly than when they had but little given them.



Betel nuts with the husk on were swallowed by the hornbill but it vomited up the seed. Naturally this fruit is not eaten by any animal so far as I am aware. Rambutans (*Nephelium*) it only pecked and sucked not swallowing the seed.

It would appear from these observations that these birds would only carry the seed for a distance which could be covered by them in 8 hours or a little more, so that in conveying seeds from say Java to Christmas Island about 300 miles the birds must make the passage in a comparatively few hours.

#### BIRD AND BAT-BORNE SEEDS.

*Limacia nativitatis.*

*Pittosporum nativitatis*, fruits of *P. ferruginens* in Sin. a pore commonly so carried.

*Grewia* two species.

*Acronychia Andrewsii*, Fruits, pink berries.

*Dysoxylon amooroides*, Seed swallowed by birds.

*Celastrus paniculatus*?

*Vitis repens.*

*V. pedatus*, Berries pink.

*Lea sambucina.*

*Allophylus Cabbe*, Berry red.

*Eugenia*, Drupe small red.

*Zehneria*, Berry small pink.

*Heptopleurum.*

*Randia densiflora*, Drupe small red.

*Ardisia pulchra*, Drupe small.

*Sideroxylon sundaicum*, Favourite food of *Carpophaga*.

*Ehretia luxifolia*?

*Solanum biflorum*, Berry red.

*Physalis minima.*

*Datura alba*, From the way *D. fastuosa* spreads in Singapore I believe it is dispersed by birds, though its dry and indeed poisonous seed does not seem inviting.

*Callicarpa longifolia*, Drupe white small.

*Premna lucidula*, Drupe white small.

*Deeringia celosioides*, Drupes red.

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*Cryptocarya nativitatis*, Favourite food of *Carpophaga*.

*Claoxylon caeruleescens*.

*Macaranga tanarius* ?

*Celtis cinnamomea*.

*Trema amboinensis*, Drupes orange, commonly dispersed by birds in Singapore.

*Ficus retusa*, Eaten by bats and birds.

*F. saxophila*, Figs bright red or orange.

*Laportea* ?

*Boehmeria platyphylla* ?

*Arenga Listeri*, Berry pink.

*Spondias dulcis* may have been sea-drifted to the Island as fruits of one species have been found in sea-drift in Jamaica, but it is stated that it is commonly carried about by Hornbills in Java, and as these are far-flighted birds one or more may have reached Christmas Island at some period. The fruit appears to be too big for *Carpophaga*, as it remained untouched at the foot of the trees, and the trees were confined to a limited area.

It is perhaps worth noting that all these plants in this list are either Javanese or from one of the neighbouring islands or allied to plants from this region, with the exception of *Cryptocarya nativitatis* of Australian affinities.

#### ADHESIVE SEEDS OR FRUITS.

These are furnished with hooks, bristles, or hair, or a gummy secretion by which they adhere to the fur or feathers of birds and animals and are so borne from place to place. This class of seeds is rare in Oceanic Islands, the greater number of the plants possessing such means of dissemination being low growing plants, with which birds seldom come in contact. Such are *Centotheca* and *Laphotherum* grasses dispersed by mammals walking through the forests. These plants through common and widely dispersed through the Malay region are absent from the

Island. Several of the weeds are dispersed by their adhesive fruits such as *Synedrella* and *Paspalum conjugatum* but these evidently did not reach Christmas Island without the aid of human beings and are not yet to be found in any parts of the island which is not constantly visited by man.

The following list contains all the plants exclusive of weeds which seem to have reached Christmas Island by adhering to the feathers of birds.

*Triumfetta suffruticosa*, A shrub with capsules covered with hooked bristles very adhesive. Probably brought by sea-birds, as it was abundant in two places where the birds nested.

*Dicliptera Mucleari*. Low herb, adheres by its spiny bracts.

*Anisomeles ovata*, perhaps adheres by its spiny calyx.

*Leucas*, adheres by its spiny calyx.

*Boerhaavia*, fruits glutinous and sticky may be sea borne, but I found it not only on the sea shore but on high cliffs above Flying Fish bay, where it is hardly likely to have been thrown by the sea.

*Pisonia grandis*, and *P. excelsa*, Fruits when ripe split and exude a glutinous matter very adhesive. Forbes mentions (Naturalist's wanderings pp. 30, 33) how he found a *Pisonia* in Cocos the fruits of which adhered to the feathers of the herons, and often killed them by clogging their feathers. One of these herons was *Demiegretta sacra*, not rare in Christmas Island. Many sea birds nested in the trees of *Pisonia grandis*, but I did not find any fruits of this species so that I am not sure whether they are as adhesive as those of *P. excelsa*.

*Achyranthes aspera* has spiny burrs which are adhesive, and is commonly to be found on the cliff edges near the boody's nesting places.

All these plants are either Javanese or have Javanese affinities except *Pisonia grandis*, a native of Australia and Polynesia.

## PLUMED SEED AND FRUITS.

These are chiefly of plants belonging to the orders *Apocynaceae*, *Asclepiadeae*, *Compositae*, with a few *Gesneraceae*, and grasses. The seed or fruit are disseminated by wind, and it might be thought that these would readily be conveyed to Oceanic Islands, as are the dust seed plants. This is not the case. They are comparatively scarce, and curiously most of the *Compositae* of Oceanic Islands are the ones which have plumeless fruits, introduced weeds excepted. Only 3 plants with distinctly plumed fruits or seeds are known from Christmas Island, of these one *Ageratum conyzoides* is certainly a weed. The others are *Blumea spectabilis* and *Hoya Aldrichi*. The former is a hill forest plant of the Malay region, the latter an endemic species allied to Javanese species.

## WINGED FRUIT AND SEEDS.

These are still rarer than the plumed seeds, and of the very few that are to be met with in Oceanic Islands, it may be doubted very much whether their wings have played a large if any part in their dissemination. The *Dipterocarpaceae* for instance are quite absent from Oceanic Islands. *Gyrocarpus* which occurs in Christmas Islands and other Islands a sea shore plant is certainly disseminated by its wings, but I suspect it reaches the islands by sea. I cannot conceive of the winged fruits of *Berria* being drifted by the severest gale for two hundred miles, as it is really hardly adapted for flying more than about 40 yards, yet it occurs on Christmas Island. The fruit is a winged capsule which splits when ripe and releases its pubescent seed, so that really ripe fruit if blown out to sea in a gale of wind, would almost certainly break up ere it had gone far and the seed would fall into the sea.

## DUST SEED.

The very fine dust like seed of orchids, and *Balanophara* and the spores of ferns, Lycopods and cellular

plants have perhaps the widest and most rapid dissemination of any group and there can be no doubt that they are the first seeds to arrive at an Island when it first becomes in a fit state to receive terrestrial vegetation, but there are islands in which plants with this class of seed are scanty, notably Fernando de Noronha on which I found no orchids, only one fern and very few cellular plants. The reasons for this seemed to be that the neighbouring land from which the wind could bring seed was somewhat of a desert nature, and ferns at least were not very common, also the island itself was distinctly xerophilous with a very dry season during which no rain fell and the ground became very dry. In Cocos Island also dust—seed plants are very scarce no orchids or ferns, and only one moss and one fungus being recorded. Here again it is doubtless the unsuitability of soil and climate that prevents these plants from establishing themselves. In Christmas Island indeed that though the number of ferns is large, the ground and rocks were in the dry season so arid that a considerable area produced no ferns or mosses. Where the ground was damper in the forests of the plateau, ferns and mosses were plentiful. One fern was confined to the fresh water stream never dry at the Waterfall, and mosses and fungi were commoner round the water tanks where water was often spilt.

Cellular plants, algæ and fungi, have an extremely wide dispersal area, far more so than the more elaborate vascular plants, and a good many seem to occur in all corners of the world. Some of the fungi, such as *Polyporus sanguineus*, *Guepinia*, *Schizophyllum commune* which are common on old timber may easily have been brought on pieces of wood by ships stopping at the island but most at least of the fungi must have arrived by the drifting of their spores by the wind. Considering the dryness of the weather a large number were obtained and some more were seen which could not be preserved. There are probably very many more to be collected at more suitable seasons. Besides the cellular plants there occur of the dust—seed group, the following, one *Balanophora*, ten orchids, 21 ferns two *Lycopodiaceae*. Of these 34 plants 17

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are epiphytic plants, 7 orchids, and 10 ferns, the rest are small low-growing terrestrial plants. All are either Javanese or closely allied to Javanese species, but two; *Balanophora insularis* and *Dendrocolla carinatifolia* have hitherto been only met with in the island of Pulau Aur off the East coast of the Malay Peninsula. Balanophoras of this type however occur in Tahiti, Salayer Island, Timor Laut, and the Comoro Islands. They seem to be all insular and to occur only in the Southern Islands in a line fringing the South of Asia and reaching to Tahiti and Comoro respectively. The endemic species of dust seed plants are 6 orchids and two ferns.

Besides these there are a large number of cellular Cryptogams, most if not all brought to the island by the drifting of their seeds in the wind. Two species of *Peperomia* also occur the very small fruits of which may possibly have been blown by the wind to Christmas Island.

I have assumed that the epiphytic orchids have all reached the island by their seeds, but it is quite possible that some of them have been sea drifted to the Island. For in 1890 I saw plants of *Dendrobium Crumenatum* apparently quite fresh and green floating about in the sea off the coast of Banka and Moseley (Notes by a Naturalist p. 368) mentions finding in Little Ki Island an epiphytic orchid washed up by the sea in a quite lively state. Most epiphytic orchids however are very quickly killed by sea water.



## Malacca Lace.

BY MRS. BLAND.

Fifty years ago really fine cotton pillow lace was made in Malacca. The lace was worn by the Chiefs and Hajis on their coats and trousers, and it may still be seen occasionally at weddings, but with the use of European clothing the lace has more or less disappeared. The present generation are content to use nine to nineteen bobbins, while their grandmothers and great aunts before them used fifty to one hundred, or even more. Moreover, they have lost all their patterns, all their fine bobbins and even their pillows. The white ants have consumed them all. Occasionally; one may come across a few relics of this past art in beautiful ivory bobbins and faded trouser borders. I myself obtained a very fine specimen of the latter from an old Malay, and have no doubt others can be picked up in the Kampongs (see plate No 3). All that remains of this old industry is the present "biku" making, chiefly found in the district of Pringgit, where quite fifty women use pillows—also at Bukit Tempurong and Bukit China, but here in much fewer numbers—at the outside twenty workers. "Biku" or edging is made of coloured silk for native use to border handkerchiefs and veils, and is sold very cheaply for that purpose to Malays and Chinese. It is sold in lengths of  $2\frac{1}{2}$  yards or one "bimpul." The silk is bought by the woman in skeins from "kelontong kain" the travelling draper, or pedlar, and he also sells the "biku" itself with his other wares. The pillow used, as depicted in the photograph, (see plate 1) is of the simplest description—a rough wooden sloping stool padded with cloth and stuffed with sawdust. The cost is fifty or sixty cents at the present date. It is called "bantal" by the Malays, and I have noticed the little girls

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sitting astride their pillows when just commencing a new piece. It is perhaps to this reason that the pillow owes its shape—it no doubt suits the Malay who always works sitting on the floor,—but it is very back-breaking to the European. Formerly the pillows always had a drawer for holding extra bobbins. It is now omitted. The bobbins are either made of wood, horn, or ivory, and are called “buah.” They are very similar in shape to the Ceylon bobbins, but rather more delicate in make and size. At the present time, there is considerable difficulty in getting bobbins made at all and the old bobbins made in ebony and ivory for three or five cents, cannot now be obtained in plain wood for less than eight or ten cents. There are five patterns now in common use, the greatest number of bobbins used being nineteen. Four of these patterns are depicted in plate 2, requiring nine, eleven, fifteen, and nineteen bobbins respectively beginning at the foot of the plate. There is one other pattern not shown requiring thirteen bobbins. The two insertions shown at the top of plate 2 are old patterns not now made. Fifty and thirty bobbins were used respectively in their composition. The patterns are pricked out in paper and called “Sepesel” and “achuwan.” The (Malays have names for their patterns such as:—

1) “Prut Lintah” or leech’s stomach. This in “torchon” would be called “bar” stitch—In the insertions shewn in Plate 2, these bars are combined to form 6-pointed stars, which are known as “Bunga Tanjong” :—

(2) “Anyam Krosi” or chair-plait which in “torchon” would be called cloth stitch, is also shown in the same insertions alternating with the “Bunga Tanjong.”

(3) “Siku Këluwang” or bat’s wing, which is a vandyke pattern depicted in the wide insertions of the old trouser border in plate 3. And I daresay many others which are now forgotten with the art. The various stitches are also named, and one “biku” of thirteen bobbins was thus described to me, beginning at the foot of the edging right across to the top :—

“Puchok” or “Kipas” taking one bobbin.

“Buah Sirih” taking two bobbins

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- "Ikatan kipas" taking two bobbins.
- "Penyambut" taking two bobbins.
- "Prut Lintah" taking two bobbins.
- "Tali Ayer" taking two bobbins."
- "Kaki" taking two bobbins.

The most common stitch in all their laces is the "Ikatan," or fastening stitch. It does not resemble the torchon "half stitch" or "whole stitch" but seems to be original. A more elaborate form of it is called "Mata Punai," and is the only stitch which has the same name as in the Palembang patterns sent to me. The Malacca Malays use the word "renda" for all lace except the narrow edgings which they call "biku." They themselves never seem to have made wide edgings; all their wide laces being insertions joined together for trouser borders. They throw their bobbins across with incredible rapidity using their second and third fingers to flick the bobbin across more especially in making the "bars" or "prut lintah." It is an art which cannot be acquired by everyone. As to the origin and history of the industry I have been unable to find out anything. Through the kindness and courtesy of Mr. Spakler, Consul General for the Netherlands in Singapore, I have obtained a pillow from Palembang, Sumatra, where lace is also made by the Malays. This pillow is identical with the Malacca one in structure and design only with a drawer and more elaborately ornamented. The industry is a flourishing one in Palembang where the Dutch ladies buy the lace in quantities for their Kēbayas (jackets) and it is sold in lengths of  $4\frac{1}{2}$  yards for this purpose. The bobbins are also identical, though slightly longer and up to one hundred are employed. What is more interesting the common terms are the same—"Bantal," "Buah," "Sepesel"—but in addition they have the word "Papan" for insertion, and "renda" is confined to wide (2), edgings which in Palembang are also made by the natives. "Renda" is I believe, a Portuguese word and is also used in Ceylon for lace, were I am told the lace industry was undoubtedly founded by the Portuguese. But again it may be native. It is impossible now to say. A very curious pillow was shown to me by Mr.

R. Shelford, Curator of the Sarawak Museum at Kuching, on which edgings are made by the Malays principally in gold thread for veils and coats worn by the Dyak women. This edging is there called "puntas," the pillow "guling puntas," the hobbins "pelulak," and the pattern which is pricked out on a strip of palm leaf is called "kabat puntas." The pillow is very primitive, a cylindrical cushion, placed on an earthenware bowl, and the hobbins which vary in number from four to sixteen are like ninepins and extremely clumsy. Good specimens of all the three pillows here described may now be seen in the Singapore Museum. I have learnt myself to make the Malacca "biku" and have appended to these notes the common words used by my teacher during our lessons. A tentative attempt is now being made to revive the industry at the Girls' School at Pringgit. It is an industry specially adapted to Malay women. I owe my grateful thanks to the Bible Society Ladies for introducing me to this local industry, also to Mr. Howell, who has so kindly assisted me with his camera, and for some very careful and detailed information received from the Resident in Palembang through Mr. Spakler.

*Terms.*

"Kuku"	finger nail, applied to loops in the "kipas"
"Kedut"	crumpled
"Ulor"	slack
"Tëgang"	tight, taut
"Selang"	alternate
"Pintal"	to cross
"Kipas"	fan
"Rengkap"	pair, complete set of two
"Chuchok jarum"	put in pin
"Ikat Jarum"	to enclose pin
"Peniti"	pin
"Kwet"	flick given to the bobbin
"Unting"	skein
"Tukal"	bundle
"Chuchok sepesel"	to prick out the pattern

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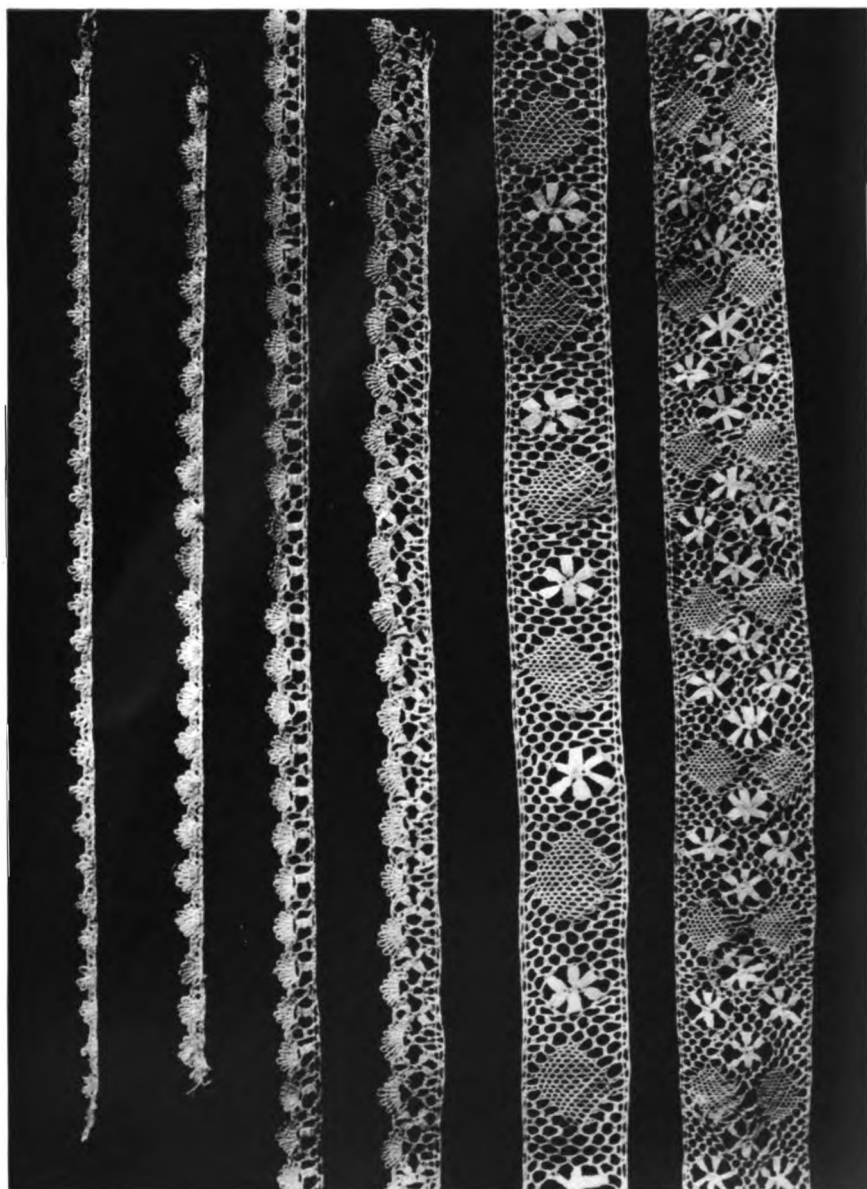


*Lace Makers, Pringgit.*



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a

b

c

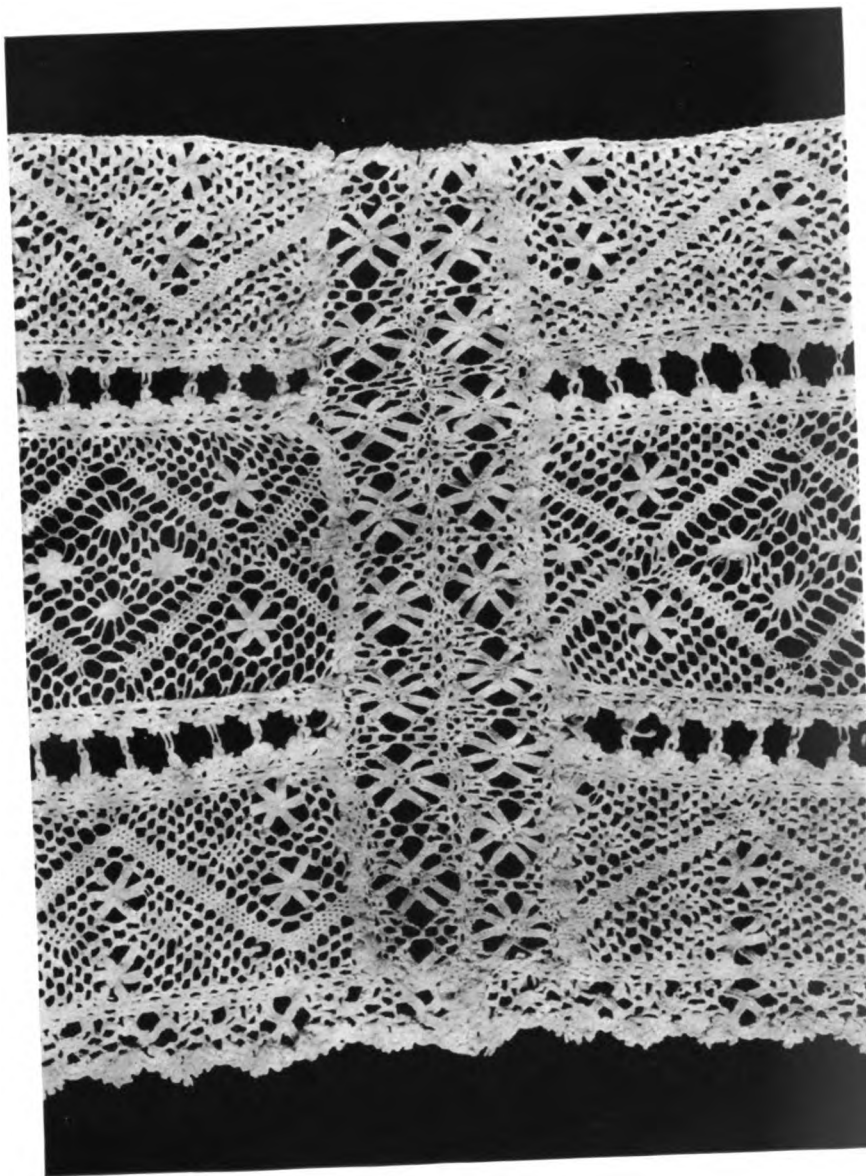
d

e

f

*Evolution of lace pattern.*





*Trouser border.*





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JOURNAL 45. PLATE IV.



*Malacca lace bobbin*



## EXPLANATIONS OF PLATES 1 TO 4.

- Plate 1. Lace-makers from Pringgit, Malacca.
- Plate 2. *a* to *d* show evolution of pattern in 4 strips of "biku."
- a* 3 pointed fan (*kipas*) 9 bobbins employed.
- b* 5 pointed fan, 11 bobbins employed.
- c* 5 pointed fan and bar (*prut lintak*) 15 bobbins employed.
- d* 5 pointed fan and bars forming a four-pointed star (*bunya tanjong*) 19 bobbins employed.
- e* & *f* Two strips of insertions composed of cloth stitch diamonds (*anyam krosi*) alternating with six pointed stars (*bunya tanjong*). The ground work of *c* to *f* is composed of fastening stitches (*ikatan*).
- Plate 3. Wide trouser border at least fifty years old. Pattern "siku kĕluwang" (bat's wing).
- Plate 4. Malacca Lace bobbin.



## Short Notes.

### Note on the Wild Goat of the Malay Peninsula.

An adult male of *Nemorrhoedus sumatrensis* var *Svetlenhami* was taken alive on the sea coast at Batu in the Kuala Langat district of Selangor last April (1905). The surrounding country is quite flat, the solitary granite hill of Jugra, the nearest high hill being some sixteen miles away. Wild goats have not been heard of on this hill. It may be that this goat was driven from the interior by some rival and wandered down to the coast. It was driven with the sea by the Penghulu's dogs and has since been in captivity, the animal is becoming quite tame.

HENRY NORMAN.

### Habits of the Tupaia.

The common little Tupaia, (*T. ferruginea*) seems to be quite omnivorous in its habits. In the Journal No. XXIX p. 148, I mentioned that it ate considerable quantities of fruit, although it belongs to the order tinsectivora. Recently I saw one chasing a bull-frog (*Callula pulchra*) along a garden path. The frog puffed out as usual when alarmed and hopped along as fast as it could, the Tupaia trying to catch it by the leg. Another Tupaia ran out of the wood, and drove off the first one, and began to chase the frog, finally catching it in its mouth and darting away with it into the wood. The frog when alarmed exudes a very sticky liquid from its back, and apparently the Tupaia either could not or were unwilling to seize it by the back, and tried to catch it by the leg, but appeared to have some difficulty in so doing.

H. N. RIDLEY.

## Some Birds of Tiuman Island.

C. BODEN KLOSS, F.Z.S., F.S.A.

Towards the end of a cruise in the Southern China Sea undertaken in 1899 (see journal 41), Dr W. L. Abbott and I spent about a week on the east coast of Tiuman collecting mammals and birds in the vicinity of Joara Bay, and again, a year later, on our return from an expedition to Tringanu, stopped for some days at Tingah Bay on the west side of the Island for the same purposes.

It was my intention to have given some account in the Journal of this little known Island and our experiences; but my notes have been mislaid and all that I have now to hand of the results are lists of the mammals and birds collected, of which I now record the latter here.

A word with regard to Tiuman. It is about 120 miles by sea from Singapore opposite the mouths of the Rumpin and Endau Rivers though the nearest point of the Malay Peninsula is distant about 22 miles S. E. It belongs to Pahang, and is inhabited by a few Malays of that race who collect rattan in its forests. The island is some eleven miles long N. S. and six wide at its broadest part and is very hilly, the highest peak being 3444 ft. while high above the southern shore are two peculiar bare rocky pinnacles known as the Dragons Ears to which reference has already been made in this journal and in the journal of the Indian Archipelago.

Various new species of mammals were obtained, but there were no novelties among the birds which were all collected below 500 feet alt. as during neither visit did we ascend the mountain. A number of species were observed in addition to those preserved but for the reason given above I am unable to include them here.

- 1 *Malacopteryx magnirostre*, Moore.
- 2 *Stachyris davisoni*, Sharpe.
- 3 *Cyanoderma erythropteryx*, Blyth.
- 4 *Aegithina viridissima*, Horsf.

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- 5 *Tricholestes criimger*, Hay.
- 6 *Pycnonotus simplex*, Less.
- 7 *Dissemurus platurus*.
- 8 *Orthotomus atrigularis*, Gemm.
- 9 *Acanthopneuste borealis*, Blas.
- 10 *Lanius superciliosus*, Lath.
- 11 *Graucalus sumatrensis*, S. Müll.
- 12 *Eulabes javanensis*, Osbeck.
- 13 *Cittacinola macrura*, Gm.
- 14 *Hirundo gutturalis*, Scop.
- 15 *H. javanica*, Sparmm.
- 16 *Motacilla flava*, Linn. *var. leucostriata*.
- 17 *Limnodromus indicus*, Gm.
- 18 *Anthrothreptes malaccensis*, Scop.
- 19 *Dicaeum cruentatum*, Linn.
- 20 *Alcedo bengalensis*, Linn.
- 21 *Collocalia inexpectata*, Hume?
- 22 *Rhamphococcyx erythrognathus*, Hartl.
- 23 *Carpophaga ænea*, Linn.
- 24 *Glareola orientalis* Leach.
- 25 *Totanus hypoleucus*, Linn.
- 26 *Ardea sumatrana*, Raffles.
- 27 *Lepterochus sacer*, Gm.

### A Johore Python.

In December 1904 I spent a few days on the summit of Gunong Pulai accompanied by Mr. H. N. Ridley. When we reached the *Kangka* at the foot of the mountain one of my collectors, whom I had sent on in advance, informed me that an *ular sawa*, 5 *depas* in length, had been killed by the Chinese there a few days before. The skin was nailed out along several boards but was unfortunately without the head which the Chinese had chopped off in slaughtering the reptile. We measured the portion that remained however and found it to be 29ft. 10 inches in length so I have no doubt that the dimensions given by my collector of the snake in the flesh were correct. This python had entered a pig-sty

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in the evening and there made a meal of a gravid sow, for when it was skinned next day it was found to contain thirteen pigs of various sizes in all, and by these the reptile had been so distended that it was unable to make its way out through the hole by which it had entered.

While pythons under twenty feet are common enough, the occurrence of a 30ft. snake in the Peninsula seems to me of sufficient interest to be recorded here.

C. BODEN KLOSS, F. Z. S.

### Account of three Snakes.

*Coluber oxycephalus*. This snake is usually bright green above and of a paler colour below, the tail being yellowish brown as if it were withered: the Dyaks here on that account call this snake the Ular Matiko. A short time ago the Museum received a large specimen over 4 feet long which had no trace of a green colour: dorsally throughout the animal had a uniform brownish colour like that of the tail of a normal form; ventrally it was pale yellowish. In other respects the specimen conforms precisely to the description of *C. oxycephalus*. In the Museum Catalogue of snakes Mr. R. Shelford my predecessor states that on the sea coast near the mouth of Trusan river he took a brilliant ochreous specimen of this species which was put in formol: after two or three days it turned green but finally the specimen became rotten and had to be thrown away. Possibly his specimen was the same as the variety now described. The colour of my variety however is quite permanent in methylated spirits.

*Dipsadomorphus cynodon*. The British Museum catalogue describes 3 distinct colour varieties of this rather large snake. Our Museum has 19 specimens, of which one from Bau received a year ago and one from Kuching just arrived are of the type described below which does not come directly under any one of the 3 varieties described by Mr. Boulenger but is not far from his variety B.

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Dorsally the general colour is yellowish brown speckled with close-set irregular black dots: there are a number of ill defined black cross bars which are not so wide as the interspaces between them but anteriorly in the first  $\frac{1}{4}$  of its length all these colours are merged together. In the posterior half of the body there is a series of white spots close to the ventrally and anteriorly the colour is yellow with some black spots, posteriorly the 2 colours merge the black predominating. The tail is black with incomplete white rings. These 2 species of snakes were taken near the Astana, Kuching by His Highness the Rajah Muda of Sarawak who kindly presented to the Museum all 3 snakes here mentioned.

JOHN HEWITT.

Note on the life-history of the Cicindelid beetle, *Collyris emarginatus*, Dej.

Within quite recent years a most interesting entomological discovery has been made by Dr. J. C. Koningsberger of the Buitenzorg Zoological Museum, but the facts being hidden in a publication of somewhat limited circulation seem to have escaped the general notice of those interested in the insects of the Far East.

Nearly all the Cicindelidae or tiger-beetles are found in exposed situations, such as sandy banks, roads or even the sea-shore and as a general rule the larvae live in burrows in the soil and feed on insects which they capture when these pass over their burrows. *Collyris emarginata* however is arboreal in its habits, running with great speed over leaves and flowers and readily taking to wing; its larvae live in small burrows excavated in coffee shoots and in these burrows await their prey which consists of ants and aphides. Cicindelid larvae are readily recognised by the swollen anterior end and by the presence of two tubercles armed with small hooks on the dorsal surface of the eighth segment; by means of these protuberances the larvae are enabled to wedge themselves up at the top of their burrows awaiting their prey, retiring to the

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bottom of the burrows once the prey has been seized. The *Collyris* larvae differs in no important particulars from the characteristic type, though its habit of living in burrows in wood is sufficiently remarkable. Dr. Koningsberger informs me that he never observed the egg-laying and that he never found any very young larvae, he is unable then to state whether the eggs are laid under bark or on it, and if the young larvae excavates for itself a small burrow which is enlarged as the larva grows in size. Pupation takes place in the burrow. In the *Dentchi Entom. Zeitschrift* for 1905. p. 172 this Cicindelid is alluded to as herbivorous, but Dr. Koningsberger tells me that this is a mistake, the beetle living on small insects, just like other Cicindelidae. Dr. Koningsberger publishes an all-too brief account of this larva and a poor figure in "Mededeelingen uit 'Slands Plantentuin" XLIV p. 113. fig. 59. (1901). It is much to be hoped that more information will soon be forthcoming about this most interesting form and its allied species. After all it is facts about the life-histories of insects that is wanted now, rather than more dried specimens, and it is a standing reproach to entomologists that so little is known about some quite common tropical insects.

R. SHELFORD.

### Nesting of Silk-weaving Ants.

The remarkable habit of the "Karinga" ant (*Oecophylla smaragdina*) in employing its larva as a spinning machine is well known, thanks to the observations of Ridley in Singapore (this journal xxii. 345, (1890-1) and of Holland in Ceylon (*Proc. Ent. Soc. London*, 1896. p. ix. E.E. Green. On the habits of *Oecophylla smaragdina*). The habit may be mentioned again in order to shew the interest of other observations on another species of ant belonging to a different sub-family. The nest of *Oecophylla smaragdina* is constructed of leaves bound together with a web of silk. If the leaves are torn apart it has been observed that the adult ants immediately repair the breach in the following manner:—several ants hold the separated

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edges of the leaves together with their jaws, each ant thus acting as an animated clamp; then come other ants every one holding in its mandibles a larva, the mouth of which is applied first to one edge of the leaf and then to the other; as a filament of slightly glutinous silk is being constantly emitted by the larva, a fine silken web is soon woven by the to and fro movements imparted to it by its bearer the worker ant and the breach in the nest is quickly repaired; the "animated clamps" relax their hold as soon as their need is past. Inasmuch as the worker ant is itself incapable of supplying silk, there seems no doubt but that all the silk of the nest is provided by the larvae. The same habit has been recorded for another species of the same genus, viz. *Oe. longinoda* of the Upper Congo and for *Camponotus senex* of Brazil.

In Notes from the Leyden Museum vol. xxv. 1905. Father E. Wasman records the observations of Herr Edu. Jacobson at Semarang in Java on the ant *Polyrhachis dives*. The nest is constructed between the leaves of a tree alluded to as the Japanese palm; the leaves are bound together by silk and the interior of the nest is lined with silk in which are entangled chips of bark, wood and fragments of dead leaves; the nest is divided into chambers by partitions of semitransparent silk. Jacobson noted that the nest which he had under observation was broken at one point and that the breach was repaired by the same method as that employed by *Oe. smaragdina*, the larvae held in the jaws of the workers being used to spin a silken web across the rent in the nest. A good many species of *Polyrhachis* employ silk in the manufacture of their nests and it would not be surprising to learn that this habit of the workers of employing the larvae as spinning machines is more general than has been hitherto suspected.

R. SHELFORD.

### Malayan Musical Instruments.

In "Fasciculi Malayenses" Pt. II (a) Anthropology, of which a notice is given in "Man" 1904, there is a

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description and figure of a bamboo tuning-fork supposed to be made by the Semangs of the Peninsula. As an identical instrument is described by Dr. A. Schaudenhorst from the Philippine Islands, Mr. W. N. Annandale remarks that "should it prove to be a real Semang instrument and be peculiar to the Malay Peninsula and the Philippines, it would be a most interesting link between the Semangs and the Negritos of these Islands." It may therefore be worth while to record the occurrence of this instrument in Engano, the most southerly Island of the West Sumatran chain. Examples were obtained by Dr. W. L. Abbott in the early part of this year which only differ from the figure in Fasciculi Malayenses in being without ornamentation and more roughly made. They vary in size, my examples being 25 and 30 cms. in length, and are played by being struck upon the thighs.

The Enganese have no Negrite strain and appear to be Proto-Malayans: there are at present only about 500 left and although inter-propagation has now practically ceased they are being slightly hybridised by intercourse with visiting traders principally Chinese.

The "*Fasciculi Malayenses*" also figures and describes Peninsula *L'nongs* or zithers. I have variants of the types given from Simalur, the most northern of the West Sumatran Islands.

The first is a closed interwove of bamboo, 66 cms. long with five strings raised from the skin and bridged in the usual manner. It is peculiar in having on the reverse side from the strings a long vibrating tongue formed by cutting a broad transverse notch opposite one set of bridges and running a split from either end to the further extremity of the instrument.

The second *g'nong* consists of a closed internode 37 cms. long with only a single string, but having tied to the centre of this an elliptical flat wooden tongue exactly above a rectangular hole cut in the bamboo cylinder. Both instruments are played by means of wooden plectrons.

Though made by the natives of Simalur it is possible that they are of Achinese origin, of which nation there are a number of settlers on the Island, while the Simalurese have only passed out of a wooden and shell stage within the last two or three generations.

C. BODEN KLOSS, F.S.A., F.A.I.

### Chinese Names of Streets.

The following notes, by an old resident, on Mr. Firmstone's valuable list in Journal No. 42 may prove of some interest.

Armenian Street.—Tan Seng Po was, I believe, a brother-in-law of Mr. Seah Liang Leah. His house was the one in Hill-street occupied till recently by St. Mary's College.

Beach Road (VII.)—"Twenty buildings," possibly this refers to the large houses in compounds which formerly fronted the whole of this road between Bras Basah Road and Clyde Terrace, and were in old times occupied by leading European residents.

Selegie Road.—"Tek-kha, foot of the bamboos." I remember when the road from near what is now the entrance to Sophia Road to Mackenzie Road was bordered by luxuriant lofty bamboos—the most beautiful, I think, that I have seen. I mourned when they were removed to make room for houses.

Stamford Road.—The shop ceased to be a "shoe shop" a couple of years ago.

Tanglin.—"No 'little Tanglin.'"—The part of Orchard-road between Tank-road and Grange-road, where there have been shop-houses for very many years, was formerly known as "Tanglin Këchil," and may be so still.

Keppel Harbour.—"Jardine's Wharf."—Jardine's and the Borneo Company's Wharves were separate but adjoining the former the nearer to town.

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Malacca.—Riverside.—“Foot of the Dutch trees.”—The Fort Road, the ascent to the Stadt House, and the road to Tanjong Kling were adorned with magnificent avenues of *angsana* (sometimes called “sena”) trees—the same as we have on the Singapore Esplanade. These avenues all decayed in the course of two years—some five-and-twenty years ago, I should say.

A. K.



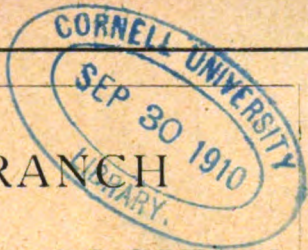








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## A few notes on the "Anyam Gila" Basket Making at Tanjong Kling, Malacca.

BY MRS. BLAND

Once upon a time there was a goblin named Sang Kelembai. He lived long ago and it was in his time that men-folk began to appear in the world. When he saw how they caught the beasts both wild and tame, and made them do all sorts of work, and how they even made the wind drive their boats on the sea, he began to get alarmed lest he, too, should be caught. So one day he went down to the sea-shore and assembled all manner of beasts—the jungle people, and spoke to them "O, all living things, come away with me over the sea to the sky's edge. This is no place for us. See how mankind is catching all the beasts and making them work." But, said the Beasts, "Why should we go so far? What will we do over there?" Said the Buffalo: "if the men catch me, I will kill them with my horns." Said the Horse: "if the men catch me, I will slay them with my heels and teeth." So spoke all the Beasts, each boasting of his own weapons, for indeed they had no wish to go so far as the sky's edge. These replies troubled the mind of Sang Kelembai so he took all his possessions, his fishing nets and his rombong baskets, and having burnt them to ashes, he departed alone to the sky's edge. Soon after the human folk came down to the sea beach and there they found the ashes and the remains of the nets and rombongs. They carefully examined the meshes of the nets and the weaving of the basket work and tried to copy them. One of the women went home to her daughters and said "Let us get some pandan leaves, and split them and then dry them." They did this and in the night came the rain and soaked the leaves, and next day the sun shone and

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bleached them. Then they tried to weave them like the goblin's baskets, but their efforts were in vain. Day after day they tried but could not succeed. At last a fairy in the guise of a woman came by. She saw the women sitting distracted in the house and said to them.

"Oh ye who sit within the house distracted,"

"Striving to learn the craft of Sang Kelembai,"

"Come ye while I the daughter of the fairies,"

"Teach you to weave the web of the distracted."

"So the Fairy taught them to find the long mengkuang leaves, to split them, to dry them, to supple them, to bleach them." Everything she taught them, and when the baskets were finished with their ornaments, she said "Now you understand the Distracted Weaving, and why it is called so. You work at it till your eyes are dim and your brain reels, till the back aches, and the hands grow weary, but still it does not come right."

This ancient industry exists to the present day amongst the Malay women at Tanjong Kling in Malacca. The baskets are woven of mengkuang, which grows there in great quantities. This mengkuang is a screw-pine or Pandanus (*Pandanus fascicularis*) and there are many other species also used by the Malays for weaving mats and coarse baskets and known by them as Pandan, but the particular screw-pine used at Tanjong Kling is called mengkuang. It is very supple and therefore suited to the special weaving done at Tanjong Kling. The latter is of a very distinctive and uncommon character and is called the "Anyam Gila," or mad weaving. It is very intricate to learn and quite calculated to drive a beginner mad. The mengkuang requires a good deal of preparation before it is fit for use, and the old women are generally employed in this work. They cut the long prickly leaves down with a native knife, or parang, (plate 4. fig A) and carry it home in large bundles on their heads. Then they dry or "laylor" it slightly over a fire of sticks, and cut off the thorns which grow down the spine of the leaf. This divides the leaf into two wide strips and for this purpose they use a smaller knife

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(pisau) than the parang (Pl. 4. fig B). Next they "jangka" or divide, the half leaves into strips by means of a rude implement called a "jangka" (Pl. 4. fig C). The "jangka" is a flat piece of wood with brass spikes fixed into one end at regular intervals, the intervals being decided by the width of strand required (the widths vary from one inch to one eighth of an inch). In this process the thorny edges of the leaves are disposed of, and many are the scratches and wounds inflicted on the workers. The thorns of the mengkuang point upwards on the edges of the leaves and downwards on the spine so one can easily imagine they are difficult to avoid in handling the leaves. Now the green strands are ready as far as size goes, but they leave yet to be made supple and smooth or "lurut." The implement for this process is the "Pulurut" or a piece of hollowed bamboo, which is pulled over the leaf many times by the left hand with a sort of curling movement (Pl. 4. fig. D). The leaves are now folded into compact bundles and soaked in a bowl of cold water (pasoh rendam) for three nights, changing the water twice a day. After this they are laid in the sun and bleached for a day, and woe betide the mengkuang if it gets a drenching by mistake: It would then all go black instead of the pretty greeny grey white, which is desired. The mengkuang is now ready for use. The construction of the baskets or "rombongs" is complicated, and much more tedious than many people imagine. It starts from a star of six strands called by the Malays "Pusat Belanak" or the navel of the "Belanak" fish, a species of mullet. This produces twelve strands, for the weaving is done with both ends of every strand used. It is this that makes the describing of the work so very difficult. The whole basket is built up by the continual interweaving and crossing of the inner and outer strands, and there is no foundation of warps round which to weave, as in English baskets. It is built up continuously round and round by weaving as in knitting a stocking. The last strand in a round is called by the Malay the "mati." The basket is begun in the centre by a star of six strands. To this is next added six more strands, then round these are woven in twelve more, then twelve more and soon till the size required

is achieved (plate 1). A six-sided shape is thus produced. The added strands are woven in always two at each corner, "buku" or "susoh" as Malays term it, and the full "mata gila" or mad stitch is achieved after the second round. The strands that go from left to right from the weaving strand or "daun anyam." The weaving strands over and under which the other strands are pulled and folded are also used for determining the size of the basket. How many "matas" or stitches? the Malays will say when you order a basket. The "daun selang" or crossing strand, and the "daun betul" or warp strand are the only other names possible to mark the distinctive action in the "Anyam Gila." When the size is determined on and woven, a piece of split rattan is inserted and the sides of the basket next made, and in the weaving the rattan is completely hidden. The strands of the mengkuang are glossy on one side only, so the Malays by carefully turning their work, arrange that the basket should be glossy both inside and out. The sides are woven round without any adding and it is a relief to the weary worker when this stage is achieved. The Malays, of course, work sitting on the floor (plate 2) and complain of the fatigue they endure—pains in the back and nape of the neck. I can testify to all this inconvenience for when learning I tried every position to obtain ease but in vain. The height achieved, another rattan is inserted. This rattan is covered with a strip of mengkuang, which process is called "bubor" or "Susop" mengkuang. In plate 2, a basket ready for this second rattan is shown by the side of the worker. It resembles a cutlet frill at this stage. Then the strands are all worked back again, the glossy sides being now towards the worker. This is a tedious process and called by the Malays to "sesep" or insert. They use an implement of wood and brass called the "penysep" or inserter which resembles very much the prickers used by the American Indians in their basketry (pl. 4 fig E). It is often strengthened and ornamented by European treasures, such as a brass thimble and an empty cartridge case and in the very coarse work I have seen used a clumsy "penysep" made entirely of wood. The strands are slipped over their respective duplicates till the

bottom centre of the basket is reached when they cross each other for strength and are cut off invisibly. On the way the pretty designs are made by twisting the strands between thumb and forefinger. This produces a raised ornamental twist which is very attractive. The ornamentation is done by twisting the strands, and starts from a single stitches called "Bras Goring," or rice grains, and a star of six such stitches called "Bunga Tanjong" flower of *Mimusops lengi* and a hexagon built round the "Bunga Tanjong" called the "Bunga Kuntum," or flower bud. These simple patterns are worked into large and small triangles and diamonds called "puchok rebong" or bamboo shoots, or "potong baji" or wedges. Combinations of triangles are called "puchok rebong berantai" or festoons of bamboo shoots, and "bunga tiga bersegi berantai" or festoons of 3 sided ornaments. The edging round all the baskets is called "bunga pending," or belt (Pl. 5). The lids are made in a similar manner of the same number of strands as the bottoms only woven slightly more loosely. The women make and sell their baskets in nests or "susun" of five baskets, each basket fitting into another very nearly (Pl. 3). There should only be the difference of two strands between each size. The baskets are made in various shapes and forms—square, long, oval, triangular, and diamond-shaped (Pl. 3 and 5). All are built up in the same way, starting with a six sided basket but with added strands to bring to any other required shape. This is an art by itself and many who can make hexagonal baskets cannot make other shapes, therefore the hexagonal are the cheapest; 50 cents extra being asked for the fancy shapes. The long and the square are the most difficult. They also make a basket of tiers, one on top of another, the lid of the lower basket making also the bottom of the next, and so on. This they call a "tengkat" and it is now almost a lost art. Another fancy shape is the "tudong gelok" (a pointed-shaped cover). They also make very coarse, large ornamented baskets which are much bought by Europeans for carrying clothes (plate 3). The women who make these live at Tanjong Kling, but all in a separate quarter of the kampong from the finer workers. It takes them a month to make a nest of very

ordinary weaving, while a fine nest takes from three to four months to complete and this means daily steady work. For the ordinary hexagonal nests they earn from \$2.50 to \$3.00, and for a fine one from \$4.00 to \$5.00. When this is calculated out it cannot be said that the industry is overpaid, yet there are many who think that it is, and that, in spite of the increased cost of living. There are now about forty or fifty experienced basket workers living at Tanjong Kling besides many beginners. Formerly only ten women made baskets. The demand has greatly increased, for people have begun to order the baskets in great quantities for home bazaars, where they are much appreciated. The industry in a way is suffering as the women are making more carelessly and rapidly to meet the demand. Five old women come into the town every second day in order to sell the work of the village, they are old and more or less blind and now unable to weave themselves. They walk fourteen miles to sell the work of their younger sisters. The chief distinctive feature in the Tanjong Kling weaving is that they use no dyes and also *always* ornament their "mata gila" with raised designs (Pl.3). In Province Wellesley the same weaving exists, but in a smaller degree, and there few ornamental designs are made and no rattans are inserted. I believe along the Malacca Coast the "Anyam Gila" may be found at Tanjong Bidara and also Kuala Linggi. I have also seen baskets and tobacco-pouches of this weaving obtained from Sumatra, Kelantan, Perak, Kedda, and Siamese territory in the Malay Peninsula. Some of the specimens were extremely fine, finer than any Malacca work now obtainable—and ornamented with dyed strands, sequins, and gold filagree work.

I have confined myself in this paper solely to this one style of weaving the mad stitch, but hope later to send further notes on other and more simple forms of basket weaving practised in Malacca. It is very curious that the ornamented "Anyam Gila" should be confined to Tanjong Kling only in Malacca, and any light that can be thrown on its origin and history would be very interesting. The female prisoners in the Singapore Gaol are made to learn "Anyam Gila" and a better

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punishment could hardly be devised. It has reduced many to tears. It was started under the auspices of the late Mr. O'Sullivan who happened to have amongst his prisoners a Province Wellesley basket-maker. With the help of Mrs. Hansen, the Matron, the industry has been firmly established there, and it is owing to her assistance also that I have been enabled to master the details of the industry and to make a basket myself. Native teachers are hopelessly poor and Mrs. Hansen deserves great credit for the way in which she has excelled in this difficult art. She has evolved a very pretty fan at Mr. Bland's suggestion in the "Anyam Gila" which is sold for the ridiculous sum of 75 cents at the gaol (Pl. 3). She has introduced many new designs for ornamenting the fans but the small and constantly changing number of prisoners renders the supply very limited and uncertain.

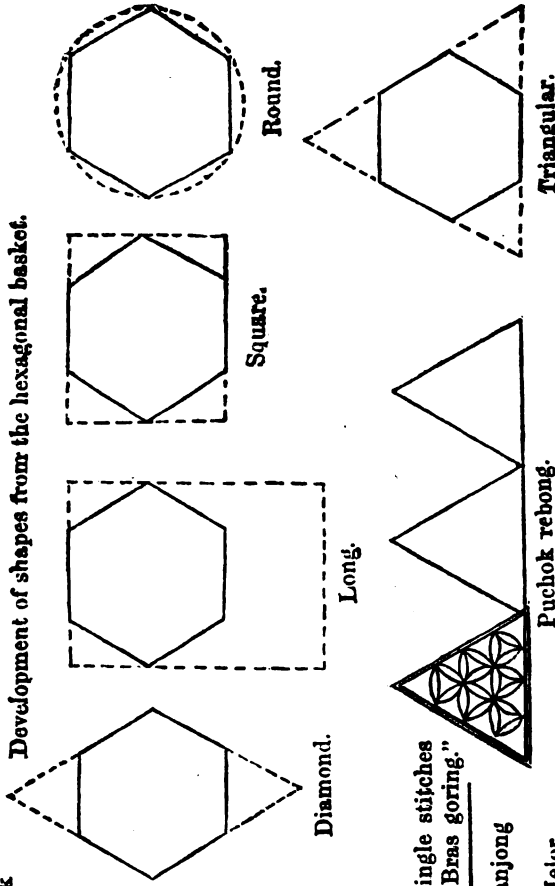
## EXPLANATION OF PLATES.

- Plate 1. Specimens illustrating the commencement of the "Anyam Gila" plait. (See text.)
- Plate 2. Malay basket maker.
- Plate 3. Specimens of Malacca baskets. In left hand lower corner is shown a "Susun," or set of 5 baskets; next to this is a basket made in Sarawak with coloured strands in it; next on the right is a "tengkat," or a basket in tiers; next to this is a fancy-shaped basket called "tudong gëlok;" and on the extreme right is a large coarsely woven basket used by Europeans for holding clothes. In the top left hand corner is shown part of a fan made by the prisoners in Singapore Gaol. Next to this is a representation in "Anyam Gila" of a pineapple. The other baskets depicted show the various shapes that are made.
- Plate 4. The instruments used by basket makers a. *parang*, b. *pisau*, c. *jangka*, d. *pulurut*, e. *penysep*. (a to b.  $x \frac{1}{2}$  c to e  $x \frac{1}{4}$ ).
- Plate 5. Diagrams illustrating development of shapes from the hexagonal basket, and ornamentation.

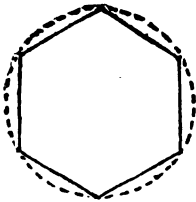
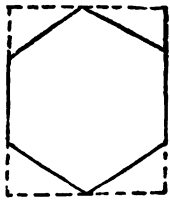
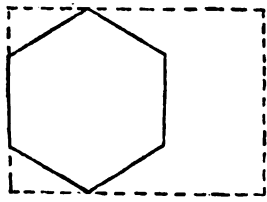
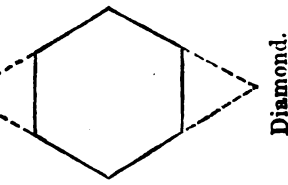
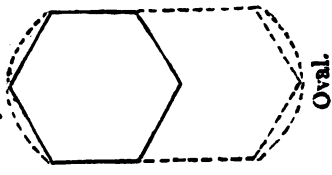




**Malacca basket work**  
**"Anyam Gila."**



Development of shapes from the hexagonal basket.

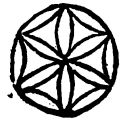


**Orientation.**

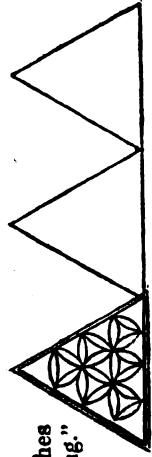
Single stitches  
 "Bras goring."



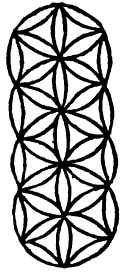
Bunga Tanjung  
 or  
 Bunga Melor.



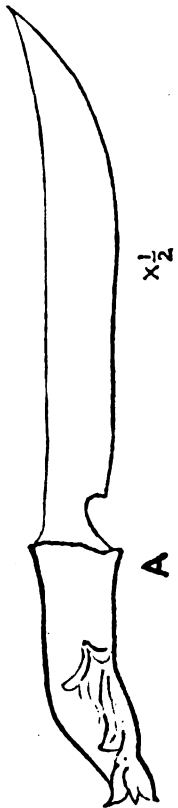
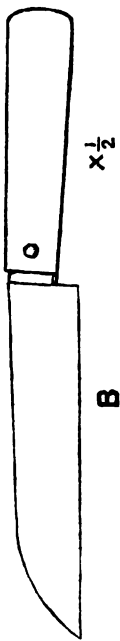
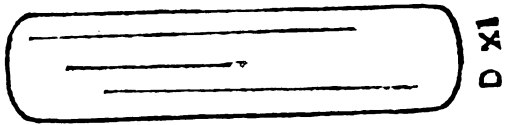
Bunga Kuntum  
 or  
 Tanjung Bulat.



Puchok rebong.

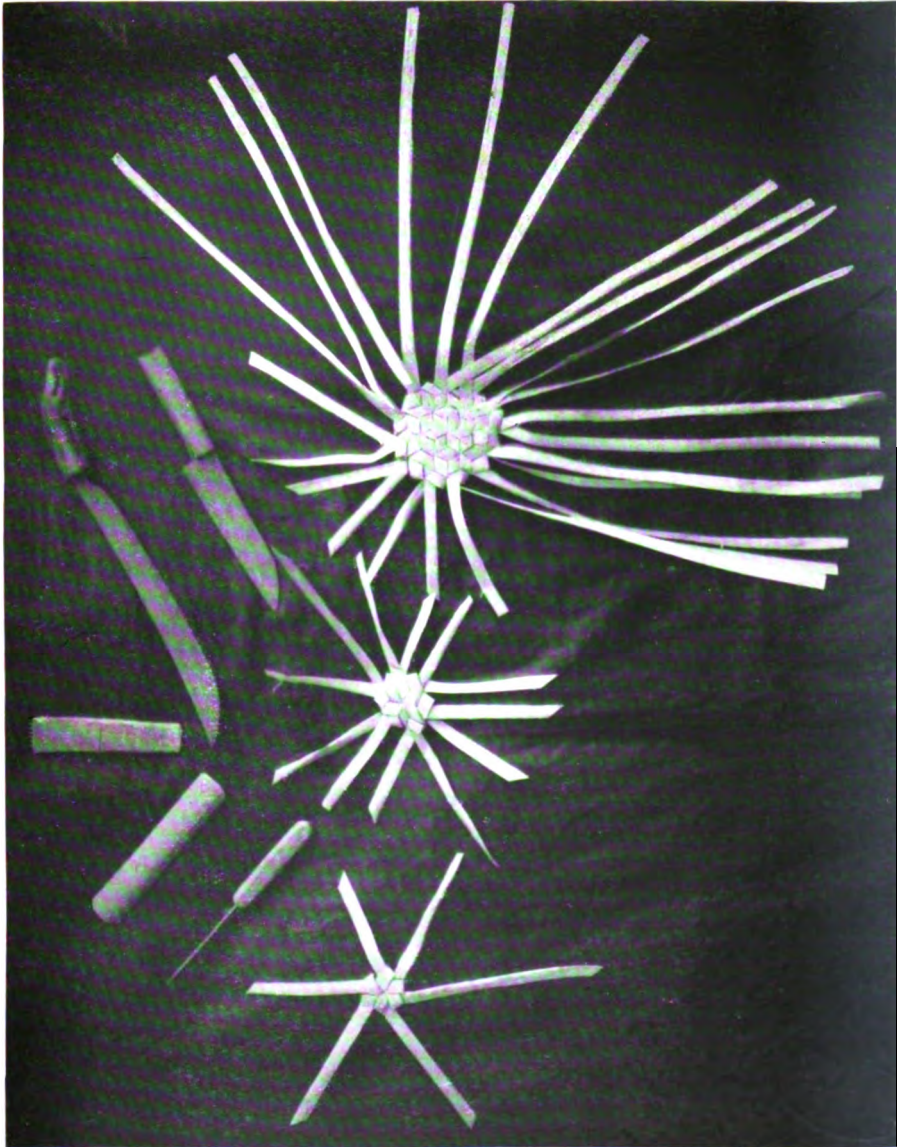


Bunga Pending  
 or  
 Border.



STRAITS BRANCH, ROYAL ASIATIC SOCIETY.

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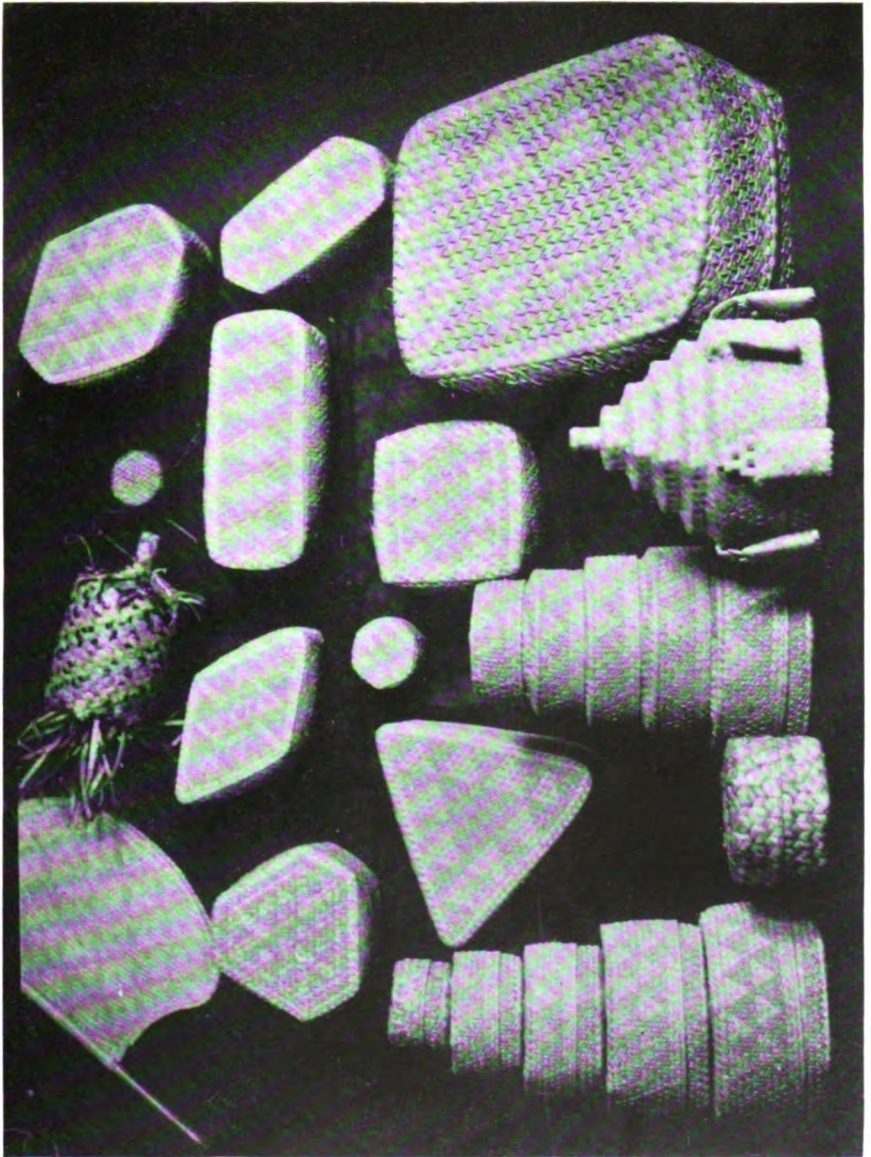


*Malay Basket Maker.*



STRAITS BRANCH, ROYAL ASIATIC SOCIETY.

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*Malay Baskets.*





**The Election and Installation of  
Tungku Muhammad, C.M.G.  
Bin Tungku Antah, as the Yang Di Per  
Tuan Besar, Negri Sembilan**

BY E. W. BIRCH

I have been induced to publish the story of how the ancient constitution of the Negri Sembilan was restored. It will be conceded that it is easier to overthrow than re-establish the constitution of a country. The event I am about to describe being one of very deep importance to the Chief and people of the beautiful State that lies between Malacca and Selangor. A brief reference to the history of the Nine States and to the establishment of the dynasty, represented by Tungku Muhammad, is first necessary.

No dates have been handed down to define the time at which the descent of a great number of Sakai from the hills peopled the countries of (1) Klang (now Selangor), (2) Naning (now a portion of Malacca), (3) Jelai (now a district of Pahang), (4) Segamat, and (5) Pasir Besar (now included in the State and Territory of Johor), (6) Johol, (7) Sungei Ujong, (8) Rembau, and (9) Jelebu.

Four Batin, or Sakai Chiefs, were the leaders of this colonisation: one, a woman, remained with her following in Johol: the other three, with their adherents, occupied Klang, Sungei Ujong and Jelebu.

These four Lawgivers (*undang yang empat*) are repeatedly referred to hereafter, but it should here be stated that the state of Rembau has succeeded to the position formerly held by Klang.

As time rolled on other people were attracted to these countries and there was free immigration from Menangkabau. The new arrivals brought their tribal customs with them, and, as the terms "Waris" and "Lembaga" will recur, it will be well to point out that there is only one Sakai, or Waris, tribe—viz., the "Suku Beduanda"—while there are several Menangkabau tribes, the elected head of each being known as the Lembaga or manager of the tribal system.

The Sakai and the people from Menangkabau maintained the most friendly relations, but it became evident that over the Nine States there must be some Suzerain to whom inter-state disputes could be submitted for adjudication: and, through the good offices of the Ruler of Johor, a deputation to Menangkabau was arranged and a Prince of that royal family was induced to come over.

In the year 1773, or thereabout, Raja Môlewar was installed by the four Lawgivers as Yang di per Tuan Besar, and he took the title, by which he and all his successors have been known, of Yam Tuan Besar, Sri Menanti. That beautiful valley which it is impossible to traverse without halting repeatedly to feast one's eyes on the scenery of hills, green or golden padi, and feathery bamboos had already been occupied by Menangkabau settlers, and they had so named it because, on their arrival, they found padi in the ear, ripe, awaiting them. There the Astana was built and the site then selected has become the ancestral home of the Raja.

Meanwhile other districts had been opened by settlers. The gaps, caused by the defection or alienation of five of the original Nine States, were filled by Ulu Muar, Terachi, Jempol, Gunong Pasir, and Inas. Subsequently Tampin and Gemencheh, settlements from Rembau and Johol, were added.

Gradually the constitution was built up and strengthened, but, about thirty years ago, dissensions, inevitable in all histories, arose, and Rembau, Jelebu and Sungei Ujong were estranged.

Then the healing interference of Great Britain commenced: by degrees Sungei Ujong (April, 1874), Rembau (March, 1884),

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Jelebu (September, 1886), and Sri Menanti (June, 1887), were brought under British Protection.

Finally, by the agreement of August, 1895, the Confederation of all the States, with one British Resident as Adviser to the Chiefs, was arranged.

Such was the condition of affairs when I assumed my duties as British Resident early in 1897. Apparently everything was in order, but enquiry proved that in matters relating to the constitution and Malay customs the greatest disorder prevailed. The Yam Tuan of Sri Menanti had not been installed: he had merely been declared to be Yam Tuan by British authority in June, 1887: there had been no formal creation of a Yam Tuan since the installation of Tungku Antah his father, and even then the Rembau and Jelebu Chiefs had not attended: of the four Lawgivers, Johol alone admitted allegiance to the Yam Tuan: the other three declared that they were absolutely independent and that their independence had been recognised by the wording of the agreement of August, 1895.

The secret of success with Malays consists, to a great extent, in the recognition of the fact that the mainspring of their life, political and social, is built upon the word "adat." Their customs are their inheritance: they regard them as their birthright and they are an absolutely conservative people. I hope that it is not unfair to say that some English administrators, who have been very popular with Malays, have fallen into the error of pandering to the Malay veneration for custom. They have put off reforms forgetting as it were that many Malays possess that true conservatism which while tenacious of the constitution, is ready to accept useful measures of reform.

My experience had taught me that the Malay is a very reasonable person, and the Malays of Malacca and of the Negri Sembilan at all events have in a comparatively short space of time consented to the demolition of their ancient but obsolete land customs. It was not without a considerable show of opposition that their consent to that demolition was

obtained but knowing that they will generally yield to the arguments of them whom they trust I was hopeful that though at the sacrifice of their self-importance, they would agree to re-establish their ancient constitution.

The opportunity arose in this wise:—When the Hari Raya, or festival which succeeds the month of fasting, was approaching, the Yam Tuan invited the four Lawgivers to Sri Menanti to witness the ceremony of obeisance which is annually performed by the subjects of a Malay Raja.

They (Johol excepted) declined the invitation and made all manner of excuses, their only reasonable plea being that it was customary to receive the homage of their own subjects on the Hari Raya.

The Yam Tuan then arranged to invite them immediately after the festival of the Hari Raya Haji, and I asked them to attend. They urged that there was no reason why they should go, and expressed fears that their attendance might be construed to be a waiver of the freedom from interference which they then enjoyed in the internal affairs of their respective States.

I invited them to a meeting at the Residency and explained that they were placing a strained construction upon the words of the agreement, that the British Government had never intended that they were to repudiate the Raja who was the representative of the dynasty their own ancestors had set up, that they were trying to override ancient custom by arguing on customs of thirty years' growth and that the machinery of the Negri Sembilan Government could not work until its component parts were replaced in their constituted places.

They replied that ancient custom required that they should instal the Yam Tuan, that Tungku Muhammad had not been invested with the powers and position of Yang di per Tuan Besar by them, and that they would be stultifying themselves if they went to Sri Menanti.

After a hasty meeting with the Yam Tuan, who at once agreed to be formally proclaimed, I suggested to the three

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malcontent Lawgivers that they should draft an agreement in Malay setting forth their allegiance but providing for freedom from interference in internal affairs and for permission to celebrate the Hari Raya in their own States.

That agreement, when drafted, was submitted to and approved of by the Yam Tuan.

Translated it reads as follows:—

**AGREEMENT BETWEEN THE YANG DI PER TUAN BESAR, SRI MENANTI, AND THE FOUR LAWGIVERS.**

Now in all truth We, the Yang di per Tuan Muhammad, C. M. G., the son of the late Yang di per Tuan, Antah, have made an Agreement with the Four Lawgivers.

- I. The Dato' Klana Petra and the Dato' Bandar of Sungei Ujong.
- II. The Dato' Mendika Mentri Akhir Zaman Sutan of Jelebu :
- III. The Dato' Johan Pahlawan Lela Perkasa Setiawan of Johol :
- IV. The Dato' Sedia Raja of Rembau.

1. Whereas We and the Four Lawgivers and the British Resident have bound together the constitution and customs of the country and the heritage of Our ancestors of old time, as is related hereunder.

2. Now the Four Lawgivers return to elect Us to be Raja of the Negri Sembilan in accordance with our ancient constitution.

3. Now that We have been installed as Raja of the Negri Sembilan, We, according to the old constitution, cannot interfere in the customs of the country or in Muhammadan Law: and every matter that arises in each State is to be settled in consultation with the British Resident of the Negri Sembilan and is not to be subject to Our commands.

4. If any difference of opinion arises between one Lawgiver and another as to the boundaries of their States, and if

either Lawgiver appeals to Us by presenting himself before Us, then We are bound to interfere and to settle the matter with justice, but if the officers of the Four Lawgivers or their subjects come to present themselves before Us to make complaint or petition Us in writing, We shall not in future entertain their complaints.

5. When the festivals of Hari Raya and Hari Raya Haji are celebrated according to ancient custom, the Four Lawgivers will not come to present themselves before Us at Our Astana, at Sri Menanti, but will each celebrate his own festivals, according to ancient custom, in his own State. Always provided that, on great occasions such as ceremonies of Marriage or Circumcision, if We invite the Four Lawgivers they shall carry out Our wishes in their entirety.

6. In the event of the death of the Yang di per Tuan, the Four Lawgivers shall bring, as an offering, gold in such amount as is befitting, such offering being provided by the Government of the Negri Sembilan.

7. Moreover the Four Lawgivers, in conjunction with each other and with their hereditary officers, shall elect one of the royal princes and instal him as Yang di per Tuan in the same manner and in accordance with the customs and constitution under which the former Yang di per Tuan was installed.

BE IT SO.

Written on the 29th day of April, 1898, that is on the 8th day of Zil-haijah, 1315.

The date fixed for the ceremony was Saturday, the 7th of May, 1898. The procedure to be followed in summoning the four Lawgivers to Sri Menanti was adopted as closely as time permitted.

We had to take it for granted that the Tungku Besar had sent for the Dato' Ulu Muar, Dato' Terâchi, Dato' Jempol and Dato' Gunong Pasir, and had announced to them that a Yam Tuan was about to be placed upon the throne.

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We assumed the consent of the Dato' Ulu Muar and despatched his four chief Lembaga to convey the news to the four Lawgivers and call upon them to attend at Sri Menanti.

The To' Paduka Besar (Lembaga, Ulu Muar) went to the Raja di Muda (Lembaga, Terâchi) and with him proceeded to Pantai and Rasah to wait upon the Dato' Klana Petra and Dato' Bandar of Sungei Ujong, respectively. Those two Chiefs, with all their following, returned with the two heralds to Terâchi, which, according to ancient customs, is there restingplace.

The To' Sri Maharaja (Lembaga, Ulu Muar) went to the To' Andika (a retainer of Johol) at Cheriau and with him proceeded to wait upon the Dato' Johol Johan Pahlawan Lela Perkasa Setiawan. The aged Dato', who much wished to attend and who had requisitioned the District Officer for a pony and trap in order to do so, was ill and therefore sent the Dato' Baginda Tan Amas, who is his representative in the Council of State. He and his following, which included the Dato' Inas and all his Lembaga, instead of returning with the two heralds to Cheriau, their appointed resting place, came straight on to Kuala Pilah and proceeded the next day to Sri Menanti.

The To' Senara Muda (Lembaga, Ulu Muar) went to the To' Paduka Sri Maharaja (Lembaga, Gunong Pasir) and proceeded with him to the house of Sinda Maharaja (Lembaga, Rembau). After being informed of their business the Sinda Maharaja conducted them to the Dato' Rembau Sedia Raja. He, with all his following, was escorted by the two heralds to Gunong Pasir, which is set apart on State occasions as his resting place.

The To' Orang Kaya Bongsu (Lembaga, Ulu Muar) went to To' Lela Raja (Lembaga, Jempol) and requested him to summon the Dato' Jelebu according to ancient custom. Having given this message the Orang Kaya Bongsu proceeded to Sri Menanti and remained in attendance upon the Dato' Ulu Muar. The To' Lela Raja (Lembaga, Jempol) instructed Si Alang Puteh of Jempol to summon the Dato' Jelebu. He



with all his following, should have returned with the herald to Kampong Bukit, his recognised resting place, but proceeded instead *via* Seremban to Terâchi, where he joined the procession of the Sungei Ujong Chiefs.

To all other Raja, Waris Chiefs, Lembaga, Penghulu and Malays of good position throughout the States news of the approaching ceremony was duly sent.

I arrived at the Astana with Mr. Chevallier, the District Officer, Kuala Pilah, at about 10.30 a.m. on Thursday, the 5th of May, and found everything in a state of preparedness that spoke volumes for the trouble taken by the Yam Tuan and his household and by Mr. Chevallier. Mr. Bathurst, Mr. Parr and Mr. Hatchell arrived on Thursday evening. I selected these four gentlemen to look after the four Lawgivers and their people, and to see that their comfort was attended to. A great measure of the success of the whole pageant is due to the assistance they gave me: and the Yam Tuan expressly thanked them.

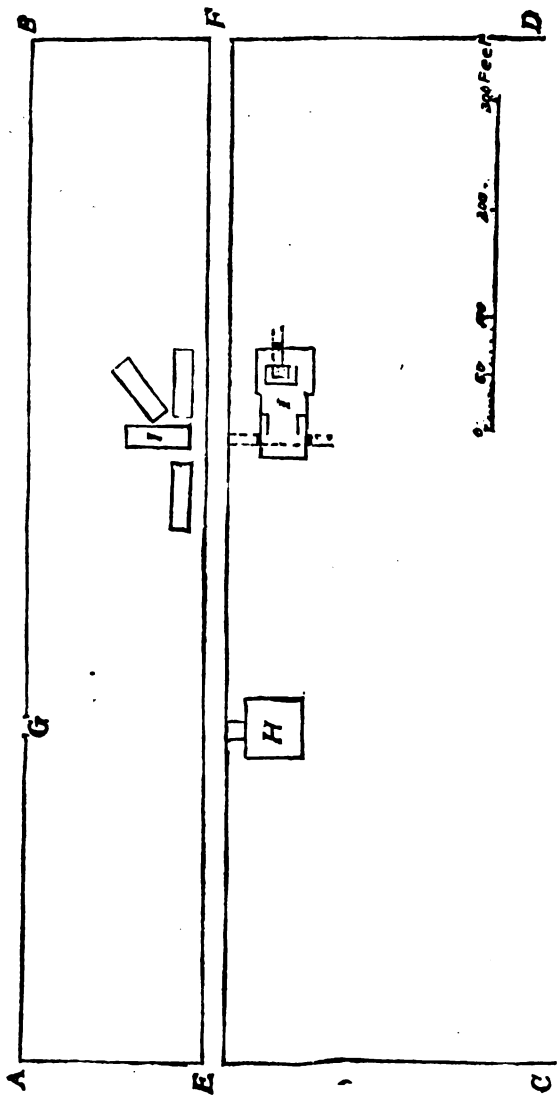
I was told that the Dato' Rembau and the Dato' Johol had already taken up their quarters at Sri Menanti with large followings. We wrote letters to the other three Dato', who were at Terâchi, advising them to stop the night there and come on next day.

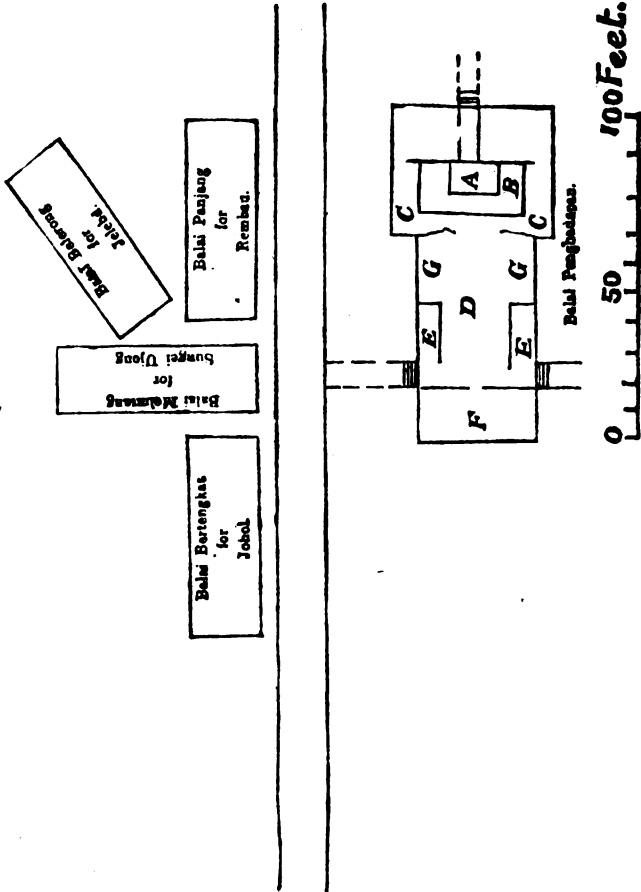
It was decided to procure more rice from Seremban, as all the Kuala Pilah shops had been emptied, and we sent for more drapery for the reception-halls of the four Lawgivers, and for four and twenty large Malacca mats to cover the bamboo flooring of those halls.

It may be well to describe the Astana grounds, and the subjoined plans will assist the description:

An examination of the first plan will show that the distance from one entrance gate (E) to the other (F) was about 300 yards. These entrances (*pintu gerbang*) were covered with thatch and on each side there was an earthen platform on which cannon were mounted. The road from one gate to the other was broad and was lined on both sides

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with bamboo poles with cross poles, say ten feet from the ground : along the whole length of the road a broad strip of yellow cloth was hung overhead and the entrance paths to the Astana (H) and royal balai (I) were similarly decorated. At the balai the royal yellow standard was flying from an orthodox flagstaff and the general mixture of yellow with the bright green of the grass and foliage was pleasing to the eye.

The second plan sufficiently explains itself.

Friday, the 6th of May, was, unfortunately, appallingly wet; but the rain did not check the constant stream of people that flowed in from every part of the Kuala Pilah district.

About mid-day the Chiefs of Sungei Ujong and Jelebu arrived at Sri Menanti and took up their abode in the houses set apart for them.

The processions of people attending upon the minor Chiefs paraded the Astana grounds, during the brief intervals of sunshine, and helped to make the scene imposing. The party that came with the Dato' Gunong Pasir was strikingly picturesque: his procession was headed by some two hundred women who wore cloths of every conceivable colour, and immediately behind them came his personal attendants carrying spears decorated with the peacock feathers of Gunong Pasir. The Dato' himself walked next, dressed in a suit of striped silk, the preponderating colour being yellow: behind him followed one hundred men, and two hundred children of all ages brought up the rear of the procession.

At various places, outside the Astana grounds, the usual forms of amusement that are concomitant with every Malay gathering of importance were provided: I was specially struck with the many skilful exhibitions of boxing (silat), which never failed to draw large crowds and provoke much merriment.

On two afternoons football matches, Europeans and Malays against the Police, were played: on a third athletic sports were held and, though the afternoon was wet, were much enjoyed.

Most of the time on Friday was occupied on determining several nice points of procedure to be adopted in the ceremony of the morrow. The Sri Menanti people were, of course, in favour of introducing many forms which the older men, who had witnessed a previous installation, deemed to be essential. The members of the Yam Tuan's family were anxious to use every form of expression which would proclaim the dominance of his position, and, had it not been for the extreme good sense of His Highness, it would probably have taken three or four days to arrange the procedure.

I had many consultations with the Dato' Bandar of Sungei Ujong, whose attitude throughout was firm but friendly, and I explained to the Yam Tuan that the Chiefs had made considerable concessions, that their patience ought not to be taxed in any way, and that the ceremony should be performed punctually and with as much expedition as possible. His Highness at once replied that his desire was to yield every point of minor importance. These discussions did not end till nearly midnight on Friday, but it was satisfactory to feel assured that every possible danger to the success of the very important event about to be celebrated had been removed.

On Saturday morning, crowds of people began to collect from every quarter: with the exception of an early shower, the weather was propitious. The placing of the royal umbrellas in front of the "balai penghadapan" (the royal hall in which the installation took place) was the signal for an enormous concourse of people to collect at that spot.

At a quarter to eleven, a guard of honour of the Sikh Police was drawn up near the reception halls of the four Lawgivers: the first to arrive was the Dato' Rembau: I received him at the entrance to the "balai panjang" and, after the guard had presented arms to him, we placed his followers in his reception hall and Mr. Parr conducted the Dato' to the Astana to put his signature and chop to the agreement with the Yam Tuan. Almost immediately afterwards, the Dato' Klana and the Dato' Bandar of Sungei Ujong arrived: the guard presented arms to them at the entrance to the "balai

melintang" and after their followers had entered the balai, Mr. Bathurst conducted them to the Astana: meanwhile Dato' Baginda Tan Amas of Johol, followed by all the Datos and minor Chiefs of the Negri Sembilan (old), had arrived: the guard presented arms to the Dato' Baginda at the entrance to the "balai bertengkat" and, after his following had entered the balai Mr. Chevallier conducted him to the Astana: a long wait occurred before the arrival of the Dato' Jelebu: he was received by the guard at the entrance to the "balai belérong. When his followers had entered it, Mr. Hatchell conducted him to the Astana. The affixing of the signature and chops of the Lawgivers to seven copies of the agreement being completed, I signed and placed the State seal upon them and they were then taken upstairs to the Yam Tuan who added his signature and chop. The four Officers named above then conducted the Lawgivers to their reception halls where they awaited their summons to the installation hall: in the meantime the Tungku Prempuan had taken her seat upon the dais to the left of the throne (Singgasana) and several ladies of high degree had been accommodated with seats in the places set apart for them: the yellow cushion, gold boxes, and other insignia of royalty were brought in and placed on the dais: Tungku Muda Chik, Tungku Ngah of Tampin, Rajah Kadir of Lukut, my four officers and I next took our seats in the body of the hall, and everything being ready the heralds announced that the Yam Tuan was coming to the hall: His Highness was preceded by the "orang empat Astana" and his "orang anam" carrying the weapons of State: immediately behind him were the young Tungku Besar (his brother) and the still younger Tungku Laksamana (his brother-in-law), while a score or so of Rajas completed the procession.

On arrival at the hall, His Highness was received by a guard of honour: he entered the hall and took his seat upon the "Singgasana," the "orang empat Astana" and the "orang anam" stood upon the right and left below the dais and the Tungku Besar and Tungku Laksamana sat on the right and left of His Highness below the throne. The heralds sum-

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moned the Lawgivers and the hereditary Chiefs, who were each conducted from their respective balai to the entrance to the hall by their Officers of State: they entered the hall alone and took their seats in the following order:—

- |                                   |                             |
|-----------------------------------|-----------------------------|
| (1) The Dato' Klana } Sungei      | (7) The Dato' Ulu Muar      |
| (2) The Dato' Bandar } Ujong      | (8) The Dato' Terachi       |
| (3) The Dato' J. Jelu             | (9) The Dato' Jempol        |
| (4) Dato' Baginda of Johol        | (10) The Dato' Gunong Pasir |
| (5) The Dato' Rembau              | (11) The Dato' Inas         |
| (6) The Tungku Besar of<br>Tampin | (12) The Dato' Gemenchek    |
|                                   | (13) The Dato' Muda Linggi  |

The two heralds (Bentara Kanan and Bentara Kiri) took up their positions on the right and left of the Yam Tuan.

When all were in readiness the young Dato' Klana, rising, said, "Oh, Bentara, proclaim to everyone that we the four Lawgivers have assembled here to place the Yang di per Tuan Tungku Muhammad upon the throne of Negri Sembilan."

The Bentara Kanan thereupon, standing on one leg, with the sole of his right foot resting on his left knee, holding his right ear open with his right hand and shading his eyes with his left hand, made proclamation as follows:—

"Oh, gentlemen all, illustrious and humble, great and small, old and young, by order of the four Lawgivers, Tungku Muhammad, the son of the late Yam Tuan Tungku Antah, is proclaimed as Yang di per Tuan of the Negri Sembilan."

The people signified their homage by shouting three times, "Dôlat Tuanku."

I then addressed the Yam Tuan as follows:—

"I am very pleased that the Lawgivers and Lembaga and Officers and all the people from all parts of the Negri Sembilan have unanimously installed Your Highness as Yang di per Tuan and have re-established their ancient constitution, and that Your Highness has assented to their action. Now I will convey their wishes to the Resident-General."

The Bentara Kanan proceeded to call, by means of the following formula, upon each of the Lawgivers and on the

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Hereditary Chiefs of Tampin, Muar, Terachi Jempol, and Gunong Pasir, to make obeisance:—

“Hè Dato' Klana Petra, who rules over the territory of Sungei Ujong, titah memanggil (His Highness summons you).”

Each Chief in turn replied, “Dôlat Tuanku:” and one by one they emerged from the enclosure (ujong balai) in which they were seated, and squatting on the ground each proceeded along the floor (hadapan mejelis) making obeisance seven times until the dais was reached: there the Yam Tuan gave his right hand to the Chief, who, receiving it in both of his, reverently kissed it thrice and then retired, making obeisance five times as he receded.

Each Chief rose and resumed his seat, with the exception of the Dato' Jelebu, who left the hall after he had done homage.

The Dato' Inas, the Dato' Gemencheh and the Dato' Muda Linggi made their obeisance together and all the chief Lembaga and Waris of the various districts entered and did likewise.

The Lawgivers then left the hall and retired to their reception halls and their places were taken by all those who were of Raja blood: they numbered about twenty five: they were almost all dressed in yellow, several with black head-cloths, and, as they all moved up the hall, and, sitting below the dais, made obeisance three times in regular time, I was more impressed by the scene than by anything I have ever previously witnessed at any gathering of Malays. The Rajas were not commanded to come forward: it was an entirely voluntary act, but every one of them joined in it and it was a fine finishing touch to an imposing pageant.

Tungku Dris, Kathi of Tampin, the assistant Kathi of Kuala Pilah and some priests came in and offered up prayers for the Yam Tuan while the people stood with palms uplifted.

All being now over, the Yam Tuan rose and, after shaking hands with me, passed out of the hall and proceeded to the Astana, followed by all the Rajas.



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The ceremony, which had lasted two and a half hours, ended at 3. p.m. and the crowd quickly melted away.

On Sunday, at noon, he gave a breakfast to the Undang and made an interesting speech in which he pointed out that the constitution of the Negri Sembilan was now complete; there were now—

THE YANG DI PER TUAN ;

THE FOUR UNDANG (from Sungei Ujong, Jelebu, Johol, and Rembau) ; and

THE FOUR SÊRAMBI UNDANG (from Ulu Muar, Jempol. Terâchi and unong Pasir who, in the absence of the Undang, would represent them and would always do so by attending to make obeisance annually at the festival of Hari Raya).

On Sunday afternoon the various Chiefs left Sri Menanti to return to their homes, and early on Monday I went back to Seremban.

The above is a brief description of a ceremony that restored good feeling to a number of Chiefs who, for a generation, had been absurdly jealous of each other. Every person taking part in the ceremony recognised its importance and the calm and dignified reserve so characteristic of the well-born Malay was strikingly exemplified.

The concourse of people must have numbered from three to four thousand persons, and good humour reigned everywhere.

## An Account of the Creation of the Dog.

BY W. G. MAXWELL.

I heard this story from Pa' Senik, an old Kelantan Malay now resident near Batu Gajah in Perak. He was giving an account of the creation of the first man according to the Muhammadan tradition, which may be found in Sale's Notes to his translation of the Koran and in D'Herbelot's article "Adam" in his *Bibliothèque Orientale*; and the account of the creation of the dog was a mere parenthesis in his story—It is new to me, and appears to be a Malay accretion to the Arabic myth.

When Azrael had torn out the heart of the Earth and had fashioned it into the form of man, he left the moulded figure, which was still without life, on Bukit Zabaniah.

It lay there face upwards exposed to all the elements. Iblis passed that way and saw it, and, from malice, voided his excrement on its chest.

When Azrael returned he flung the excrement away, and it immediately took the form of a dog.

The creation of the dog in this manner has had effect in two ways. In the first place, the dog, though an unclean animal may be bought and sold by Muhammadans, whereas the purchase money of all other unclean animals carries the taint of the unclean. In the second place, the Dog, however badly treated and however often thrashed, will always return to man.



## Kun and Payah Kun.

BY W. G. MAXWELL.

Every student of pawang-lore is familiar with the terms *kun* and *payah kun*, which most frequently occur in such expressions as "kun *kata Allah*, *payah kun kata Muhammad*" (*kun* saith Allah, *payah kun* saith Muhammad), but no one has yet, so far as I am aware, discovered their meaning.

*Kun* presented no difficulty; it is obviously the Arabic كُنْ "let it be." But the antithetical term *payah kun* remained without a solution. My father suggested that it was a corruption of the Malay word سُنَّاي *supai*—meaning "in order that," and in this he is followed by Skeat,\* but the sense thus derived from the sentence does not appear to be altogether satisfactory. Another suggestion was that the word was the Arabic فِيهِ *fih*—meaning "to him." But this, too, seemed inconclusive.

For the solution of the puzzle I am indebted to Mr. J. C. Sugars, of the F. M. S. Civil Service. '*Payah kun* is merely a corruption of the Arabic *fa yakun* فَيَكُونُ—meaning "and it is." The correct reading therefore is "kun *kata Allah*, *fa yakun kata Muhammad*."

"Let it be" saith Allah: "and it is" saith Muhammad.)

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\* Skeat, *Malay Magic*. p. 4. Footnote.

The words occur in the 110th verse of the second chapter of the Koran.

إِذَا قَضَىٰ أَمْرًا فَإِنَّمَا يَقُولُ لَهُ كُنْ فَيَكُونُ

*Idha qadha amran fa innima yaqulu lahu kun fa yakun.*  
(When He decreeth a matter, He doth but say unto it 'Be;' and it is.)

Again in the 83rd verse of the 36th chapter we have  
إِنَّمَا أَمْرُهُ إِذْ أَرَادَ شَيْئًا أَنْ يَقُولَ لَهُ كُنْ فَيَكُونُ  
*Innama amruhu idha arada shai'an an yaqulu lahu kun fa yakun.*

(His bidding is only, when He desireth anything, to say to 'Be; and it is.)

The expression is thus identical with that which appears throughout the first book of Genesis in such verses as the following :—

And God said, Let there be light : and there was light.

And God said, Let the waters under the heaven be gathered together unto one place, and let the dry land appear : and it was so.

It is probable that the sentence as we now have it was first coined by *pawangs* as part of a *mantra* at a period when the Malays had not long been converted to Muhammadanism. The addition of the words "saith Muhammad," though doubtless partly due to ignorance of the meaning of the foreign words and partly to the national love of an antithesis, appears also to be partly due to the zeal of a convert. And, it is interesting to note, not only is the addition of the two words wholly unnecessary, but the expression "and it is, saith Muhammad" would appear to a strict Muhammadan to be of very doubtful orthodoxy.

## The Story of Kherudin.

BY G. M. LAIDLAW.

Penghulu Mat Nordin learnt this story of Kherudin many years ago from Mohamed Unus bin Mohamed Arip who, so far as is known, was of pure Perak descent.

The tale is told that once in the olden time there was a merchant called Mansur who had seven sons. Now he was very rich. But one day, owing to the will of God, he fell ill with many and very grievous sicknesses. Many doctors and medicine men tried to physic him but could not restore him to health. So one day he called his seven sons and at that time he declared his will to his eldest son, Zainal Abidin, his second son, Kamarudin, his third son, Shamsudin, his sixth son, Bahakudin, and to his youngest son, Kherudin, saying to them. "Hai, Zainal Abidin, on this day have I made my will. As regards your younger brother Kherudin you must take very great care of him, for it seems to me that he is the one who will be most fortunate, indeed all of you will be able to obtain your living through him. Now on no account whatever are you to transgress this my will. If you do, I shall certainly curse you both in this life and hereafter and you will not obtain peace."

His son named Zainal Abidin made reply and said, "It is good, my father."

Two or three days later Merchant Mansur returned to the mercy of God. After that Zainal Abidin called all the priests and preachers, hajis and lebais, to pray for his father. He also got ready the siraja diraja, that is to say the bier on which the body is carried to the grave. This was adorned with all sorts of most precious things. He gave away in alms many tens of thousands of dollars to all those of the faith who were there on the day that his father was laid in the earth. After he had completed the feast of the third day and

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of the seventh day and of the twice seven days and of the forty days and of the hundred days after all this work of the feasts had been settled, Zainal Abidin carefully followed out to the letter the will of his father as regards the upbringing of his youngest brother.

After a very long time when Kherudin had grown up, the eldest brother made a plan with his younger ones to go on a trading voyage. They all replied that it was a most excellent plan. So after this meeting they ordered the second son of Kamarudin to get ready a very big ship and to load all sorts of trading things therein. After voyaging for some days they came to a country and the six brothers with Zainudin went to lay before the king of the country all sorts of offerings in homage, but the youngest brother was left to watch the ship. Now Kherudin had been given a hundred dollars by his eldest brother in order that he might buy anything that he fancied. This had been ordered in his father's will. While he was watching the ship, a certain man in the country who had been keeping a mangy dog began to think on this wise. "What is the good of taking care of this mangy dog? The food that I give it is only a loss." So that day he made up his mind to destroy it by setting it adrift in the sea. But when the man reached the shore leading the dog with him and Kherudin saw that he meant to throw it into the sea, he said. "What are you going to do with the dog?"

The owner replied. "I am going to set it adrift, because it is mangy and I cannot afford to feed it any longer."

Kherudin said, "Will you sell the dog?"

The man said, "If you want to have it, take it."

Kherudin said, "If you give it to me, I do not want it, but if you will sell it for thirty dollars I will buy."

When the dog's owner heard that he replied gladly, "Take it." So Kherudin paid over thirty dollars, and the man took it and went away back to his own house. A little later his elder brothers came back from the palace, and found Kherudin busy bathing his dog. They said to him. "Where did you get the dog?"

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Kherudin answered. "I bought it just now for thirty dollars."

The five brothers said. "The fellow is cracked, a ninny to throw his money about like that for no use."

"Don't be angry with him. It is not your money that he has given away."

Some days later the elder brothers again went on shore to buy all sorts of merchandise to bring back to their own country and again Kherudin was left to take care of the ship. While he was on watch a man brought a mangy cat which he intended to throw adrift into the sea. Kherudin said, "What are you doing with that cat?"

The man with the cat answered, "I am going to set it adrift in the sea."

Kherudin said, "Will you sell it?"

The owner of the cat answered. "If you would like to have it, take it."

Kherudin said, "If you merely give it, I do not want it, but if you will sell it for thirty dollars I will buy it."

So the owner of the cat said, "Very good then." And Kherudin paid him the thirty dollars. The man went back to his house rejoicing. A short while after the six elder brothers came back from the shore and found Kherudin busy bathing the mangy cat. The five said to him, "Where did you get this cat from next?"

He answered, "I have just bought it for thirty dollars."

They said to him, "Are you a human being? Have you no brains? You are just like a beast, and when a man is like a beast, it is a very great curse indeed."

The eldest brother said, "What is the use of being angry with him? It is not your money with which he bought it. I gave him that money. Let him buy whatever he likes. I don't mind."

So Kherudin lavished all his care on the dog and on the mangy cat and paid no attention to the trading voyage. He gave his whole energy to looking after the dog and the cat.



About two days after this his brothers again went on shore to look for all sorts of things to trade and left him again in the ship. Then another man came along dragging a snake by a noose which he had fastened round its neck. He also wanted to kill it by throwing it into the sea.

When Kherudin saw the man dragging the snake he said, "What are you going to do with that snake?"

The man said, "I am going to kill it and throw it into the sea."

Kherudin said, "Will you sell it?"

The man said, "If you want it take it."

Kherudin said, "If you give it to me, I do not want it: but if you will sell it for thirty dollars I will buy it."

The man said all right. After that Kherudin paid the thirty dollars. When he had bought the snake Kherudin looked after it so well that his brothers never knew about it.

Now it seemed that this snake was the king of all snakes, so in the middle of that night, all his ministers and all his subjects came before him. The ministers made obeisance saying, "Your majesty, why do you live here? Why have you abandoned your throne? What is the fault of your servants? Have we not all obeyed your august commands? As far as we can remember never have your servants even on one occasion rebelled against your august commands."

Kherudin heard all that they said. The king snake replied, "It was no fault of yours. Only it happened that one day as I went along by myself intending to look at the sports of mankind, while on the way I became thirsty so I went to look for water. While doing this I met with one of these folk, who struck me and intended to kill me and cast me into the sea. But then we met this man who redeemed me for thirty dollars, and that is how it happened that I did not die."

Then all the ministers proceeded to present themselves before Kherudin and made obeisance saying, "Your majesty, this snake which you have redeemed is the king of all the

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snakes. If there is any pity any mercy in your majesty, your slaves trust to be allowed to return you this money."

Kherudin answered, "Even if he is the king of all the snakes, yet we cannot give him back for we are fond of him."

So all the ministers besought him saying, "If your majesty will not allow us to give you money, then there is a certain fairy ring which we can present to you. Whatever your intention or whatever your wish may be, it will bring them all to pass."

When Kherudin heard that, he said, "If that is true, you can take the king snake."

So all the ministers rejoiced greatly and besought permission to retire, which was graciously given them. The king snake was borne away on his ryots heads, back to his own country.

The next day the eldest brother, Zainudin, said, "Tomorrow we will sail home."

Kherudin heard what he said and saw that he had only ten dollars left. So he went on shore to buy all the fish scales and broken pots at the fish sellers' place. He bought every fish scale and broken sherd from those people who lived there for ten dollars. They were all very glad. Then he carried them all off and stored them in the ship. His eldest brother just noticed him, but the five others kept on grumbling and were angry with Kherudin for his mad conduct.

After that on the next morning they set sail, and Kherudin was still more devoted to his mangy dog and to his mangy cat. After voyaging for seven days and seven nights they reached their own country. As soon as ever they arrived, the six brothers each took a present to offer as homage to the king.

The king said, "The six of you have each given me a present but your youngest brother seems to think that he need present no homage to me."

The eldest brother replied, "It is because this youngling, Kherudin has brought nothing whatever back with him."

After that they all craved permission to return to their own house.

When they got there the five brothers said, "This fellow is of no value in the king's eyes. The rest of us all took a present. He alone took none. And so we were put to shame, for of course people will not say that we are rich, and of course people will not say that Merchant Mansur was our father."

But Kherudin was silent and made no reply.

The next day he went to his mother, Siti Rasimah, and said, "Mother, mother, please go and bespeak the king's daughter in marriage."

His mother answered, "Why, what resource have we? Certainly such poor people as we are will not be received by the king."

Her son said, "Please go, mother. You can but try."

So his mother went before the king and lifted her ten fingers in obeisance and made homage, saying, "Pardon my lord, a thousand be the pardons vouchsafed to your most humble slave, who humbly craves for pardon. My child, my youngling, Kherudin has preferred a request. He desires to become your august majesty's slave, and to repair the broken flooring and the torn partitions in your palace."

The king quite understood what Siti Rasimah meant, so he said, "I would like to give my child a husband, but Kherudin must first accomplish what I want and then, please God, I would accept him."

Siti Rasimah made obeisance, "Pardon, your majesty, your slave wishes to hear a little of the royal commands, what is your intention, what is your desire towards her in the dust at your feet?"

The king said, "First of all, he must make me a royal palace whose pillars are of mingled gold and silver and whose walls are of pure gold, and with a diamond cupola. Then secondly he must make a landing of gold from the palace right down to the sea. Then thirdly he must make a gold road between his house and my palace."

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When he had finished speaking Siti Rasimah became very sad and after she had obtained leave to depart she returned home weeping looking for her son, and saying, "This time mother and child are indeed separated."

Kherudin saw her weeping and became very frightened. He said, "Why are you weeping, mother? What has the king said?"

So his mother told him all that the king wanted. Kherudin said, "If that is all that the king wants, do not be frightened, mother; go and tell the king that whenever he wants it done, I am ready to do it."

So the next day Siti Rasimah again went before the king and made obeisance.

"Pardon your majesty a thousand pardons, when does your majesty desire to have this thing done?"

The king said, "I want it done in three days time from now. When it is quite finished I will marry my daughter to him at once."

After that Siti Rasimah was given leave to return. She told her son all that the king wanted and Kherudin replied, "Very good." So that evening he ordered his mother to make limes and cosmetics ready and also told her to sleep at another house for that night, so that he was left alone. In the evening when alone by himself he bathed and perfumed himself. At midnight he called out aloud, "Oh! fairy ring that was given me by the king snake, if you really are a fairy ring, I ask you to make me a royal palace whose pillars are of mingled gold and silver and whose walls are of pure gold, and a landing place of pure gold from the palace to the sea side, and a pathway of gold from the palace to this house of mine."

At that very instant with a noise like thunder came all the jins and the king snake and all his ministers before Kherudin.

The king snake said, "Why is my beloved troubled of heart?"

So Kherudin answered, "I have asked for the hand of the daughter of the king of this country, and he has asked me

to make a royal palace and a landing place and a pathway of pure gold, and also that the palace should have a diamond cupola."

The king snake said, "When does my beloved want this done?"

Kherudin answered, "I want it done to-night."

So that very night after the king snake had concentrated all his will on fulfilling Kherudin's request, everything came into being perfectly complete. The glamour of the palace burst all over the whole country side, and all the retainers and all the great men were terrified and went before the king. The king too was greatly astonished, but in a little while he recollected the request that he had made of Kherudin. Then he became very glad and told all his retainers; each of whom afterwards went back to his own house. The king was very pleased indeed to see what Kherudin had done. As soon as ever it was day, the whole population came together to see the king's palace. They were all astonished. When each one was satisfied with gazing on this most wonderful sight they all went back to their own homes.

Later on Kherudin went to his mother and said, "Mother, go and ask the king when he is going to marry me to his daughter."

Siti Rasimah at once went before the king. When she reached the royal presence she made obeisance, lifting her ten fingers in homage, and said, "Pardon your majesty, a thousand thousand pardons, your slave trusts peradventure to be pardoned for preferring her request, since she has for such a long time obeyed the royal behest. Your slave has been asked by her youngling Kherudin to enquire from your majesty what is to be done about your former promise."

When the king heard Siti Rasimah's request he pondered thus in his heart: "Of a certainty I spring from a race of kings who have come down from father to son from the olden days, and this Kherudin is the son of a merchant. If I marry my daughter to him I shall be put to shame when the kings in the other countries come to hear of it. But if I break my word he

may raise the country in revolt, and perhaps he might subdue it, for he is clearly a man endowed with many charms and magic powers."

So in thinking thus the king spake as follows: "Very well, the marriage will take place in seven days time."

When Siti Rasimah heard the king's words she went home and told her son all that the king had said. Kherudin was very glad. On the next day the king told one of his friends to call all his retainers together. And on that day all his ministers were gathered together. The king was seated on the royal throne of state and spake on this wise: "Hai! one and all, retainers of mine, we have called you together to make preparations for the wedding of our daughter Princess Shamsiah with the merchant's son named Kherudin."

All the retainers made obeisance, saying, "Pardon your majesty, a thousand thousand pardons, we are all willing to bow our heads beneath your majesty's commands."

When the king had made an end of speaking and the retainers had finished their homage, the retainers all lifted their ten fingers, and obtained leave to return each to his house. The very next day the ministers all began to obey the king's behest: the days were like nights and the nights were like days, the whole country was in an uproar and all the inhabitants were gathered together. The blind were led in and the lame came on crutches.

When the seven days and the seven nights were completed Kherudin was brought in procession to the king's house with all sorts of finery. Still more was lavished on the Princess Shamsiah. When Kherudin reached the royal audience hall it was crammed full with all the ministers, eunuchs, heralds, all the penghulus, the whole army of the common folk were in the royal hall. The king himself was present seated in state on his royal throne and he had called the kathi and had empowered him to marry his daughter to Kherudin. When the kathi arrived he came on bended knee lifting his ten fingers in homage, and when the king had fully confirmed the power bestowed and he had again lifted his hands in obeisance,

he went back to find Kherudin. When he got near Kherudin he ordered him to sit down on one knee. The kathi then read the marriage service, after that he spoke to Kherudin, and when he had made an end of that and he had prayed in all sorts of ways for the safety of the king's children, husband and wife, and for their parents and for all the people in the realm, when he had made an end of all that, they bore Kherudin into the palace and seated him next to Princess Shamsiah. All the men and all the women who saw the sight were very greatly pleased, for it was for all the world just like the moon encircled by stars. Next they brought the marriage cake of rice, which was ornamented in many ways. Both husband and wife partook of it. When they had finished eating they were next led by the eunuchs and female attendants into the royal bed-chamber, and the golden state curtain was lowered. Many were the terms of endearment that Kherudin lavished on his wife, but she bore herself most humbly. When Kherudin saw that, a great pity arose in his heart and he embraced her and fondled her with many sweet and kind words to soothe his wife's heart. So Kherudin came to love his wife.

Some days after, Kherudin went out hunting. His wife made ready all sorts of provisions. He left behind his magic ring with his wife and set off with an army of retainers and with elephants and horses. While her husband was away hunting the Princess Shamsiah noticed that the setting of the ring was old and worn. So she ordered one of her attendants to call the most skilful Chinaman in the country. He quickly came to her presence and she ordered him to reset the ring in a more beautiful way. The jeweller said "Very well." He obtained permission to return to his house. When he got there he had a good look at the jewel in the ring. Never had he seen so fair a gem. So that very night he ran away with it.

After two days time Kherudin came back from hunting with all sorts of things that he had taken in the chase. When he reached his wife he asked for the ring. She replied that she had given it to a Chinaman to put it in a better setting. The princess ordered one of her servants to go and call the jeweller. When the servant reached his house she

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learnt that he had run away. So she ran back to the princess and informed her. As soon as Kherudin heard what the servant said he swooned without saying a word. The princess was greatly distressed for her husband. An uproar arose in the palace and the king her father came to see why his son-in-law had fainted.

While this was going on the mangy cat got to know what had happened to his master and he took counsel with the mangy dog.

"What will be the end of this thing? Our master has been in a swoon for several days because he has lost the fairy ring given to him by the king snake. I think that it is only right that we should go and look for this ring for that Chinaman has run off with it to some other country. If we cannot find it, the care spent on us by our master is quite useless."

The mangy dog replied, "Go and get it, for I cannot look for it."

The mangy cat said, "It is not that you are not able merely. You have no strength for it, for you have no love for your master."

The mangy dog said, "It is not that I have no love for my master. I am very fond of him. But I do not know where on earth that ring has been taken by that Chinaman."

The cat said, "If you do not know how to look for it, let me be the head and you can follow. But whatever I say you must do."

The mangy dog said, "If it be arranged like that, let us go."

After they had made this plan the dog and the cat set off, into forests, out of forests, up mountains and down mountains, into plains and across plains. At last they came to a village.

The dog said, "I cannot walk any farther, for I am tremendously hungry."

The cat replied, "I am hungry too. Since that is so, I had better go and look for some food. But let us make



our plans first. I will go into the houses. If I find any food in the kitchen and if I can knock it down to the ground, you must at once snatch it up in your mouth and run off to the jungle."

The dog agreed, so the cat set off. He went into one house where he saw a cooking pot in the middle of the kitchen. So he went in and kicked it down to the ground. The dog snatched it up and ran off to the jungle and the cat followed him. When they got into the jungle they ate until they were satisfied and then being once more strong they went on their way. The mangy cat went into the towns to listen to the people talking but heard nothing. So they went on once more until they came to the sea side. There they saw an island.

The cat said, "Perhaps that Chinaman is there, we must go across to the island."

The dog said, "If you are able to, come along."

So they set off swimming in the sea. They swam for a day and a night. At length both of them reached the island and climbed on shore. They walked about on the beach.

The dog said, "Hai, I can't walk any longer for I am very hungry."

The cat said, "Let us look on the shore, perhaps we can find some fish which we can eat."

In a little while they found a big fish. The cat said, "That is the very fish we want, come and let us eat it." So the cat and the dog finished the fish. After that both of them went on. Every night they listened of news of the Chinaman to see if he was in the island. But he was not.

The cat said, "What resource have we left now?"

The dog said, "I don't know, whatever you think I will agree to."

The cat said, "We had better go to some other country perhaps we will find that Chinaman there."

So they both swam away to another country. After a long long time they arrived and climbed on shore. The dog said, "Hai, cat, I can walk no longer for I am faint with hunger."

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The cat answered, "Wait here then, while I go to look for some food."

So he set off. At last he met with a man who was busy smoking some fish. The cat hid in the grass close by and while the man went away to eat his dinner, he took five or six fish and went off with them to the dog. They both ate and when they were satisfied they went on together. When night fell they went to the house of a goldsmith, a Chinaman. The cat thought that this was perhaps the house of the man who had stolen their master's ring.

The dog said, "How are you going to manage to get that ring if the ring is in the house?"

The cat answered, "I have a plan. It seems that this towkay is really the fellow who has stolen the ring."

The cat said to the dog, "You wait on this side of the door and I will wait on that. If you see a white rat, catch it, but don't kill it."

The dog said, "Very well." They each lay in wait on their side of the door. At last about midnight, a white rat came out on the cat's side and the cat caught it.

The white rat said, "Don't eat me."

The cat said, "Yes, I am going to eat you."

Now the white rat was the king of all the rats in that country. When this occurred all the great men of the king rat came.

One of his retainers said, "Do not, oh, Grandfather Cat, devour our king! Whatever you may want we will help you."

The cat said, "Very good, there is a fairy ring in the inside of seven boxes belonging to this towkay. If you get that ring to-night, I will let your king go; if not, I certainly will eat him."

The retainer replied, "Very well, if it is there, we will get it to-night."

So they pressed all the rats in that country and ordered them to bore into that Chinaman's box. So all the rats gnawed through one box after another, until the seventh.

When they had pierced the seventh, one of the army of rats went in and searched about inside. There was only a small bundle of cloth but the rat felt that there really was a ring inside it. So he brought it outside and gave it to the cat. When the cat saw that it really was his master's ring he let the king rat go. So the king rat went off with his army of followers. The cat was very glad indeed and went to find the dog.

The cat said, "Hai, mangy dog, I have got our master's ring. Come along home."

The cat carried the ring in its mouth. When daylight came the cat and the dog set off to swim across a very wide sea. The cat was not in the least tired owing to the power of the ring. But the dog got very tired and spent, so he said to the cat,

"Hai, let me carry the ring for a little, for I see that you are quite fresh."

But the cat said, "You can't carry the ring now; perhaps you will let it fall."

The dog said, "It won't fall."

So the cat gave it to the dog who put it in his mouth. The dog at once became a little stronger. But after a time the ring fell into the sea.

The dog said, "Hai, our master's ring has fallen into the sea."

The cat said, "I told you before that if you carried it, you would let it fall, but you said it would not. Now you have dropped it. And how are we to get it back again?"

So they went on swimming till they got to an island at which they rested.

The cat said, "We had better walk about on the shore."

The cat noticed a large fish rolling over and over on the shore. He thought, "What a fat fish that is. I am hungry; I had better eat it."

So he said to the dog, "Come along and eat this dead fish for I am very hungry."

The dog rushed off and began to eat. The cat also came and ate. The dog guzzled right into the fish's maw. When he broke it open he saw that there was a ring inside. The dog said, "I have found a ring in the maw of this fish."

The cat said, "Here! let me have a look."

So the dog gave it to the cat, and it actually was the ring that had fallen. The cat took it and put it in his mouth, and said "Come along and let us swim back."

So they both swam away. At last after a very long time they reached land. They travelled on, day and night, night and day, until at last they reached their master's country. When they got below the house, Kherudin was still in a swoon. The cat tried to reach his master but was not allowed to get near. So at midnight when they were all asleep, the cat crept up into the house and went to his master and laid the ring on his breast. Then Kherudin sneezed and at once recovered consciousness and went away to his own bedroom. Nobody had noticed anything, so the people who were on guard at the place where Kherudin had swooned were very frightened the next morning when they saw that Kherudin had disappeared. So an uproar arose in the palace. Some one told the king that his illustrious son had disappeared from the place in which he had swooned. The king was very grieved to hear this. Later on in the day, at the time when the ploughman can glance round without being dazzled by the sun, that is to say at the time that you can lift your eyebrows, (about 9 a. m.) the princess Shamsiah came out from her bedroom and heard that there was an uproar in the palace because her husband had disappeared. So the princess ordered one of her servants to go and tell her father that Kherudin had recovered from his swoon and was in his own bedroom. So the maid servant ran off in a hurry to go before the king and said,

"Pardon, your majesty, a thousand thousand pardons, this your slave has come before your gracious majesty on the command of your daughter. The princess commands me to say that Kherudin has recovered from his swoon and is now in his bedroom."

When the king heard this report his grief at once disappeared. While the maid was away seeing the king, Kherudin arose from his sleep. Both husband and wife then proceeded to bathe. When the bathing was over, they had breakfast. They lived together very happily.

After a very long time the king abdicated in favour of Kherudin. As long as Kherudin was king the country increased in peace and became more and more populous. Kherudin was styled Sultan Kherudin Shah because he was so very wise and clever, and because he took such great care of all the natives of the land and because he so fostered all the strangers. His dignity increased and his name became more and more famous in the neighbouring lands.

One day he summoned all the great men of the country and all his brothers. When they were all assembled and he was seated on his throne of state, he made his eldest brother the chief minister of state and the other five brothers the keeper of his buffaloes, of his cattle, of his goats, of his sheep, and of his fowls, each with his separate work. And his kingdom became more and more firm. He may be reigning still, Heaven alone knoweth.

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### The Story of Kherudin.

Alkésah maka ada-lah pada masa dahulu kala maka ada-lah sa'orang saudagar nama Saudagar Mansur, maka ada-lah anak-nya laki-laki tujoh orang. Maka sangat-lah kaya-nya. Maka pada satu hari dèngan takdir Allah sakit-lah ia dèngan bër-bërapa kasakitan amat sangat, maka bër-bërapa tabib dan bër-bërapa bomor akan mêngubati ini saudagar tiada juga mahu baik. Maka pada satu hari di-panggil-nya-lah anak-nya katujoh-nya dan pada waktu itu bër-wasiat-lah ia kepada anak-nya yang tua nama Zainal Abidin dan yang têngah-nya nama Kamarudin dan yang alang-nya nama Shamsudin dan yang uda-nya nama Bahakudin dan yang bongsu-nya nama Kherudin. Maka kata bapa-nya " Hai Zainal Abidin pada hari ini tëlâh aku bër-wasiat-lah kapada kamu. Fasal adek kamu Kherudin ini

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handak-lah kamu pëlihara-kan baik-baik kërana ia pada pandangan aku dan rasa hati-ku ia-lah yang sangat bërtuah dan sèklian kamu boleh mënumpang kapada-nya. Maka jangan-lah sèkali-kali kamu lalui akan wasiat aku ini, jika kamu lalui juga téntu-lah kamu aku sumpah dunia dan akhirat tiada-lah dapat sèlamat." Maka jawab anak-nya yang nama Zainal Abidin "Baik ayah." Kémudian sèlang antara tiga hari maka ini Saudagar Mansur pun këmbari karahmat Allah. Sètèlah dëmikian dipanggil oleh Zainudin sègala imam khatib, haji dan leba akan sëm-bahyang-kan bapa-nya itu dan dipërbuat-nya sèraja diraja, yaani përusongan mêngangkat mayat ka-kubur dèngan pëlabaigei përhiasan yang tëlalu amat èndah-èndah-nya dan bër-bèrapa puloh ribu ringgit disèdèkah-kan-nya kapada sèklian orang islam yang ada hadir pada hari turun tanah bapa-nya. Maka sètèlah disèmpërna-kan-nya-lah khanduri mèniga hari, dan tujuh hari, dan dua kali tujuh hari dan empat puloh hari dan saratus hari-nya, shahadan tèlah sèlèsei-lah dèripada pèkerjaan khanduri itu, maka ini adek-nya yang bongsu-nya itu dipëlihara-nya ikut sabagimana wasiat bapa-nya itu juga.

Kémudian lama dèngan kalamaan-nya maka ini Kherudin pun bèsar-lah sudah. Maka pada satu hari-nya bèrmèshuarat-lah abang-nya yang tua kapada sègala adek-adek-nya ia hëndak bëlajar bërniaga maka jawab sègala adek-adek-nya, "Itu elok sangat-lah abang." Maka sètèlah habis mèshuarat itu, maka disuroh-kan-nya adek-nya yang tèngh nama Kamarudin akan siap-siap satu kapal yang sangat bèsar-nya mèmuat pëlabaigei jènis pèrniagaan, këmudian antara bèrbèrapa hari didalam pèlayaran-nya itu tiba ia kapada sabuah nègri dan naik-lah ini saudagar Zainudin anam bèradek pèrgi mêngadap raja didalam nègri dèngan mèmbari pëlabaigei jènis pèrsèmbahan kapada raja dan adèk-nya yang bongsu-nya tinggal mènunggu kapal. Maka ini Kherudin ada dibèri oleh abang-nya yang tua itu saratus ringgit akan mèmbari apa-apa yang disuka-i-nya akan hëndak mèlihat-kan sèpèrti wasiat bapa-nya.

Kémudian didalam ia mènunggu kapal itu ada-lah satu orang didalam nègri itu ada pëlihara sa'ekor anjing kurap, fikir-nya, "Apa guna aku pëlihara ini anjing kurap, buat rugi, aku bèri makan-nya sahaja." Kémudian itu hari juga ia hëndak bunoh buangkan kalaut. Kémudian sèrta sampai ia katèpi laut mèmbari

itu anjing maka dilihat oleh Kherudin ini orang hendak membuang-kan anjing itu, maka kata-nya, "Hendak dibawa kamana itu anjing?" Maka jawab tuan anjing itu, "Sahaya hendak buang-kan kalaut, kerana ia sudah kena penyakit kurap tiada-lah lalu lagi beri makan sahaja." Maka kata Kherudin "Dijual-kah itu anjing?" Maka jawab tuan anjing "Jika tuan hendak ambil-lah sahaja." Maka kata Kherudin "Jika dibéri-kan sahaja sahaya tiada mahu, jika dijual tiga puluh ringgit sahaya beli." Maka tuan anjing menengar yang demikian itu, suka-lah, jawab-nya, "Ambil-lah," serta dibayar oleh Kherudin harga-nya \$30—sudah diterima-nya harga anjing itu ia balik karumah-nya. Kemudian sabuntar lagi turun abang-abang-nya itu daripada mengadap raja. Maka dilihat oleh abang-nya ini Kherudin tengah memandi-kan anjing-nya, maka kata abang-abang-nya itu, "Dimana kamu dapat ini anjing?" Maka jawab Kherudin "Sahaya beli tadi dengan tiga puluh ringgit." Maka kata abang-nya yang lima orang itu "Ini-lah orang yang gila dan bodoh membuang-kan duit dengan tiada faidah." Maka jawab abang-nya yang tua, "Jangan kamu marah kepada-nya. Bukan-nya kamu yang memberi duit itu."

Kemudian antara dua tiga hari abang-abang-nya berjalan naik kadarat akan membeli pelbagai jenis perniagaan hendak dibawa ka-negri-nya, tinggal Kherudin juga menunggu kapal. Maka didalam ia menunggu itu ada satu orang membawa sa'ekor kucing kurap hendak membuang-kan kalaut, maka kata Kherudin "Hendak kamana dibawa kucing itu?" Maka jawab tuan kucing itu, "Sahaya hendak hanyut-kan kalaut." Maka kata Kherudin "Dijual-kah itu kucing?" Maka jawab tuan kucing itu "Jika tuan mahu ambil-lah sahaja." Maka kata Kherudin "Dibéri-kan sahaja, tiada sahaya mahu, jika dijual tiga puluh ringgit sahaya beli." Maka kata tuan kucing itu "baik-lah." Maka dibéri oleh Kherudin harga-nya \$30—suka-lah hati tuan kucing itu maka ia balik karumah-nya. Kemudian antara sabuntar lagi turun-lah abang-nya anam beradek dari darat, maka dilihat-nya ini Kherudin tengah memandi-kan kucing kurap. Maka kata abang-nya yang lima orang itu, "Dimana pula kamu dapat kucing kurap?" Maka jawab-nya "Sahaya beli tadi tiga puluh ringgit ini." Maka kata abang-abang-nya itu, "Ini-lah manusia yang tiada berakal seperti binatang dan apa-

bila manusia sèperti binatang chélaka yang amat bèsar." Maka kata abang-nya yang tua "Apa guna kamu marah-kan dia? Bukan-nya duit kamu yang dibèlikan-nya. Itu duit aku mèm-bèri-kan-nya. Maka apa-apa yang disuka'i pada hati-nya boleh ia bèli. Aku tidak fèhduli-kan." Maka ini Kherudin pun ia pèlèhara-lah anjing dan kucing kurap itu dèngan sahabis-habis akhtiar-nya, maka tiada-lah ia fèhduli-kan alkesah perniagaan. Sèmata-mata ia mèmèlihara anjing dan kucing itu sahaja.

Kèmdian antara dua hari pula naik pula abang-abang-nya kadarat akan mènchari pèlabagai jènis dagangan, maka ia ting-gal juga dikapal, kèmdian datang satu orang mènarek anak ular dijèrat-nya dèngan tali pada leher anak ular itu ia hèndak bunoh tuangkan kalaut. Maka tèrlihat oleh Kherudin itu orang mènarek anak ular itu, maka kata-nya "Hèndak kamana di-bawa anak ular itu?" Maka jawab orang itu "Sahaya hèndak bunoh buang-kan kalaut." Maka kata Kherudin "Dijual-kah itu anak ular?" Maka jawab tuan ular itu, "Jika tuan hèndak ambil-lah sahaja." Maka kata Kherudin "Jika dibèri-kan sahaja tiada sahaya mahu, jika dijual dèngan hèrga-nya \$30 boleh sahaya bèli." Maka jawab tuan ular itu "baik." Habis itu ia bayar-lah tiga puloh ringgit, maka apabila sudah dibèli-nya ini ular maka Kherudin pun pèlihara-lah dèngan sachukop-nya tiada ditahu oleh abang-abang-nya. Maka ini anak ular rupa-nya raja sèkalian ular.

Kèmdian ada-lah waktu tèngah malam itu juga, maka datang-lah sègala mèntri dan sègala rayat-rayat raja ular ini, mènndapat-kan raja-nya. Maka sèmbah sègala mèntri-mèntri-nya, "Tuanku mèngapa dudok pula disini mèninggal-kan tèmpat karajaan? Apa-kah salah patek sèkalian? Tiada-kah patek sèkalian mènjunjong titah kabawah duli? Pada ingatan patek hèlum pèrnah satu kali pun patek sèkalian mèmperbuat dèrhaka kapada kabawah duli." Maka didèngar oleh Kherudin sègala pèrkataan sègala mèntri ular ini. Maka jawab raja ular itu "Bukan-nya kèrana apa-apa, hanya-lah ada satu hari aku pèrgi bèrjalan sa'orang diri, sahaya hèndak mèlihat-kan tèrmasa sègala manusia, maka pada waktu itu tèrasa pula hèndak minum, jadi pèrgi pula aku mènchari ayer, maka didalam aku bèrjalan ini bèrjumpa dèngan sa'orang manusia lalu dipukul-nya aku, hèndak dibunoh buang-kan kalaut. Kèmdian bèrjumpa pula



dengan tuan ini lalu ditēbus-nya tiga puluh ringgit, ini-lah sēbab-nya tiada aku mati." Kēmdian bērhada-p-lah sēgala mēntri-mēntri ini mēngadap Kherudin maka sēmbah mēntri kapada Kherudin, "Tuanku ada pun anak ular yang tuanku tēbus tiga puluh ringgit itu, ini-lah raja sēkalian ular, jika tuanku ada bēlas kasihan akan patek harap akan boleh patēk sēmbah-kan kēmbali duit tuanku itu." Maka jawab Kherudin "Jikalau bētul ini anak raja ular tiada-lah kami bēri balik kērana kami pun kaseh pula kapada-nya." Maka dipohonkan juga oleh mēntri-mēntri itu kapada Kherudin kata-nya "Jika tuanku tiada bēri bayar dēngan duit boleh patek pērsēmbah-kan sabēntok chinchin kasaktian. Jika apa maksud dan hajat-tuanku sēmua-nya sampai." Maka tēlah didēngar oleh Kherudin yang dēmikian itu kata-nya "Jika bētul bagitu bawa-lah anak raja ular ini." Maka sēgala mēntri-mēntri itu pun tērlalu-lah suka-nya sērta bērmohou-lah bērjalan kapada Kherudin, maka jawab-nya "Baik-lah." Maka anak raja ular pun dijunjong-lah oleh sēgala rayat-rayat-nya diatas kēpala-nya bawa balik kanēgri-nya.

Kēmdian satu hari bērkata-lah abang-nya yang tua nama Zainudin kata-nya "Esok hari kita bērlayar balik." Maka didēngar oleh Kherudin pērkataan abang-nya itu dan ada-lah tinggal duit pada-nya \$10—kēmdian itu naik kadarat pērgi mēmbēli sēgala sisik ikan dan tēmbikar pēchah-pēchah katēmpat orang-orang bērjual ikan, maka dibēli-nya-lah sēgala sisik ikan dan tēmbikar pēchah-pēchah itu kapada orang-orang yang dudok disitu dēngan harga \$10. Maka suka-lah hati orang disitu, maka ia angkat sēkalian-nya dimuat-nya kadalam kapal itu, maka abang-nya yang tua itu mēlihat-kan sahaja dan abang-abang-nya yang lima orang itu mērungut-rungut sahaja marah-kan Kherudin ini sēpērti kalakuan orang gila. Habis itu maka pagi esok-nya bērlayar-lah kapal itu dan Kherudin maseh ia bēla anjing kurap dan kucing kurap sahaja, maka antara tujuh hari tujuh malam sampai-lah kanēgri-nya dan manakala sudah sampai, maka abang-abang-nya yang anam bēradek masing-masing mēmbawa pērsēmbahan kapada raja-nya itu. Maka kata raja, "Kamu yang anam bēradek ada-lah masing-masing mēmbawa pērsēmbahan kapada beta dan adek kamu yang kēchil itu tiada ia mahu mēmbawa pērsēmbahan kapada beta." Maka jawab abang-nya yang tua, "Ada pun didik Kherudin itu tiada suatu

apa pun yang ada dibawa-nya." Habis itu ia pun bėrmohon-lah balik karumah-nya. Maka sėrta sampai abang-abang-nya lima orang lain itu, "Ini-lah orang yang tiada bėrharga kapada raja-raja. Orang-orang lain-lain sėmua-nya ada mėmbawa pėrsėmbahan hanya-lah kamu sa'orang yang tiada mėmbawa pėrsėmbahan mėnjadi malu-lah kapada raja-raja kėrana kita ėntahkan kaya dan ėntahkan Saudagar Mansur juga disėbut orang." Maka ini Kherudin pun diam tiada suatu pėrkataan.

Maka esok hari-nya pergi-lah ia mėndapat-kan mak nama Siti Rasimah, kata-nya, "Mak-mak pergi-lah mak pinang-kan sahaya kapada anak raja itu." Maka jawab mak "Apa-lah upaya kita, kėrana kita ini orang miskin tėntu tiada ditėrima oleh raja itu." Maka kata anak-nya "Pėrgi juga mak, boleh pandu dahulu." Maka mak-nya pun pėrgi-lah mėngadap raja sėrta *mėngangkat kadam jari sapuluh*,<sup>1</sup> sėmbah-nya. "Ampun tuan-ku bėribu-ribu ampun harap-kan diampuni sėmbah patėk yang tėramat hina harap-kan diampuni ada-nya ; ada pun sėpėrti anak *didik* <sup>2</sup> Kherudin itu ia hėndak bėrmohon pėrsėmbah-kan diri-nya kabawah duli akan jadi mėmbaiki *lantai yang patah dan dinding yang koyak*."<sup>3</sup>

1. Mengangkat kadam jari sapuluh.

The proper way of making this obeisance is on bended knee. The hands are placed together open with the fingers touching each other. The thumbs also touch but are drawn well back. The hands are then carried up in front of the face and down again. If addressing the sultan the thumbs should be brought up above the end of the nose close to the eyes. If addressing the raja muda the thumbs should be carried to just below the end of the nose. When addressing others who are entitled to this salam the thumbs should not be carried higher than the chin.

2. Didik.

This is the correct word to use when referring to one's own offspring in addressing royalty.

3. Lantai yang patah dan dinding yang koyak.

The subject matrimony has to be broached most delicately. One must thread oneself in, menjarum jarum. The initial process is known as the kesalahan sirih sabekas or jabat salam or chelapai mulut. One version which was given me uses this phrase :

Sahaya ini ada di suroh orang kapada mika.

Apa maksud orang disuroh ?

Sahaya ini disuroh orang datang kapada mika 'nak berhambakan diri, 'nak berbaik lantai yang patah, dinding yang pesok, atap yang tiris.

Seperti maksud mika yang di suroh orang itu, teman dengar, kemudian seperti yang mika kata itu, adalah pada diri teman, tetapi sa-benarlah hal

Maka raja itu pun herti-lah akan maksud Siti Rasimah itu, maka titah raja itu, "Aku pun suka juga hendak nembéri anak-ku bersuami tetapi jika lalu Kherudin itu menyampai-kan seperti hajat-ku, insya-allah, aku terima." Maka sambah Siti Rasimah, "Ampun tuanku harap paték hendak mendengar sedikit titah, apa-apa hajat dan maksud kabawah duli itu." Maka titah raja itu, "Yang pertama buat-kan aku sebuah mahligai tiang-nya deripada suasa dan dinding-nya deripada amas sepuluh mutu dan berkemunchak dengan intan. Kadua aku mintak buat-kan jambatan deripada amas juga dari mahligai hingga sampai ka-tepi laut. Dan yang ketiga-nya aku mintak buat-kan pelantaran dari mahligai hingga sampai ka-rumah Kherudin sendiri deripada amas juga." Maka apabila habis titah raja itu maka Siti Rasimah pun tersangat-lah duka chita menengar titah raja itu, maka ia bermohon-lah balik serta menangis-lah ia mendapatkan anak-nya itu, kata-nya, "Sakali ini bercheralah kita anak beranak." Maka dilihat oleh Kherudin ma'-nya menangis itu. Maka terkéjut-lah ia serta kata-nya, "Apa yang ma' tangis-kan itu dan apa titah raja?" Maka dikhabarkan oleh ma'-nya seperti maksud raja itu. Maka kata Kherudin "Jika sabanyak itu sahaja ka-hendak raja itu, jangan-lah ibu-ku susah hati lagi. Pergi-lah ma' sambah-kan pada raja bila-ka ia mahu itu barang boleh sahaya perbuat." Kemudian esok hari-nya pergi pula Siti Rasimah mengadap raja. Maka sambah-nya, "Ampun tuanku beribu-ribu ampun. Bilakah tuanku berkahendak-kan perkara itu?" Maka titah raja, "Aku mahu didalam tiga hari ini juga. Apabila sudah hadir telah aku nikah-kan-lah dengan ber-bberapa seggèra-nya." Habis itu Siti Rasimah bermohon pulang. Maka dikhabarkan-nya-lah segala kahendak raja itu, maka jawab Kherudin, "Baik-lah."

Kemudian pada waktu petang itu juga disuruh-nya ma'-nya membuat limau bedak serta ia suroh pergi pada lain rumah yang ia satu orang sahaja, pada petang itu juga ia berlimau bedak dengan sa'orang diri-nya. Kemudian pada waktu tengah malam ia pun beriangiang-lah kata-nya, "Hai chinchin kasaktian yang

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yang itu teman punya milik-nya, tetapi banyak waris ada sa-blah menyablah. Jikalau bagitu teman minta tempoh didalam dua tiga hari ini, teman nak berjumpa dengan we—waris teman dan segala ipar duai teman. Apa bila sampei tiga hari, balaiklah mika jumpa dengan teman.

The matter is decided at this second meeting, the kesalahan besar.

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dibëri oleh raja ular, jika angkau sunggoh kasaktian aku mintak buat sabuah mahligai tiang-nya dëripada suasa dan lain-nya dëri-pada amas sapuloh mutu dan suatu jambatan amas juga dëri mahlagai hingga sampai ka-tëpi laut dan sata pëlantaran dëri mahligai hingga sampai ka-rumah aku ini." Maka dëngan sakatika itu juga bërgëmuroh bunyi datang sëgala jin dan anak raja ular dan sëgala mëntri-mëntri-nya mëngadap Kherudin. Maka kata anak raja ular "Apakah yang ka-kasih susah hati?" Maka jawab Kherudin "Adalah kami mëminang anak raja didalam nëgri ini. Maka ia mintak buat-kan sabuah mahligai dan satu jambatan dan satu pëlantaran dari pada amas sapuloh mutu dan mahligai bër-kë-nunchak intan." Maka kata anak raja ular "Bila-kah ka-kasih-ku bër-kahëndak?" Maka jawab Kherudin "Ini malam-lah kami mintak buat-kan." Maka pada malam itu tëläh dichita pula oleh anak raja ular sëpërti maksud Kherudin itu, maka malam itu juga sëmua-nya mënjadi dan siap. Maka mëndërang-lah चाहaya mahligai itu sëluroh nëgri itu, Maka gëmpar-lah sëgala wazir-wazir dan sëgala orang bësar-bësar raja didalam nëgri itu. Maka masing-masing masok mënadap raja, Maka raja itu pun terlalu heiran pula. Maka sajurus sajenang panjang tëringat-lah raja akan përmintaan-nya kapada Kherudin, maka baharu-lah ia suka hati-nya sërta ia khabar-kan pada sëgala wazir-wazir-nya këmudian masing-masing balik ka-rumah-nya. Maka sangat-lah suka hati raja itu mëlihat-kan hal përbuatan Kherudin. Maka apabila siang-lah hari bërhipun-lah sëkalian orang isi nëgri itu mëlihat-kan mahligai anak raja itu, Maka masing-masing heiran-lah. Maka sangat-lah puas masing-masing mëmandang përbuatan yang tëlalu ajaib itu maka lalu sëkalian mëreka balik ka-rumah-nya.

Këmudian Kherudin pun përgi-lah ia mëngadap ma'nya, lalu bër-kata-lah ia "Përgi-lah mak përéksa raja itu bila-kah ia hëndak kahwin-kan sahaya dëngan anak-nya itu." Hata maka dëngan sabentar itu-lah Siti Rasimah përgi mëngadap raja. Maka sërta sampai ia lalu mënyëmbah mëngangkat kadam jari sapuloh, kata-nya, "Ampun tuanku bërribu-ribu ampun, Harapkan diampuni kira-nya sëmbah patek hamba, sëdia lama mënjong titah, Ada pun patek ini disuroh-kan oleh didik Kherudin akan mëmëreksa prihal përjanjian kabawah duli da-

hulu." Maka sërta mënëngar sëm̄bah Siti Rasimah dëm̄kian, maka termenong-lah raja itu akan fikir didalam hati-nya, "Ada pun aku ini dan anak-ku tẽrtẽntu dari pada bangsa raja zaman dahulu kala turun tẽmurun, dan Kherudin itu bangsa saudagar. Malu-lah aku mën̄ikah-kan dia, jika didẽngar oleh raja-raja yang lain-lain. Kẽmdian, jika aku mungkir-kan sęperti janji, itu takot aku barang-kali dilanggar-nya nẽgri aku ini dẽngan sabuntar barang-kali boleh ia alah-kan kërana ia orang yang sangat banyak elmu hikmat dẽngan kasaktian-nya." Maka didalam itu bẽrtitah-lah raja itu titah-nya, "Baik didalam tujuh hari ini kita kahawin-kan-lah." Hata sètẽlah Siti Rasimah mënëngar titah raja dëm̄kian itu maka ia pun balik mendapat-kan anak-nya sërta ia khabar-kan sęperti titah raja itu, maka suka-lah hati Kherudin. Kẽmdian esok hari-nya maka raja mōnyuroh-kan sa'orang kawan-nya mēmanggil sẽgala wazir-wazir-nya. Maka pada hari itu-lah bẽrhimpun sẽgala pẽrdana mẽntri-mẽntri-nya maka dudok-lah raja diatas singgã sana takhta karajaan-nya sërta mōngluar-kan titah. Maka kata-nya, "Hai sẽgala wazir-wazir-ku sẽkalian ada pun kami sẽkarang hẽndak dudok kerja hẽndak mẽ-kahwin-kan anak kami yang lẽr-nama Pẽtri Shamsiah dẽngan anak saudagar nama Kherudin itu." Maka sëm̄bah sẽ\_ala wazir-wazir itu "Ampun tuanku bẽribu-ribu ampun ada pun sęperti titah kabawah duli itu sediaan tẽrjun-jong-lah diatas batu kẽpala patek sẽkalian," maka sètẽlah habis-lah titah raja dan sëm̄bah sẽgala wazir-wazir, maka sẽkalian wazir-wazir ini pun mōnyẽmbah mōngangkat kadam jari sepuluh lalu bẽrmohon pulang masing-masing karumah-nya. Maka ka-esokan hari-nya maka tẽlah dimulai oleh sẽkalian pẽrdana mẽntri mēm-buat pẽkerjaan raja itu siang sẽrupa malam dan malam sẽrupa siang, gegak gempita-lah didalam nẽgri itu dan bẽrh impun-lah sẽkalian isi nẽgri. Yang buta datang bẽrpimpin dan yang chapek datang lẽrtongkat.

Hata tẽlah gẽnap-lah tujuh hari tujuh malam, maka diarak orang-lah Kherudin itu, karumah raja dẽngan pẽlabagai jẽnis pẽrhiasan. Tambahan pula tuan pẽtri Shamsiah itu. Dan sërta sampai-lah Kherudin ka-balei pẽngadapan maka penoh sẽzak sẽgala pẽrdana mẽntri sida-sida bẽntara pẽnghulu nai, \*

\* nai pemanisan chapak sahaja seperti pekan pesara, but it seems to operate as a collective.

hulubalang rayat belakangan hina-dina sekalian dibalei rong pengadapan itu dan raja pun telah hadir dudok bersesuaiam diatas singgasana takhta karajaan-nya serta memanggil tuan kadi ia berwakil minta nikah-kan anak-nya dengan Kherudin. Maka telah datang-lah dengan bertelot menangkat kadam jari sepuluh maka telah dikabul oleh tuan kadi itu menerima wakil raja itu kemudian mengangkat tangan pula ia hendak kembali balik mendapatkan Kherudin itu. Maka serta sampai-lah dekat Kherudin maka disuruh oleh kadi, dudok *bertinggol*. Kemudian maka tuan kadi pun membaca khatabah nikah. Habis itu lalu tuan kadi *ijab kabul*† dengan Kherudin itu kemudian selesai, maka telah mendoa-lah tuan kadi pelabagai do' mintak-kan selamat anak raja dua laki istri dan kepada ayahonda dan bonda-nya, dan sekalian *rayat-bala* isi negeri semua nya, maka telah selesai-lah doa itu dan diangkat dan dipimpin orang-lah Kherudin masuk kedalam istana serta disanding-kan orang-lah Kherudin dengan tuan petri Shamsiah itu. Maka sangat-lah berkeunan segala laki-laki dan perempuan, mana-mana yang memandangi-nya sa'olah sa'umpama bulan dipagar oleh bintang. Kemudian diangkat orang-lah nasi tinggi adap-adapan dengan pelabagai perhiasan-nya dan bersuap-suapan-lah laki istri-nya Maka apabila sudah selesai dari pada bersuap-suapan kemudian dibawa oleh sida-sida bentara yang perempuan masuk kedalam pelaminan lalu dijatoh-kan orang-lah tirai tiwangga, yang ka-amasan maka telah berbagai-lah pujok chumbuan Kherudin akan istri-nya dan istri-nya itu melakukan diri-nya itu sa-umpama-nya yang amat hina maka telah di-pandang oleh Kherudin istri-nya demikian itu tersangat-

†Rukun nikah itu, lima:—pertama wali, ka dua dua orang saksi, katiga laki-laki, ka empat perempuan, ka lima ijab kabul.

When these fundamentals are thoroughly grasped a binding marriage is an easy affair in Mohamedan law. But where they are not clearly understood the officiating party cannot perform a valid marriage. The formula of bestowal in marriage is the *ijab*, and it must be instantly replied to by the formula of acceptance, the *ka-bul*.

Inilah lafath *ijab* :—

*Abdullah*, aku nikahkan dikau akan *Si Putimah* anak *Mohamed* yang berwakil ia (or if the father is not present substitute *wali-nya*) akandaku, serta isi kahwin-nya anam puluh tengah tiga ringgit.

Kabulnya,

Aku terimalah nikah *Si Putimah* binti *Mohamed* serta isi kahwin anam puluh tengah tiga ringgit.

lah bélas didalam hati Kherudin sërta dipelok dipangku-nya dëngan pelabagai pujok chumbuan përkataan yang halus-halus manis akan mëlipar-kan hati istri-nya. maka tëläh sëlësai dari pada hal yang dëmikian, maka bërkaseh-kaseh-lah Kherudin ini dëngan istri-nya.

Maka antara bërapa lama-nya ada-lah kapada satu hari maka ini Kherudin hëudak përgi bërburu maka disiap-kan oleh istri-nya dëngan pëlabagai përbëkalan. Maka pada waktu itu ditinggal-kan-nya chinchin kasaktian itu kapada istri-nya dëngan mëm bawa lashkar gajah kuda. Këmdian sëpëninggal suami-nya përgi bërburu itu maka dilihat oleh tuan pëtri Shamsiah itu chinchin burok pëngikat-nya, maka disuroh-nya sa'orang daiang-daiang-nya përgi mëmanggil sa'orang tukang china yang number satu didalam nëgri itu, maka sabuntardatang-lah tukang itu mëng-adap tuan pëtri, maka dibëri-kan oleh tuan pëtri chinchin itu ia mintak gauti pëngikat-nya yang tërlebeh elok lagi daripada itu. Maka kata tukang itu "Baik-lah," maka ia pun bërmohon balik sërta ia sampai karumah-nya ditatap oleh tukang itu përmata chinchin itu, maka belum përnah-përnah dilihat-nya dëngan bigitu chantek-nya. Hata pada malam itu juga ini tukang ia lari mëm bawa itu chinchin.

Këmdian ada-lah sëläng antara dua hari balik-lah Kherudin daripada bërburu itu dëngan sëbarapa banyak dapat perburuan-nya sërta tiba kapada istri-nya ditanya-kan-nya itu chinchin. Maka jawab istri-nya ia sudah mintak ikat kapada tukang china yang tërlebeh elok ikatan-nya. Maka disuroh oleh tuan pëtri sa'orang daiang-daiang-nya panggil tukang itu. Maka daiang pun përgi-lah sërta sampai karumah tukang itu ia dapat khabar sudah lari. Këmdian ini daiang pun bërlari-lah ia mëndapat-kan tuan pëtri sërta ia sëm bah-kan itu tukang sudah lari. Maka di-dëngar oleh Kherudin akan perkataan daiang-daiang itu maka ia pëngsan tiada khabar-kan diri-nya. Maka tuan pëtri dukachitalah hati-nya akan suami-nya itu, maka gadoh-lah orang didalam istana itu dan berhimpun-lah ayahanda baginda mëlìhat-kan mënantu-nya pëngsan itu.

Maka dëngan hal yang dëmikian dikatahawi oleh kuching kurap hal tuan-nya itu maka mëshuarat-lah ia dëngan anjing kurap kata-nya, "Apa-lah sudah-nya tuan kita sudah pëngsan bëbërapa hari sëbab hilang chinchin kasaktian yang dibëri oleh

anak raja ular itu? Fikir aku patut sangat kita pergi mencari itu chinchin kerana sudah dibawa oleh tukang china lari kepada lain negeri. Jika kita tiada lalu mencari-kan sia-sia-lah kita tuan kita membela pelihara kepada kita." Maka jawab anjing kurap, "Pergi-lah kamu aku tiada lalu pergi mencari-nya." Maka kata kucing kurap "Kamu itu bukan-nya tiada lalu sahaja tiada kuasa kerana kamu tiada kaseh akan tuan kamu." Maka jawab anjing kurap "Bukan-nya aku tiada kaseh akan tuan kita itu, kaseh sangat juga, tetapi entah-kan kamana-mana di-bawa oleh china itu pergi-nya." Maka kata kucing, "Jika kamu tiada tahu mencari, biar-lah aku kepala-nya kamu ikut sahaja aku. Apa-apa kata aku mesti kamu buat." Maka jawab anjing kurap, "Jikalau bagitu moh-lah kita pergi." Habis mesuarat-nya itu kucing dan anjing pun lalu berjalan masuk hutan keluar hutan naik gunung turun gunung masuk padang keluar padang, lama-lama berjumpa-lah dengan sebuah kampung. Maka kata anjing "Aku tiada lalu berjumpa lagi, kerana perut aku terlalu lapar-nya." Maka sahut kucing "Aku pun lapar juga. Jikalau bagitu biar aku pergi mencari nasi tetapi berpakat-lah kita, aku sekarang naik karumah-rumah. Jika ada nasi orang didapur apa bila aku terajang-kan katanah sekarang kamu gunggong bawa lari masuk hutan." Maka jawab anjing "Baik-lah." Maka berjalan kucing kurap naik karumah orang maka ditengok-nya ada sebiji periok tengah didapur pergi ia kadapur itu ditérajang-nya itu periok jatoh katanah. Maka datang-lah anjing kurap gunggong bawa masuk hutan, maka di-ikut oleh kucing. Tibatiba kadalam hutan makan-lah ia berdua sudah kenyang perut masing-masing kuat-lah masing-masing berjalan itu.

Maka kucing kurap pergi-lah ia masuk negeri itu periksa akan hal orang berchakap tiada ia dengar apa-apa hal itu, jadi berjalan-lah pulak ia berdua-dua maka trus lalu katépi laut maka dilihat-nya satu pulau. Maka kata kucing kurap, "Barang kali ada china disitu. Patut kita pergi menyemberang kapulau itu." Maka kata anjing kurap, "Jikalau kamu lalu, moh lah kita." Maka masing-masing bernang-lah ia kadua didalam laut itu siang malam, lama dengan kalama'an sampai-lah ia kadua-kadua-nya kapulau itu, lalu naik kadarat berjalan-lah kucing kurap dengan anjing kurap ditépi pantéi itu. Maka kata anjing, "Hai kucing kurap, aku ini tiada lalu berjalan lagi



kërana përut aku sangat lapar-nya." Maka jawab kucing, "Kita chari-lah ditëpi laut ini, barang kali ada ikan ditëpi pantei ini boleh kita makan." Këmdian sebuntar lagi bërjalan jumpalah ia dëngan sa'ekor ikan bësar, maka kata kucing, "Ini-lah dia ikan boleh kita makan." Maka dimakan-lah oleh anjing dan kucing itu ikan. Habis itu lalu ia kadua bërjalan tiap-tiap malam mënëngar-kan hal china itu barang kali ada didalam pulau itu, maka tiada juga. Maka kata kucing, "Apa akhtiar kita lagi?" Maka jawab anjing, "Aku tidak tahu lagi, apa fikiran kamu aku mëngikut sahaja." Maka kata kucing, "Baik kita përgikapada lain nëgri, barang kali ada china disitu." Maka bërnang-lah polak ia kadua përgi kapada lain nëgri.

Maka lama dëngan kalama'an sampai-lah ia kapada satu nëgri lalu naik kadarat. Maka kata anjing, "Hai kucing, aku tiada lalu lagi bërjalan kërana aku sangat lapar." Maka kata kucing, "Nanti-lah kamudisini biar aku mënchari makan." Këmdian bërjalan-lah ia lama-lama bërjumpa-lah ia dëngan orang tëngah mënyalai ikan maka dudok-lah ia bërlindong di dalam rumput-rumput. Maka sapëninggal tuan salai përgi makan nasi makan di-ambil-nya ikan lima auam ikor lalu dibawa-nya kapada anjing, lalu ia makan sama-sama dëngan anjing itu, maka masing-masing pun sudah kënnyang bër-jalan-lah ia kadua-nya. Maka hari pun malam përgi-lah ia karumah tukang amas, orang china, maka fikir kucing, "Barangkali ini-lah rumah china yang mënchuri chin-chin tuan kita itu." Maka kata anjing "Apa-akhtiar kamu hëndak mëngambil chinchin itu, jikalau ada chinchin itu di-dalam rumah ini." Maka jawab kucing, "Ada-lah akhtiar aku, maka rupa nya bëtul sunggoh-lah towkeh di-dalam rumah itu mëngambil chinchin itu." Maka kata kucing. "Baik kamu nanti di-sabëlah pintu ini dan aku nanti di-sabëlah pintu darat, maka jikalau kamu jumpa tikus puteh boleh kamu tangkap, tëtëpi jangan di-bunoh." Maka jawab anjing, "Baik-lah ;" maka masing mënunggu pintu, satu sa'orang.

Këmdian lama-lama kira-kira sa-tëngah malam lalu sa'ekor tikus puteh pada pehak kucing, maka di-tangkap oleh kucing ini tikus puteh. Maka kata tikus puteh, "Jangan-lah aku di-makan." Maka jawab kucing. "Aku hëndak makan juga." Maka ini tikus raja sëgala tikus di-dalam nëgri itu, maka antara dëm-

kian datang-lah sĕgala orang bĕsar-bĕsar raja tikus itu maka kata sa'orang wazir raja tikus, "Janĕan-lah toh kuching, di-makan raja kami itu. Sabarang ka-hĕndak boleh kami tolong." Maka kata kuching, "Baik : ada satu chinchin kasaktian di-dalam pĕti towkeh rumah ini tujuh lapis, boleh kamu ambil itu chinchin ini malam juga. Jikalau dapat itu chinchin aku lĕpas-kan raja kamu ini, jika tidak tĕntu aku makan juga." Maka jawab wazir tikus itu "Baik-lah jika ada tĕntu dapat juga ini malam." Maka bĕr-kĕrah-lah wazir tikus itu sĕkalian rayat-nya di-suroh-nya korek pĕti china itu. Maka di-korek-lah oleh tikus yang banyak itu tĕmbus satu-satu pula, tĕmbus satu pula hingga katujuh lapis-nya, maka apabila sudah tĕmbus pĕti yang tujuh-nya itu, maka ada sa'orang hulubalang tikus itu masok-lah ia ka-dalam pĕti itu di-chari-chari-nya di-dalam pĕti itu ada satu bungkus kain kĕchil sahaja di-rasa'i tikus itu bĕtul ada chinchin di-dalam-nya. Maka ia bawa keluar lalu di-bĕri-kan-nya kapada kuching itu. Maka di-tĕngok oleh kuching itu chinchin bĕtul chinchin tuannya, maka di-lĕpas-kan oleh kuching raja tikus itu maka raja tikus pun bĕr-jalan lah ia dĕngan sĕkalian rayat bĕlantara-nya dan kuching pun suka-lah hati-nya pĕrgi mĕndapat-kan anjing kurap. Maka kata kuching, "Hai, anjing kurap, chinchin tuan kita sudah aku dapat. Mari-lah kita bĕr-jalan balik." Dan chinchin itu kuching mĕmbawa-nya di-dalam mulut di-taroh-nya.

Kĕmdian apabila siang-lah hari bĕrnang-lah kuching dĕngan anjing mĕlalui laut yang amat bĕsar itu maka kuching itu tiada-lah bĕrasa pĕnat dan lĕlah oleh bĕrkat tuah chinchin itu dan anjing bĕrasa-lah ia pĕnat dan lĕlah badan-nya. Maka kata anjing, "Hai kuching biar-lah aku mĕmbawa itu chinchin pula kĕrana aku tĕngok kamu sĕgar sahaja." Maka kata kuching, "Kamu tiada boleh bawa ini chinchin. Barang kali jatoh pula sĕkarang." Maka kata anjing, "Tidak jatoh." Maka kata kuching, "Baik-lah," maka dibĕri-lah kuching itu chinchin kapada anjing, maka di-ambil oleh anjing lalu di-masok-kan-nya kapada mulut-nya. Maka ia pun kuatlah sĕdikit. Maka lama dĕngan kalama'an-nya jatoh pula ini chinchin ka-dalam laut. Maka kata anjing "Hai kuching, chinchin tuan kita sudah jatoh ka-dalam laut." Maka kata kuching "Tadi aku sudah kata, jikalau kamu bawa jatoh ini chinchin, maka kata kamu tidak. Sĕkarang sudah jatoh. Apa-lah hal kita hĕndak

mēngambil-nya?" Maka masing-masing bērnang-lah lalu sampai ka-pulau singgah-lah kuching dan anjing di-pulau itu.

"Baik ber-jalan di-tēpi pantai laut itu. maka dilihat oleh kuching ada sa'ikor ikan terguling ditēpi pantai itu, maka fikir kuching, "Ini-lah ikan bēsar pērut, aku pun lapar boleh-lah aku makan ini ikan." Maka kata kuching, "Hai, anjing, mari-lah kita makan ini. Ada ikan mati boleh kita makan dahulu, kēr-ana pērut pun sangat lapar-nya." Maka tēr-lari-lari-lah anjing itu, tiba-tiba lalu ia makan sahaja dan kuching pun makan pula. Maka anjing itu makan pada pērut ikan itu, maka tēmbus ka-dalam-nya maka dilihat oleh anjing ada-lah sabēntok chinchin. Maka kata anjing, "Aku jumpa sabēntok chinchin didalam pērut ikan ini." Maka kata kuching "Mari aku tēngok." Maka dibēri kan oleh anjing rupa-nya bētul pulak chinchin yang jatoh itu, lalu diambil oleh kuching dimasok-kan-nya ka-dalam mulut-nya. Maka kata kuching "Mari kita bērnang balik." Maka kadua-nya pun bērnang-lah.

Kēmudian lama dēngan kalama'an-nya sampai-lah kadua-nya kapada satu nēgri bēr-jalan-lah kadua-nya siang sarupa malam. dan malam sarupa siang, lama dēngan kalama'an-nya sampai-lah ia kadua kapada nēgri tuan-nya, lalu ia masok di-bawah rumah tuan-nya dan Kherudin itu maseh lagi didalam pēngsan-nya. Maka ini kuching hēndak dēkat tiada-lah dibēri orang. Maka pada waktu tēngah malam orang pun sēma-nya tidor naik kuching ini dēkat tuan-nya lalu di-lētak-kan-nya chinchin itu di-atas dada tuan-nya itu. Kēmudian bērsin-lah Kherudin ini lalu ia sēdar daripada pēngsan-nya dan masok-lah ia kadalam pēraduan-nya laki istri-nya dan sēma-sēma-nya orang tidak sēdar tēr-kējut pagi-pagi hari dilihat oleh orang bēr-tung-gu sudah tiada lagi Kherudin pada tēmpat-nya pēngsan itu jadi gadoh-lah orang didalam istana. Maka di-sēmbah-kan orang-lah kapada raja mēngata-kan "Sri paduka anakinda Kherudin sudah tiada ia pada tēmpat pēngsan-nya itu." Dan raja itu pun duka chita-lah hati-nya mēnēngar-kan hal yang dēmikian itu. Kēmudian didalam antara itu matahari pun tuleh tēnggala ia itu angkat kēning, maka tuan pētri Shamsiah pun kēluar-lah dēri dalam pēraduan-nya maka dikētahui-nya-lah orang gadoh didalam istana-nya kahilangan suami-nya. Maka kata tuan pētri pada sa'orang daiang "Pērgi-lah kamu daiang-

daiang sambah-kan kapada ayah itu Kherudin ia sudah siuman daripada pangsanya. Ada ia didalam peraduan-nya itu." Maka daiang-daiang itu pun dengan segera-lah berlari-lari menghadap raja sambah-nya, " Ampun tuanku beribu-ribu ampun ada pun patek ini datang menghadap kabawah duli di-titah-kan oleh sri paduka anakinda tuan petri titah-nya ada pun seperti anakinda Kherudin ada ia sudah siuman daripada pangsanya ada ia didalam peraduan anakinda itu." Maka serta raja menengar-kan sambah daiang-daiang itu maka raja hilang-lah duka-citanya. Maka sa-peninggal daiang-daiang pergi menghadap raja itu Kherudin pun bangkit-lah daripada beradu itu lalu bersiram kadua laki istri-nya setelah sudah bersiram lalu santap kadua laki istri-nya. Maka berkaseh-kaseh kadua laki istri-nya.

Maka lama dengan kalama-an-nya telah di-ganti-kan oleh raja itu akan Kherudin-lah menjadi raja didalam negeri itu dan selama ia menjadi raja itu bertambah aman dan ma'mor didalam negeri itu serta digelar akan dia Sultan Kherudin Shah oleh ia sangat pandai bijak laksana pada belia pelihara di atas rayat bala isi negeri-nya dan mengaseh anak dagang senetri dan bertambah-tambah-lah gah mashur nama yang ka-puji-an semerata negeri-negeri.

Maka ada-lah pada satu hari di-panggil-nya-lah segala orang besar-besar dan sekalian saudara-nya. Maka dudok-lah Sultan Kherudin di atas takhta karaja-an-nya dan berhimpun-lah sekalian orang, Maka pada waktu itu telah di-letak-nya abang-nya yang tua sekali akan menjadi wazir yang besar sekali didalam negeri itu, dan saudara-nya yang lima orang itu di-jadi-kan-nya gombala kerbau dan lembu dan kambing dan biri-biri dan ayam masing-masing dengan jawatan-nya. Maka kekal-lah ia dudok di atas takhta karaja'-au-nya selama-lamanya. Wallahu alam.



## Pa Senik and his Son-in-law Awang.

BY G. M. LAIDLAW.

[A story by Mat Nordin of Kota Stia. No information can be had as to its source beyond the fact he learnt it when he was a boy.—*G. M. L.*]

There is a story that once in the olden time there lived a man who was called Pa Senik. He had a daughter named Senik and they lived in one house together. Now their occupation was the cultivation of a garden of bananas, and in this garden of theirs they had ever so many kinds. There also lived at this time a man called Awang. This Awang got a friend to go and betroth Pe Senik's daughter. Pa Senik said,

"If this Awang can give me on account of the expenses of the marriage of my daughter two hundred and fifty banana stems, I will take him as my son-in-law."

So the envoy returned to Awang and told him what Pa Senik had said. Awang replied, "I can bring as many stems as that."

So the envoy returned once more to Pa Senik and said, "Awang can bring you the sum that you wish."

Then Pa Senik said, "I accept him. The marriage can take place in three days."

So the man returned to Awang and told him, and Awang said, "Very well." Three days after Pa Senik married his daughter to Awang. But the marriage feast consisted of nothing but all sorts of bananas.

Awang lived happily with his wife. He made a garden of bananas in order that he might be able to pay his marriage expenses.

One day Awang went out fishing. He got a few. He ordered his wife to make a curry, which she did. Then he invited his father-in-law. So his father-in-law came to dinner. Now it seems that Pa Senik was a little deaf. Awang noticed

that his father-in-law sometimes poured the gravy of his curry on his rice and that sometimes he sucked it up. So he said, "The more gravy the more he sups it up. Yet he is not strong enough to set a fish trap for himself."

His father-in-law said, "What did you say, Awang?"

"I was just thinking that you are most fortunate and that you are indeed skilled in searching for a livelihood. You have no need to pay court to religion."

"What you say is very true indeed."

Now the real reason that Awang had invited his father-in-law to dinner was that as long as ever he had lived there next his father-in-law, his father-in-law had never given him a single banana. And yet though he wanted to ask for one, he was ashamed to do so.

Some time later Awang one day went again into the jungle to look for some fish and he found a certain pond which was very deep. By the edge of the pond there was a very big tree. Awang began fishing. He caught quite a lot of fish. At last he had caught as many as he could carry. Then he came home. His father-in-law saw him come home so heavily laden and asked him where he had got the fish. Awang answered, "I went into the jungle and found a pond which I fished."

"What bait did you use?"

"A golden banana which was quite ripe."

"I would like to go and fish to-morrow for I have never yet fished in all my life."

"Very well: but you had better wait a bit till I have cleared the road a bit and it will be easier walking for you."

The next day Awang made a very crooked trail but his own was quite straight. After that his father-in-law set off to go fishing and took with him two whole combs of golden bananas. Awang carefully counted the number of the bananas.

After this his father-in-law set off. Awang pointed out the very crooked road but he himself set off on the straight one and reached the pond first. He got into the pond and waited for his father-in-law to arrive. In a little while he turned up. He uncoiled his line and baited it with a golden banana. But Awang snatched his father-in-law's line and

took the bait off and ate it. Then his father-in-law lowered the line again and Awang eat the bait once more. And so it went on till there was only about one banana left. Then Awang snatched hold of the line and his father-in-law fell sprawling into the pond. Awang seized him and kept on ducking him under the water and saying,

"Pa Senik, why don't you give Awang some bananas? If you don't give him some I will really kill you."

"Let me go. And when I get back to the house I will give Awang ever so many bananas."

So Awang let his father-in-law get out and climb up on to the bank and go home. But he (Awang) went home direct and got home first. He sat down at the door of his house and waited for his father-in-law.

"Well, did you get many fish?"

"You have cheated me, Awang."

"How have I cheated you?"

"There is a very big evil spirit in that pond. I never got a single fish. But I kept on lowering my bait till it was nearly finished. And then just when I had got to the very last piece, my line was dragged and I fell into the water, and then I was ducked down under the water again and again while he said to me, 'Why don't you give Awang some bananas?' Then I promised to give you some."

Then Awang said, "Had you not better give me them quickly as you have vowed? Otherwise perhaps to-morrow or the day after you may fall ill. You will feel rather stupid later when you are pitied by your children."

Then his father-in-law took all sorts of bananas and gave them to Awang. Then he ate them very vulgarly, saying, "Ahum, ahum, now I've got some one else's bananas." His father-in-law said, "What are you saying, Awang?"

"Nothing, Sir. I was only saying that you had made a vow and that Heaven had mercifully spared you."

"Pray for me Awang, pray for me."

Then he added, "Do you want any more bananas, Awang? Eat until you have had quite enough."

And Awang answered, "To-morrow I would like some more, sir."



### Pa Senik.

Alkisah maka ada-lah pada masa zaman dahulu kala, maka ada-lah satu orang nama Pa' Senik, dan ada anak-nya nama Senik perempuan dudok ini orang anak beranak didalam satu rumah, ada-lah usaha-nya siang dan malam berkebun pisang, maka berbagai-lah bangsa pisang ada kapada-nya. Kemudian ada sa'orang laki-laki nama Awang. Kemudian di suroh oleh Si Awang kapada satu orang pula akan meminang anak Pa'Senik itu; Maka kata Pa'Senik, "Jikalau lalu Si Awang itu membawa-kan belanja anak sahaya itu dengan dua ratus lima puluh perdu pisang boleh sahaya terima." Kemudian ini orang pun khabar-kan pada Si Awang seperti perkataan Pa'Senik itu. Maka kata Si Awang, "Lalu-lah sahaya membawa-kan sebanyak itu." Kemudian ini orang balik pula pada Pa'Senik, maka kata orang itu "Lalu-lah itu Si Awang membawa belanja sebanyak maksud Pa'Senik." Maka kata Pa'Senik "Sahaya terima-lah, didalam tiga hari ini sahaya boleh nikah-kan." Kemudian balik-lah ini orang khabar-kan kapada Si Awang. Maka kata Awang "Baik-lah." Maka didalam tiga hari tu Pa'Senik pun menikah-kan anak-nya dengan Si Awang dan ber-khanduri-lah dengan pelbagai jenis pisang sahaja. Maka dudok-lah Si Awang bersuka suka-an dengan perempuan-nya serta ia membuat kebun pisang akan membayar blanja perempuan-nya. Kemudian ada satu hari pergi-lah ini Si Awang menchari ikan dapat-lah kadar sedikit-sedikit, maka disuroh oleh Si Awang gulai itu ikan kapada perempuan-nya, maka digulai-lah oleh perempuan-nya. Maka diajak oleh Si Awang mentua-nya makan ber-sama-sama. Maka makan-lah mentua-nya itu ber-sama-sama Si Awang. Maka ada-lah mentua-nya pekak-pekak bahasa sedikit, maka di-dalam tengah makan itu dilihat oleh Si Awang ini mentua-nya terkadang dituang-nya kuah gulai kadalam nasi-nya dan terkadang dihirup-nya. Maka kata Si Awang, "Tuan ini lagi berkuah lagi berhirup, menahan bubu tidak kuasa." Maka kata mentua-nya itu, "Apa kata kamu Awang?" Maka jawab Si Awang "Sahaya terkentang-kan tuan itu lagi bertuah lagi pandai berhidup menuntut ilmu tidak kuasa." Maka kata mentua-nya "Benar sekali-lah kata anak-ku itu." Maka ada-lah sebab diajak oleh Si Awang

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méntua-nya itu makan bër-sama-sama kërana bëbërapa lama sudah ini Si Awang dudok bër-sama-sama di situ bëlum përnah ini méntua-nya itu mémbëri sabiji pisang kapada Si Awang ini dan Si Awang hëndak mintak kapada méntua-nya itu ia malu. Këmdian ada-lah satu hari yang lain përgi pula mënchari ikan masok ia kadalam hutan maka bërjumpa-lah ia dëngan sabuah kolam sangat dalam-nya dan ditëpi kolam itu ada sapoko' kayu bësar. Maka mëngail-lah itu Si Awang hingga sarat ia mëmbawa ikan itu. Këmdian ia pun balik, maka dilihat oleh méntua Si Awang itu Si Awang sarat mëmbawa ikan, maka kata-nya "Dimana kamu dapat ikan itu Awang?" Maka jawab Si Awang "Sahaya masok ka-dalam hutan bërjumpa sabuah kolam di situ-lah sahaya mëngail. Maka kata méntua-nya "Api kamu umpankan Awang?" Maka kata Si Awang, "Pisang amas yang masak-masak." Maka kata méntua Si Awang, "Esok aku hëndak mërasa mëngail kërana sa'omar hidop aku ini bëlum përnah aku mëngail." Maka jawab Si Awang, "Baik tëtëpi nanti dahulu sahaya tërangkan jalan baik supaya sënang tuan bërjalan." Këmdian esok hari-nya Si Awang buat-lah satu jalan yang sangat bëngkok-nya dan ia punya jalan elok bëtul. Habis itu ini méntua-nya pun hëndak përgi mëngail itu di bawa-nya pisang amas dua sikat. Maka ini pisang dibilang Si Awang banyak sëdikit-nya. Habis itu méntua-nya pun bërjalan ditunjok-kan-nya pada jalan yang bëngkok-bëngkok itu dan dia ikut jalan yang bëtul. Maka dahulu-lah sampai Si Awang pada kolam itu. Maka tërjun-lah Si Awang masok kadalam kolam itu mënanti méntua-nya. Sabuntar lagi tiba-lah méntua-nya itu sërta mëngulor kail-nya dan diumpankan-nya dëngan pisang amas. Maka ditangkap oleh Si Awang kail méntua-nya itu di-ambil-nya umpan-nya itu lalu di-makan-nya. Këmdian di-hulur juga oleh méntua-nya dan di-makan-nya juga dëmikian sëlalu bagitu juga. Ada-lah kira-kira tinggal satu biji pisang, maka di-hulur juga oleh méntua-nya maka di-tangkap oleh Si Awang kail méntua-nya sërta ditarek-kan-nya kail itu ka-dalam ayer. Maka tërsumkur-lah méntua-nya masok ka-dalam kolam itu lalu di-tëkan tëkan-nya méntua-nya di-dalam ayer itu sërta kata, "Mëngapa kamu, Pa'Senik, tidak bagi Si Awang makan pisang? Jikalau tidak kamu bagi Si

Awang makan pisang tentu kamu aku bunoh." Maka jawab mēntua-nya "Lēpas-kan-lah aku ; tiba aku ka-rumah boleh aku bagi Si Awang makan pisang banyak-banyak." Maka sudah itu di-lēpas-kan-nya-lah mēntua-nya lalu ia naik kadarat langsung ia balik ka-rumah-nya. Dan Si Awang pun balik ia dahulu dudok ia di-muka pintu dan mēntua-nya tiba kēmdian. Maka kata Si Awang "Banyak-kah tuan dapat ikan?" Maka jawab mēntua-nya "Kamu tipu aku rupa-nya Awang." Maka kata Awang "Apa sahaya tipu kapada tuan?" Maka kata mēntua-nya, "Itu kolam sangat bēsar hantu-nya, sa'ekor ikan pun tidak aku dapat, di-hulur-hulur habis umpan-nya, maka pada umpan yang pēngabis ditarēk-nya kail aku dan aku pun tēr-jatoh ka-dalam ayer lalu ditēkan tēkan-nya aku sērta kata-nya, 'Mēngapa tidak kamu bagi Si Awang makan pisang? Maka jikalau tidak dibagi, kamu aku bunoh.' Maka aku pun mēngaku-lah mēmbēri kamu makan pisang." Maka kata Si Awang "Tuan baik sēgōra-kan sēpērti nazar tuan itu esok lusa ēntah-kan tuan sakit pula jadi sēsal bēbal pulak anak." Maka mēntua-nya mēngambil pisang macham-macham jēnis dibēri-kan-nya kapada Si Awang, maka Si Awang pun makan-lah sērta ber-sēdawa kata-nya "Aham-ham paku ; pisang orang, pisang aku" Maka kata mēntua-nya itu, "Apa kata kamu Awang?" "Tidak apa, tuan: kata sahaja tuan bērnazar sama sahaya dilēpas-kan Allah mēntua sahaya." Maka kata mēntua-nya "Doa-kan-lah Awang kapada aku." Sērta kata-nya "Hendak-kah lagi pisang, Awang? Makan-lah puas-puasam." Maka jawab Awang "Esok-esok pula tuan."

## The Baboon Pa Si Bagok and the Girl.

BY G. M. LAIDLAW.

An earlier story by Penghulu Mat Nordin refers to this big baboon. But this is the only other story of Pa Si Bagok that I can find. No further information or additional stories can be had. Nor can the story teller give any history of the tale. It has nothing to do with Hanuman ("Handoman.")

Once upon a time there was a certain poor man and his wife who lived in a clearing in the jungle. Now these two had a daughter. Every day the husband and his wife went off to their clearing and left their daughter alone in the house. One day while they were away a big baboon found this girl. When she saw him she was very frightened and all her joints and bones shivered because of her fear of the baboon. But she disguised her feelings by talking. The baboon on his part fell deeply in love with the girl and wished to make her his wife. The girl said, "How are you so wet, Pa Si Bagok?"

"I have just been fishing with a casting net."

"If you have been fishing, where is your casting net?"

"I left in a tērap tree. If I left it there nobody will know."

"But if you have been fishing, where are the fish?"

"I left them in the river, so that nobody should know."

"Why is your head so flat?"

"Because I wear an Arab cap every day."

"Where is your cap?"

"I left it in the house."

"Why are your fingers so bent?"

"Because I hold a pen every day."

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[NOTE.—A great many common nouns in the Malay are improperly typed with a capital].

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"If you use a pen every day where is it?"

"I left it in my box. If I left it in the box no one will know."

"Why do you sit like that, Pa Si Bagok?"

"Because I am used to sitting on a mat every day."

"If you do so, where is the mat?"

"The mat is in a princess' house where nobody knows."

After that the baboon carried her away to the top of a Tok Allang tree. The girl cried. After the girl had been carried away by the baboon her father and mother came back from their clearing and found that their daughter had disappeared. They too wept.

"Alas my daughter, where can you have gone to? Who can have carried you off? What evil spirit, what jin, can have had the heart to carry you away?"

Both her father and her mother were very very sorry that their daughter had disappeared.

The baboon made a small hut on the top of the Tok Allang tree for his wife. Every day he went to find food and water for her and also to find clothes. After a time the girl became pregnant and bore a son. The child was half man and half baboon. Two months after this the girl thought of a plan by which she could escape back to her father and mother. So she ordered Pa Si Bagok to look for a joint of the bĕtong bamboo.

He said, "What are you going to use it for?"

"I want to bathe our child. Just think for what a long time it has never been bathed."

Pa Si Bagok thought that this was all right so he went to look for a bĕtong bamboo and in a short time he found one. So he came back with a joint. Then his wife took it gently and made a hole in the bottom. Then she said.

"Pa Si Bagok, go and fill the bamboo full of water. If it is not quite full it won't do."

So Pa Si Bagok took the bamboo and went to a place where the water was beautiful and clear, and filled the bamboo there. Then he went away for a moment. When he came back he saw that it was no longer full. Then he filled it to

the brim and went away again. But the water leaked again. And so it went on all day till evening. While Pa Si Bagok was away getting the water his wife took her child's cradle which was made of tērap bark and lengthened it till it reached to the ground. Then she climbed down to the ground and ran away with her child to the villages. At last she reached a house by the edge of a clearing and asked where the house of her parents was. She ran off again as soon as she was told for she was afraid that Pa Si Bagok was behind her. In a little while she reached her home. Her parents were extremely glad to see their daughter with her child, half monkey, half man. Then they thought, "What are we to do? For she is sure to be followed by this baboon. We had better make some magic." So they made a very deep hole and placed some banana stems at the bottom.

He said, "If that baboon comes now, I will tell him that his wife and child have died and that this is their grave."

At last when Pa Si Bagok was tired out and had not been able to fill the bamboo, and it was nearly nightfall, he thought, "I had better go back and ask my wife what she means." So he returned to the Tok Allang tree. But when he got there he found that his wife and child had disappeared. He was very grieved, but as it was night he could do nothing. He got no sleep all that night. At daybreak he started off in a great hurry. He met a man and asked him about his wife and child. "Hai sir, have you noticed a woman carrying a child pass this way?" The man replied that he had not.

To every person that he met he put the same question. At last he reached her parents' house. There he asked her father, "Has your daughter come back bringing her child with her?"

"She did: but they have both died."

"What has happened that both of them have died?"

"She travelled too fast. For she was afraid of you. She thought that if you found her you would kill her. So she was quite worn out and both of them have died."

"If they are dead where is the grave?"

"Come and let us go and see it."

Now the girl's father had made an arrangement with three or four men when he made the grave that if they got the baboon in it, it was to be filled in again from the top.

When Pa Si Bagok reached the grave he began to dig it up. Now these other men were waiting on the top, and when Pa Si Bagok was right down into the hole they filled in again from the top. And so Pa Si Bagok died.

## THE END.

Maka ada-lah suatu zaman dahulu kala satu këlamin Orang miskin dudok-lah ia Laki Bini-nya pada satu tẽmpat pẽr-buat Ladang dẽngan satu buah Rumah kẽchil, Maka ada-lah ia sa-Orang anak-nya Pẽrẽmpuan, Maka pada tiap-tiap hari ini miskin pẽrgi-lah ia Laki Bini-nya bẽr-kerja Ladang dan tinggal-lah anak-nya di-Rumah satu Orang diri-nya. Maka pada suatu hari sapẽninggal Mak Bapa-nya pẽrgi ka-Ladang, Maka datang-lah sa-Ekor Bẽrok Jantan mẽndapat-kan Budak Pẽrẽmpuan, Maka sẽrta tẽr-pandang-nya itu Bẽrok sangat-lah gẽmẽntar sẽndi talang-nya oleh sangat katakutan mẽlihat Bẽrok itu sẽrta di-samar-nya dẽngan bẽr-kata-kata. Dan Bẽrok sangatingin dan bẽrahi di-dalam hati-nya bẽr-kabẽndak Budak ini akan jadi Pẽrẽmpuan-nya. Kẽmudian kata Budak Pẽrẽmpuan itu, "Derimana Pak Se-Baguk bẽr-basah ini?" Jawab-nya "Aku datang dẽri-menjala." Maka kata Budak ini "Jikalau Pak Se-Baguk datang dẽri-mẽnjala mana jala-nya?" Maka jawab-nya "Jala tinggal di-Pokok Tẽrap Jikalau Jala tinggal di-Pokok Tẽrap siapa tiada tahu." "Dan jekalau Pak Se-Baguk mẽnjala mana Ikan-nya?" Jawab-nya "Ikan ada tinggal di-dalam Sungei Siapa tiada tahu." "Apa kẽna kẽpala Pak Se-Baguk pipeh?" Jawab-nya "Mẽmakai Kupiah Arab sa-hari-hari." "Jikalau Memakai Kupiah sa-hari-hari, Mana Kupiah-nya?" "Kupiah tinggal di-Rumah." "Apa kẽna jari Pak Se-Baguk serong?" Jawab-nya "Mẽmẽgang Kalam sa-hari-hari." "Jikalau Mẽmẽgang Kalam sa-hari-hari mana Kalam-nya?" "Kalam tinggal di-dalam peti. Jikalau Kalam tinggal di-dalam peti siapa tiada tahu." "Apa kena punggong Pak Se-Baguk merah sẽrta belulang?" Jawab-nya "Dudok di-atas Chiau sa-hari-hari." "Jikalau dudok di-atas Chiau sa-hari-hari mana Chiau-nya?" "Chiau ada tinggal di-Rumah Tuan Pẽtẽri Siapa tiada tahu."

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Kemudian lalu di-bawa oleh itu, Ini budak bawak naik ka-atas Pokok Tok Alang, Maka menangis Budak Perempuan itu. Maka sapeninggalan Budak ini di-bawa oleh Bërok balek Mak Bapak-nya dëri Ladang di lihat-nya anak-nya sudah tiada lalu-lah menangis, "Wahai-anak-aku kamana-lah garangan-nya siapa-lah yang mën bawa-nya ? Hantu mana Jin mana-lah yang sampei Hati mën bawa anak-aku itu." Maka sangat-lah duka chita Mak Bapak-nya itu oleh kuhilangan anak-nya itu.

Shahadan maka ini Bërok pun di perbuat-nya-lah pondok-pondok di-atas Pokok Tok Alang itu akan tempat Perempuan-nya itu Maka ini Bërok sa-hari-hari përgi ia mënchari makan dan mën bawa ayer akan Perempuan-nya itu dan mënchari-kan kahin perempuan-nya itu, Maka lama dëngan ka-lama-an-nya ini Budak pun Bunting-lah ia kira-kira sampei-lah waktu hëndak beranak. Maka bër-anak-lah Budak Perempuan itu sa-kërat Manusia dan se-kërat sèpërti Bërok juga di-atas Pokok Tok Alang itu. Maka ada-lah antara dua Bulan kemdian dëri-pada sudah bër-anak itu, Maka ini Perempuan pun datang-lah pikirannya mën buat suatu masa-Elah ia hëndak balik pada Ibu Bapak-nya, Maka suatu hari di-suroh-nya chari satu ruas Buloh Bëtong pada Pak Se-Baguk, Maka kata Pak Se-Baguk "Apa guna itu Buloh ?" Jawab Perempuan-nya "Sahaya hëndak mëmmandikan anak kita ini kërana bër-apa lama-nya sudah tiada përnah mandi." Maka bënar-lah pada pikiran Pak Se-Baguk itu, Maka ia pun përgi-lah mënchari Buloh Bëtong itu tiada-lah bër-apa lama-nya Pak Se-Baguk pun balek mën bawa Buloh Bëtong itu satu ruas, Kemudian di-ambil oleh Perempuan itu Buloh plan-plan lalu di-tëbok-nya Buloh itu dëri bawah, Maka kata-nya "Pak Se-Baguk përgi-lah ambil ayer biar pënoh Buloh ini jika tiada pënoh tëntu-lah tiada chukup sèkarang." Maka Pak Se-Baguk ambil Buloh itu lalu ia përgi pada tempat ayer yang Elok jërneh-nya, Maka ia Isi-lah Buloh itu dëngan ayer, Maka bër-jalan sabuntar di-lihat-nya ayer di-dalam Buloh itu sudah luak, Maka balek pula mengisi ayer mëmnoh-kan Buloh itu Kemudian bër-jalan pula sabuntar di-lihat luak juga ayer itu bagitu-lah sa-hari-hari itu hingga pëtang hari, Kemudian sapeninggalan Pak Se-Baguk itu mëngambil ayer, Maka ini Perempuan di-ambil tërapi Buai-an anak-nya di-Ubong-Ubong hingga sampai katanah, Maka ia pun lalu turun mën bawa anak-nya ikut tali



Térap itu sërta sampai ka-tanah ia bër-kéjar-kéjar-lah sèhaja menuju Kampong Orang, Maka lama dengan ka-lama-an-nya sampei-lah ia pada Rumah Orang di-tépi Ladang, Maka bertanya-lah ia akan Rumah Mak Bapak-nya, Maka di-khabar-kan Orang-lah, Maka ia ber-kejar juga takut di-turut Pak Se-Baguk dèri bëlakang sabuntar lagi sampei-lah ia ka-Rumah Mak Bapak-nya, Maka sangat-lah suka-chita Mak Bapak-nya akan melihat-kan anak-nya datang itu dèngan mèm-bawa sa-Orang anak manusia sakèrat Bèrok, Kém-dian pikiran, "Apa-lah hal ini anak-kau téntu datang turut Bèrok Jantan itu kapada anak-nya jikalau bagitu baik aku buat satu hikmat," Maka ia korek satu lobang yang sangat dalam, Maka di-tanam-kan-nya batang Pisang. Jikalau Bèrok itu datang aku kata-kan Pérèmpuan-nya dan anak-nya sudah mati inilah kubur-nya. Kém-dian ini Pak Se-Baguk pènat sudah ia bër-Ulang-Ulang tiada juga dapat pènoh ayer di-dalam Buloh Bètong itu dan hari pun hampir-lah Malam pikir dia, Baik-lah aku balek dahulu ber-tanya-kan akhtiyar pada Pérèmpuan aku, Maka ia pun balek ka-Pokok Tok Alang itu tiba-tiba di-lehat Perempuan-nya dan anak-nya sudah tiada dan sangat-lah duka chita ia dan hari pun malam tiada-lah ia tidor samalam itu, Maka pada Waktu dinihari itu ia pun bër-jalan-lah dèngan gopoh gamah-nya dan tiba ia pada Orang bër-tanya ia akan Pérèmpuan-nya dan anak-nya kata-nya, "Hai Inhee ada-kah tampak sa-Orang Pérèmpuan mëndukong anak lalu dèri sini? Maka jawab orang itu. "Tiada."—Dan bër-jalan pula tiap tiap bër-jumpa dèngan Orang bagitu-lah ia bër-tanya-kan Pérèmpuan-nya dan anak-nya selalu, Maka tiada-lah bër-apa lama lagi tiba-lah ia ka-Rumah Mak Bapak-Pérèmpuan itu, Maka bër-tanya-lah, Kata-nya Bapak, "Ada-kah anak Bapak datang kemari mèm-bawa anak-nya?" Maka jawab Bapak Pérèmpuan itu, "Ada; tètapi sudah mati ikadua-nya." Maka kata Pak Se-Baguk, "Apa kena-nya dan apa sebab-nya ia mati kadua-nya?" Maka jawab Pak-nya, "Kèrana ia bër-jalan itu dèngan kej-r sahaja takut akan Pak Se-Baguk. Jikalau bër-jumpa dèngan Pak Se-Baguk barang-kali Pak Se-Baguk bunoh akan dia, Maka dèngan sebab tèr-lalu pènat itu lalu-lah ia mati kadua-nya." Maka kata Pak Se-Baguk, "Jikalau ia sudah mati di mana Kubor-nya?" Maka jawab Bapak-nya, "Mari-lah kita pèrgi liha

THE BABOON PA SI BAGOK AND THE GIRL. 71.

Kubor-nya bër-sama-sama." Maka ini Bapak Përëmpuan pakat tiga ampat Orang. apa-bila ia mengorek Kubor itu jikalau sudah dalam ia pakat tambus deri-atas, Këmdian tiba-lah Pak Se-Baguk ka-Kubor itu lalu-lah ia menzurek Kubor itu, Maka ini Orang tiga ampat Orang mënanti di-atas, Maka apa-bila sudah dalam lobang itu lalu di tambus-nya deri-atas, Maka Pak Se-Baguk pun langsung Mati Tamat.



## A Pelandok Tale.

BY G. M. LAIDLAW.

[From the penghulu of Pulau Tiga, Lower Perak, Haji Mahomed Ali bin Haji Mahomed Perak. No details of the source can be obtained. The teller is so far as his ancestry can be traced for several generations of pure Perak extraction].

This is the tale of the pelandok, this is a four footed animal that lives in the woods and is very small, just about the size of a cat. Now in the olden days this animal was very much cleverer than all the others. Also in those days animals could talk.

We must farther explain that in those days, the king of all the animals was King Solomon. His form was the form of a man, but his appearance and dress was that of one of the wild men of the woods, the Sakai. His chief warrior (Hulubalang) was the tiger and his chief counsellor (Penghulu) was the pelandok.

Once upon a day, they say, the pelandok was walking along looking for his food, when he met with a doe. The pelandok said, "Hai, Sang Rusa, what is the name of the tree you are eating?"

The deer replied, "I am eating the young shoots of the yam."

The deer then said to the pelandok, "Where have you come from, Toh Sang Dirimba?"

The pelandok said, "I have come from my house and am also looking for my food."

Now when the pelandok saw that the deer was very fat indeed, the thought came into his heart and he desired to eat her. So he went off to the tiger. When he reached him the tiger said, "Where have you come from, Toh Sang Dirimba?"

The pelandok answered, "I have come from Sang Rusa over there, and have come straight to find you, Hulubalang, for I want to eat that doe."

The tiger said, "How ever are you going to eat her?"

The pelandok replied, "That is why I have come to find you, in order that we may lay our plans together."

The tiger said, "What are your plans?"

The pelandok said, "You, hulubalang, must pretend to be dead, and lie down with your mouth wide open and your body covered with flies. When you are ready, I will call together the deer and the elephant and the rhinoceros and the roe deer and the pig. As soon as we have got them all together, I will give them each their work. But you are to do nothing but listen to whatever I say in my mourning. You are to do nothing when we give you your funeral bath or when we are on the road. But when I call out, "Yam yam" that is the time when you are to catch Sang Rusa."

The tiger answered, "Very well then."

The story about the tiger goes on to say that after he had made this plot with the pelandok, he pretended to be dead lying down with open mouth covered with flies. Also he did not breathe through his nostrils but only through his mouth. After he was ready the pelandok went away to get the elephant, the rhinoceros, the deer, the pig, and the roe deer. This was how he called them,

"Hai, Sang Elephant, Sang Rhinoceros, Sang Deer, Sang Pig, Sang Roe-deer, King Solomon has ordered you all to be summoned together in order that you may bury his Hulubalang Dirimba, who died last night. Come at once."

So all these animals followed behind the pelandok who led them to the place where the tiger was. When they had all got there, the pelandok ordered Sang Pig to dig a hole and the elephant to bring water, and the deer to hold the tiger's head on her lap, and also the upper part of the body, and the roe deer was told to hold the body from the waist to the tail, and the rhinoceros was told to make a smooth road. When the preparations were all finished the pelandok told them to bear the body to the hole. He ordered the deer to lift up the head and the elephant to support the body. But the roe deer and the pig began to bicker. The roe deer said,

"Let me carry the tail."

The pig said, "Let me go first and show the way. Because from the colour of his fur, it looks as if he were alive."

The roe deer said, "I also am not very easy in my mind."

The pelandok then said, "Don't talk too much there."

So three of them, the deer and the elephant and the rhinoceros bore the body along. The pelandok then got on the top of an ant heap and began to lament for the tiger in this wise.

"Ho Toh Hulubalang, who achievest the desires of my heart, yam yam."

The roe deer said, "Listen Sang Babi, what a shrill cry Sang Dirimba is making. What is he saying?"

While the roe deer was in the act of saying this to the pig, the tiger seized hold of the deer by the back of her neck, and dragged her down. The elephant rushed off trumpeting as he went. The rhinoceros darted off screaming. The roe deer darted off like a bullet springing three fathoms at a time. The pig followed. When the pelandok heard the uproar in the forest and all the animals running away, he said, "Spring, Sang Roedeer. Sang Deer's case is decided."

After he had said that the pig drove his snout with a bang against the projecting buttress of a merbau stem. The pelandok heard it and also the scream that the pig gave in its pain. The pelandok said,

"Mind the buttress, Sang Pig. Sang Deer's case is over."

The pig replied,

"Let your own father mind the buttress Sang Dirimba. I am sore all over and you do nothin' but laugh."

And that is why the pig's shout is flat to this day. Then all the animals ran right away.

The story of the deer that was taken by the tiger goes on to say that after they had finished their plot they divided the deer into two: one half for the tiger and one half for the pelandok. They then carried the meat off to a place where some men had been making a clearing. The wood had nearly all been felled. They took wood and made a place on which they could smoke the meat. They also took some more fire wood. When it was all ready and the meat had been placed in

position they lit the fire. By that time it was night. About midnight when one side of the meat had been cooked they turned it over to the other side. When this had been done the pelandok said,

"Hai, hulubalang, let me go to sleep now and then when I wake up you can have a nap."

The tiger said, "Very good." "But," added the pelandok, "Don't you interfere with my eye teeth for fear that you should be hurt by their poison."

"All right."

"Then again," said the pelandok, "whenever my eyes are closed I am not asleep, but if my eyes wink and if I snore at the same time, then I am asleep."

After this the pelandok went to sleep. The tiger put more wood on the fire. After about an hour's sleep the pelandok began to wink his eyes and to snore. The tiger began to think about the pelandok's eye teeth.

"Are they really poisonous or are they not?"

So the tiger began to touch them.

"They are not so very sharp," he said.

After gazing closely at them for a little while he lay down. Now the pelandok had seen him touching them. After that the pelandok, thinking that smoking was now properly done, got up from his sleep.

When the pelandok got up the tiger went to sleep and began to snore too. When the pelandok saw that the tiger was fast asleep he took the tiger's share and ate it up. Then he took a piece of the bark of the gentong tree, which was of the same shape and put it where the tiger's meat had been. This was now near day-break. When the sun rose the pelandok called the tiger who rose from his sleep with a start. When he had got up the pelandok said,

"Hai, hulubalang, come along to this clearing and find a stick on which we can carry this cooked meat."

So they both set off together. When they were about half way there, the pelandok said,

"Hai, hulubalang, you look for the root (with which to tie it on), while I look for the stick on which to carry it."

While the tiger was looking for the root, the pelandok took the stem of a Satamban tahi which had been felled by the men in the clearing. Now the thorns of this are quite long, about an inch long each. Those thorns that were near the foot of the stem he did not remove, but those that were near the top he did. After that the pelandok and the tiger each took up their share. The tiger put his share in front of himself and the pelandok put his share in front of himself. Then they set off towards the river. As they walked on each began to eat. While they were walking along the tiger said, "Oh dear, I am very sore, this stick is pricking my back. Also my meat is very bitter."

The pelandok answered and said,

"That, hulubalang, is what I told you last night. I warned you not to interfere with my eye teeth. Now your meat has become bitter."

The tiger said, "Hai, Sang Dirimba, give me a little of your meat, just to taste. Because I am very tired, everything seems difficult for me."

When the pelandok heard that, he took pity on the tiger and gave him a little. This tasted extremely delicious to the tiger, who stopped in the middle of the road. The pelandok said, "What is the matter? Why are you stopping? We are certainly near a big river now. And if we are late in arriving and we meet with his highness King Solomon he is sure to take away this meat from us. Moreover he will be angry with us and punish us because we have devoured this deer without letting him know."

When the tiger heard that he took up his stick again. A little farther on, just about as far as you can hear a cry in the woods, they reached the bank of the river. There they stopped and each devoured his meat. The share of the pelandok was quite finished because he four times gave the tiger a piece. After that they each had a drink, but the tiger's share was left unfinished on the bank.

They tried to get across the river. The tiger and the pelandok set off together down stream, skirting the edge. They found a raft made of banana stems which had got stranded



on a big trunk that had fallen down by the edge of the river. They both got on board the raft and shoved it off across. It was the tiger that did the shoving, the pelandok did nothing. When they got near to the bank, the pelandok sprang on shore and left the tiger on the raft drifting down stream. The pelandok said, "Hai hulubalang, you will die now when you are caught by the crocodiles. I finished that smoked meat of yours last night, and put some gentong bark in its place."

The tiger became angry and said, "Just you wait, Sang Dirimba, and I'll eat you." He then sprang on to the bank began looking for the pelandok. But the pelandok had and walked on. In a short while the pelandok came across a hornets' nest in some lalang and sat down near it. When it was nearly evening the tiger met him there and said to him, "Now I have found you, I will eat you. You cheated medid you?"

The pelandok said, "Dont eat me, for I have been ordered by King Solomon to look after his gong, Don't you see it?"

"Where is it?"

"This : listen to it humming."

"May I strike it?"

"Don't. Are n't you afraid of King Solomon?"

"Let me strike it: just a little."

"Wait then till I go and lay your request before King Solomon?"

After that the pelandok ran away from the place where the nest was as far as his voice could be heard. Then he shouted out, "Hit it, hulubalang."

When the tiger heard that he lifted his paw and struck it. Then the hornets swarmed out over the tiger, who ran away roaring and with his body and his face all swollen.

When the pelandok heard the tiger roaring like that he ran away for a long distance. When night fell he stopped by a large tree trunk and nestled in between the buttresses round the stem. He was quite frightened of the tiger since he had been guilty of cheating him so many times. He got no sleep that night for he wanted to find some other stratagem by which he could again punish the tiger. All that night he pondered.

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The next day he set off again and travelled till about midday, then he came across a big python which was fast asleep snoring. It lay sleeping with its body in three coils but its head was some way off in the middle of the main road. When the pelandok saw that the snake was obviously fast asleep, he sat down near the coil, because he thought that if the tiger were to come he could once more quibble with him and say that he was watching King Solomon's waist belt. So he sat there till about the middle of the afternoon when the tiger once more met him. When the tiger saw the pelandok sitting squatted on his hands he became very angry indeed and intended to spring on the pelandok. But the pelandok saw the tiger about to spring on him and said, "Hai, hulubalang, don't spring on me, because I am watching King Solomon's belt. He has ordered me to do so because this is a valuable ancestral cloth. This is what he is going to wear in state to-morrow. For the king has given orders that we are to be summoned in a couple of days when he is going to make a proclamation."

The tiger gave up trying to catch him because he saw that the cloth was very beautiful and also that the colour was of mingled gold. He was very much surprised and very much desired to feel what it was like to put it on, so he said, "Hai, Toh Sang Dirimba, may I put it on?"

"Wait until I go and ask King Solomon."

So the pelandok walked on until he came to an ant heap into the top of which he climbed. Then he shouted out to the tiger, "Hai hulubalang, put it on."

When the tiger heard that he put it on. The tiger saw that the snake moved so he thought, "This thing seems to be afraid of me, I seem to have been cheated."

So the tiger took a stick and beat the snake. When he hit it it crawled away. The tiger was very much astonished that the pelandok should have cheated him once more and became more angry than ever. So he began to search for the pelandok again. But the pelandok had run away very far indeed, and the tiger could not find him.

The pelandok came to a large river. When he got to the bank he saw a tree called Chadong. The fruit of this tree

is about as large as a cat's eye, and when it is ripe it is sweet. Now the pelandok was very fond of eating this fruit. But he did not know how to get across the river for the current was swift and the water deep. He saw that there were a lot of crocodiles in the river. So he went to look for a coconut shell and when he had got one he held it in his hand and went and stood on the bank of the river and called to all the crocodiles like this, "Hai, all you Si Rangkaks, come together here for King Solomon has ordered me to make a census of you."

When the crocodiles heard that they all came to the top of the water. Then the pelandok ordered them to arrange themselves in a line right across the river. When they had put themselves in position the pelandok got on to the head of the first crocodile and then struck the head of the crocodile with the coconut shell saying, "One two three,"(crick), "small head big head" (crack) "One two three," (crick), "small head big head"(crack).

And so on until he had got across the river. Then he got up the bank and said, "Hai, all you Si Rangkaks, I wanted to get across this river to eat this chadong fruit, so I said that King Solomon had ordered you all to float. Now I have knocked all your heads with this coconut, aren't you clever you stupid?"

When the crocodiles heard that they were very angry with him, and said, "It will be impossible for you to drink any water now, for if you drink the water of this river or of any other we will catch you."

"I can go away from the river, to the swamps and the ponds and the buffalo wallows and the puddles, what is to stop me?"

"Wherever there is water, we will be there. Don't you make any mistake about that."

"Hai, is that so? If you are clever you will catch me, but if I am clever I will not die."

Then the pelandok began to eat the chadong fruit. But the crocodiles had a council together, those from the sea and from the river and from the swamp. They all laid themselves in wait for him. The pelandok went on eating the chadong

fruit until he was satiated. Then he became very thirsty and wanted a drink of water. So he went to the swamp and the wallows and called out like this, "Hai, Si Rangkak."

And the crocodiles answered, "Yoo-ee."

So the pelandok stopped and went to the river. There again he called out. This time four crocodiles answered him.

"Hai," said the pelandok, "If it is this sort of thing, I will die for I will not be able to drink."

So he went right up stream and called out once more. This time ten answered him. Then the pelandok noticed that a big bamboo, a buloh aur, had fallen down from the midst of a clump into the water. So he crept along the stem among the thickest leaves till he was able to get a drink. While he was lapping up the water, making a noise, chepak chepak, a crocodile made a snatch at him from below but only caught hold of the branch of the bamboo. The pelandok was alarmed and called out,

"Adohai, adohai, not so strong, hai Si Rangkak."

"Don't talk about its being strong; you are going to die this time."

"Hai," said the pelandok while he crept slowly back along the stem, "Don't tear me like that."

So the crocodile dragged at the bamboo till he threshed the water into big waves. But the pelandok had got safely to shore.

Then the pelandok said, "Hai, Si Rangkak, what is the use of your catching hold of that tough bamboo? I am very sorry for you, you hoped that you had caught hold of me."

When the crocodile heard that he let go of the bamboo. The pelandok went on looking for an ant heap because he wanted to sleep, for he had eaten till he was satisfied and also he was very tired. He was afraid too of the tiger that he had cheated. At last he found a small pointed one on to the top of which he climbed and went fast asleep, snoring.

All this time the tiger had been looking for the pelandok. At last he reached a river where he found a large crocodile floating. The crocodile spoke to him, "Hai hulubalang, where have you come from?"

' I have come from the big jungle where I have been looking for the pelandok, who has deceived me so badly that I want to kill him; first he diddled me with a hornets' nest that left me full of stings, then he gave me a very nasty moment just now with a big snake but fortunately I saw that it was alive. So I am looking for him to eat him. "

When the crocodile heard that he in his turn told how the pelandok had cheated him, and how when the pelandok wanted to eat the chadong fruit he had told them that King Solomon had ordered a census to be made and had ordered them to arrange themselves side by side right across the river, and then when they were arranged how he took a coconut and rapped them all on the head saying, "One two three" (crick) "small head, big head" (crack) until he had rapped them all on the head. And then as soon as he had got across he told them how he had cheated them. And so they too were very angry with the pelandok.

When the tiger heard the story of the crocodile he said to the crocodile, "We had better lay our plans together; you can carry me across to the other bank over there and I can hunt for him. If he runs into the water he is your meat but if I catch him on the land he is mine."

The crocodile agreed, so the tiger got on to his head and was carried across the river and safely reached the other bank.

Now at the time that the tiger and the crocodile were making this plot the pelandok heard them from the top of the bank that was exactly opposite. The pelandok's thoughts ran thus:

"I had better kill the tiger now, because he has promised that if I run into the water I am the crocodile's meat but that if he catches me on the land I am his. Ah, I know what to do."

When the tiger got safely to land he began to look for the pelandok. Now the pelandok went and stood in the middle of a small clearing where there was very little brushwood. The tiger sprang out on the pelandok saying,

"Now this time I have got you, Sang Dirimba, and I will eat you

"Try then, make your effort. If you are really the great warrior of the woods, you will get me now. But I think that I will turn you out."

When the tiger heard that, he sprang on the pelandok, but the pelandok ran off close to the edge of the bank. The tiger chased him. Then he sprang back inland. Now when the crocodiles heard the uproar on the bank made by the tiger chasing the pelandok, they all gathered together and watched the edge of the water. The tiger made another spring at the pelandok but did not get him, for the pelandok jumped off to the edge of the bank. The pelandok twisted and turned, bounding ten feet at a time. Now at one part of the bank there was a sandy beach. The pelandok sprang to the edge of the beach and dipped his foot in the water, and then sprang back to the land. The tiger followed him to the water's edge but over-jumped himself and sprang about twelve feet into the water. Then the crocodiles seized him thinking that he was the pelandok. The tiger struggled in his pain. When the crocodiles had hold of him they tore him.

The tiger said, "Friends, don't tear me."

The crocodiles said, "We don't care; the promise that we made before was that whatever came into the water was our meat."

When the tiger heard that he burst out crying and at last died. The pelandok rejoiced and said, "Tear him Si Rangkak, eat him. He is bigger than I. What is the use of a thing like me? You would hardly be able to taste me."

This is the fealty of the crocodile. Don't have anything to do with it.

After escaping from this peril the pelandok went on his way towards the garden where King Solomon lived. He passed close to one house in a garden where he heard some men quarrelling about an axe. One man had borrowed an axe from another for a long time for over a year, and had not returned it. When the owner wanted it the man who had borrowed it said that it had been eaten by weevils. So the two men had gone to law before the king. When they got

there the owner made his petition to the king. The king then examined the borrower who answered, "Yes, your highness. I have borrowed it but the axe head has been quite devoured by weevils. And the owner won't allow that it is lost: he wants it."

The king was puzzled for it was not right that an axe head should be eaten by weevils. So he said, "Hai there you dog, go and call Selang Dirimba, for you know where he is, the others do not know where he lives."

So the dog travelled for half a day until he met the pelandok. Then he said, "Hai, Selang Dirimba, his highness King Solomon calls you."

When the pelandok heard what the dog said he at once went to King Solomon's house. When he got there he went up into the house.

"Selang Dirimba."

"Your highness."

"I have sent for you because these men, these two, have been disputing about an axe head. One man is the owner and the other has borrowed it. The borrower says that the axe head is eaten by weevils, but the other will not allow this. So I don't know what to think and I have asked you to decide the case."

"What you say is very true your highness, will you first allow your slave to go away and bathe?"

So the pelandok went away to bathe at the river bank. Then he went off to a patch ofalang grass that had been burnt near the king's garden, there he rolled over and over in the ashes till his body was black. Then he went back to the king's house. It had now become evening. The king saw that the pelandok's body had been blackened by thealang ashes so he said, "What has happened Toh Selang Dirimba to make your body so black? You said that you wanted to bathe. What kind of bathing is this?"

"Pardon, your majesty is always correct. Your slave went away just now to bathe, but your slave saw that the sea near your majesty's garden was all ablaze, so your slave went to help to put it out, and when he had put it out your

slave came back. That is why his body is black : it had been singed by the fire."

When the king heard that he was most astonished and said, "Hai, it seems to me to be most improbable that the sea should be on fire."

Both the suitors too heard this. The pelandok said, "Why does your highness not believe me?" The king leant back in astonishment and said, "Why Selang Dirimba, it is most improbable as far as my knowledge goes, for I have never heard that anything like this happened in former times."

The borrower of the axe still more strongly said that it was improbable. Then the pelandok said, "Pardon your majesty, a thousand thousand pardons, but that is just why so far as your slave's knowledge goes it seems so improbable to him that the axe head was eaten by the weevils, for he has never heard that that has happened in former times."

When the king heard what the pelandok said he at once gave his decision against the borrower and ordered him to either return the axe or to replace it with one as good.

After the case had been decided the pelandok got leave to go home again. So he set off. On his way he passed by a fruit garden where he wanted to look for some durians, but he met a tiger there. The tiger spoke to him saying, "Hai Selang Dirimba, where have you come from?"

"I have just come from the king's house where the case of two men who were quarrelling about an axe that the one had lent and the other had borrowed has just been decided. The case is over now."

After they had talked about that, the tiger said to the pelandok, "Last night I dreamt that I was eating a black he goat. What do you think, Selang Dirimba, ought I to go and look for this goat? Should I believe this or not?"

The pelandok said, "Don't go and look for the goat. Go and get King Solomon to decide the case. It will be quite easy for you, because King Solomon has just sent for that goat."

When the tiger heard what the pelandok said he set off to King Solomon's house. When he got there the king addressed him,



"Where have you come from, great warrior of the woods?"

"Your highness, your slave has come from his house because he wished to come into your most royal presence."

"For what reason?"

"Your slave wished to explain to your majesty that one night he dreamt that he was eating a black goat and he wishes to know what he ought to do."

"Hai, I have never yet eaten a black he goat and yet you have dreamt of doing so."

So the king called his dog and told him to go and call Selang Dirimba and the dog went and looked for him till he was tired but could not find him. Now when the tiger had gone to King Solomon's house, Selang Dirimba had gone to find a black he goat that lived in a village near to the king. When he found him he said to him, "Hai, black goat, you had better take care for the tiger wants to eat you. He was pleased to tell me of a dream he had a little while ago, he said, 'I dreamt that I was eating a black goat last night, Selang Dirimba; what does my dream mean?' I answered and said, 'I do not know: you should go to King Solomon and get him to explain it.' So after that the tiger went away to the king's house. Now what do you think, are you frightened or not?"

"Hai, Toh Selang Dirimba, what do you advise me to do?"

"You had better at once make a torch from a coconut leaf, for the king may call me at any moment."

When the goat heard what the pelandok said, he at once took a coconut leaf and made a torch. Then the pelandok said, "You go on in front to the king's house and lurk in the brushwood close to the house, and when I call you, come up into the house."

So the goat went and lurked in the brushwood by the king's house. When he had gone the dog came and gave Selang Dirimba an order like this, "Hai Selang Dirimba, King Solomon calls you at once."

When the pelandok heard what the dog said he went off with him to the king's house. When he reached the king's house the king called out, "I have called you Selang Dirimba

because a tiger has told me that he dreamt one night that he was eating a black goat. Now what do you think this dream forebodes?"

"Pardon your majesty, a thousand thousand be thy slave's pardons, if it commends itself to your gracious majesty might it not be as well to call this goat?"

After the pelandok had said this the king ordered the dog to call the goat. Now the goat heard the king's order that he was to be called so he came out. When the dog came he saw him and called out to him, "Hai Sang Goat, his highness calls you."

So the goat went into the house and left his torch below on the ground. When he arrived the king began to examine him: "I have called you Sang Goat, because this hulubalang dreamt a night ago that he was eating you. What do you think of that?"

"Pardon your majesty, a thousand thousand pardons your most gracious majesty, your highness can better judge what ought to be done, but if the decision is left to me I do not like that dream for it seems that in it I die."

"What you say is very true, but all the same my judgment is that whenever a man dreams of eating he should eat and that whenever a man dreams of wearing anything he should put it on, and that whenever a man dreams of being married he should be wedded and so on."

Then the king stopped speaking. The pelandok lay with his eyes closed. When the king saw the pelandok lying like that as if he was asleep he called to him, "Hai Selang Dirimba."

When the pelandok heard the king call he started from his sleep and at once ordered the goat to go and get the torch. He said, "Hai Sang Goat, go and get your torch at once."

The goat went and got it. Then the pelandok said, "Light it."

The goat lit it. Then the pelandok made a disturbance and asked the goat for the torch, the king said,

"Hai Selang Dirimba what on earth do you mean by making this disturbance with this torch?"

The pelandok, answered, Your highness, while napping here just now, I dreamt that your house was burnt down, so I want to burn it."

"Who ordered the house to be burnt down?"

"Pardon your majesty a thousand thousand pardons. I wanted to burn it because I dreamt that I did so, and you yourself decided that whenever one dreamt of eating one was to eat and that whenever one dreamt of putting a thing on one was to wear it and that whenever one dreamt of a wife one was to marry."

When the king heard what the pelandok said, he said to the tiger, "Hai, don't you eat the goat because whenever there is a dream like that don't carry it out for that would be tyrannous."

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### A Pelandok Tale by the Pēnghulu of Pulau Tiga.

Alkēsah ini hikayat chētēra pēlandok binatang hutan empat kaki-nya lagi kēchil itu binatang lēbeh kurang bēsar kuching. Maka tēt kala dahulunya itu binatang tērlalu chērdek dēripada tiap-tiap binatang yang lainnya; pada waktu masa zaman dahulu kala sēklian binatang bērkata-kata adanya. Maka dinyatakan pula chētēra raja Suleyman namanya itulah raja sēklian binatang. Rupanya, rupa manusia juga, tabiatnya samacham Sakai, hulu-balangnya harimau dan pēnghulunya pēlandok adanya.

Alkēsah tērsēbutlah kalakuan pēlandok itu ada kapada suatu hari bērjalan pēlandok itu hēndak mēuchari makan maka bērjumpa ia dēngan rusa bētina. Maka kata pēlandok itu "Hai Sang Rusa apa namanya kamu makan itu?" Maka di-jawab oleh rusa itu, "Aku mēmakan tarok ubi." Maka kata rusa itu kapada pēlandok itu, "Dērimana Toh Sang Di-rimba ini?" Kata pēlandok itu, "Aku dēri rumah aku hēndak mēnchari makan juga." Maka bērfikir pēlandok itu kērana dilihatnya rusa itu gemok sangat, maka bērfikir didalam hati pēlandok itu bērhajat hēndak mēmakan rusa itu, maka pēlandok itu pun pērgi kapada harimau. Maka tiba ia pada harimau itu bērkata harimau itu

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"Dërimana Toh Sang Di-rimba?" Kata jawab pëlandok itu, "Aku ini dëripada Sang Rusa di-situ maka lalu aku mëndapatkan hulubalang kërana aku hëndak mëmakan rusa bëtina di-situ." Maka jawab harimau itu, "Macham mana Toh Sang Di-rimba hëndak mëmakannya?" Maka kata jawab pëlandok itu, "Ini-lah aku mëndapatkan hulubalang boleh kita bërpakat." Maka kata harimau itu, "Macham mana pakatnya?" Kata pëlandok itu, "Hulubalang boleh matikan diri dingangkalan mulut boleh dihurong langau, maka sudah itu aku boleh memanggil rusa dan gajah dan badak dan kijang dan babi, maka mënangkala sudah datang sëmuanya itu aku surohlah masing-masing dëngan kerjanya. Maka hulubalang dëngar-kan sahalalah apa-apa përkataan didalam tangisku itu tëtapinya jangan masa têngah mandikan hulubalang itu atau têngah masa mëm bawa bërjalan itu, pada waktu aku kata nyamlah nyamlah, masa itu-lah tangkapti Sang Rusa itu." Maka kata sahut harimau itu "ialah," adanya.

Alkësah tërsëbutlah përihal harimau itu sudah habis mëshuarat itu dëngan pëlandok itu lalulah ia mëmatakan dirinya sërta dingangkannya mulutnya dihurong oleh langau harimau itu pun tiada bërnapas ia këluarkan napasnya dëri mulutnya sahaja. Maka habis itu pëlandok pun përgilah ia mëndapatkan gajah dan badak dan rusa dan babi dan kijang. Dëmikian bunyinya dipanggil oleh pëlandok itu "Ilai Sang Gajah dan Sang Badak dan Sang Rusa dan Sang Babi dan Sang Kijang, titah tuanku raja Suleyman mënuyroh mëmanggil kamu sëkalianya, titah ia mënuyroh mënanamkan hulubalang dirimba sudah mati samalam. Mari sëgëra." Maka sëkalian binatang yang tërsëbut itu mëngikutlah dibëlakang pëlandok itu bërjalan përgi mëndapatkan harimau itu. Maka tiba sëmuanya disitu lalulah pëlandok mënuyroh Sang Babi mëngorëk liang dan gajah disurohnya mëngangkut ayer dan rusa itu disurohnya mëriba këpala harimau itu, dan lalu kapala badannya dan Sang Kijang itu disurohnya mëribakan pinggang lalu pada ekornya dan badak itu mëmbuatkan jalannya. Maka sudah sëmuanya kerja-an disurohlah oleh pëlandok itu mëm bawa kapada lobangnya disuroh rusa itu mimikul këpalanya dan gajah mëngampu badannya dan kijang dëngan babi itu têngah berbalah-balah. Kata kijang, "Aku biar pada ekornya," dan babi "Aku biar dahulu mëm bawa

jalan, kerana aku lihat choraknya chorak hidop." Kata kijang "Aku tiada juga sèdap hati-ku." Kata pelandok "Jangan kamu bërbanyak kata." Maka dëmikian dibawa oleh rusa dan gajah dan badak bërtiga sahaja, Maka pelandok itu pun përgi ia naik kaatas busut lalu ia mënangis akan harimau itu dëmikian bunyinya. "Hai Toh Hulubalanglah, yang mënampaikan hajat hati aku nyam-lah nyam-lah." Maka kata kijang itu, "Dëngar Sang Babi, bunyi tëriak Sang Di-rimba itu. Macham mana kata bunyinya itu?" Maka tëngah bërkata-kata kijang dëngan babi itu harimau pun mënangkaph pada tëngkok rusa itu sërta menarek rusa itu dan gajah pun marah berlëntang-lentang bunyi bëlalei nya lari, dan badak pun bërleporlepor bunyi mulutnya dan kijang pun mëlompat tiga ampat dëpa macham pëluru përginya bërдахulu këmndian dëngan babi, maka didëngar oleh pelandok itu bergëmuroh bunyi hutan itu binatang lari, kata pelandok itu pada kijang "Lompatkan Sang Kijang, Sang Rusa bicharanya sudah." Maka habis kata itu babi pun tertumbok munchongnya pada banir kayu mërbaun bërđëntum bunyi. Maka didëngar oleh pelandok itu sërta tërjërit bunyi babi itu sakit. Maka bërkata pelandok itu, "Banir, Sang Babi, Sang Rusa bicharanya sudah." Kata jawab babi itu, "Banir bapa kamu Sang Di-rimba aku sakit sèkliannya, kamu suka sahaja." Mënjadi bërpayong munchong babi itu. Maka habis sëmuanya jauh adanya. Intiha.

Alkësah maka tërsebut pula përkataan rusa yang ditangkap oleh harimau itu tëläh sudah sëlësai mësuarat pëlendok dëngan harima itu, maka dibëläh rusa itu dua, yang sabëläh pada harimau dan yang sabëläh pada pëlendok maka dibawa daging dëkat dëngan tëbas ladang orang itu. Maka ladang orang itu hampir rëbanya. Maka mëngambil kayu mëmbuat tëmpat salai dan kayu api salai itu maka sudah siap salai itu dan dagingnya sudah naik maka dilëkat apinya maka hari pun malam. Maka hampir sudah tëngah malam salai itu pun masak sudah sabëläh lalu di-balek sabëläh lagi maka bërkata pëlendok itu, "Hai hulubalang biar aku tidor dahulu, këmndian aku pun bangkit sëkarang hulubalang pula tidor." Maka kata harimau itu "Ia-lah." "Tëtapinya," kata pelandok itu, "Apa kala aku tidor sëkarang, jangan hulubalang usek hujong sangir aku ini, takut kënä bisanya." Kata harimau itu "Ia-lah." Dan lagi kata pëlendok itu, "Aku tidor sëkarang manakala pëjam mata aku

itu, aku belum tidur lagi. Jikalau sudah chelek mata aku sekarang serta mēnēngkor bunyi itu aku tidur." Maka habis itu tidorlah pēlandok itu. Maka harimau itu mēngapikan salainya maka lebeh kurang satu jam tidor pēlandok itu lalu ia mēnchēlekan matanya sērta ia mēnēngkor bunyinya. Maka fikir harimau itu akan sangir pēlandok itu, "Ia-kah bisa atau tidakkah?" Maka diuseknya oleh harimau itu. Maka kata harimau itu, "Tiada bērapa sangat tajam-nya." Sudah diusiknya sēdikit diamlah harimau itu. Maka pēlandok itu dilihatnya harimau itu mēnguseknya. Maka sudah itu fikir pēlandok itu masak sudah salai itu, ia bangkitlah dēri tidornya. Intiha.

Alkēsah tērsēbut pula halan harimau pula maka pēlandok sudah jaga maka tidorlah harimau itu sērta mēnēngkor bunyinya, maka sudah yakin pada fikir pēlandok itu tidor harimau itu diambil oleh pēlandok itu salai harimau itu dimakanuya habis. Maka sudah itu di-ambil oleh pēlandok itu kulit kayu yang bērnama gēntong kērana sarupa dēngan salai itu lalu digantinya di-tēmpat salai harimau itu. Maka sudah itu hari pun hampir tērbit matahari maka pēlandok itu pun dipanggilnya harimau itu lalu harimau itu tērkJut dēripada tidornya lalu ia bangkit. Maka sudah bangkit harimau bērkata pēlandok itu, "Hai hulubalang mari kita mēngambil kayu pēngandar salai kita didalam tēbas orang itu." Maka pērgi ia bērdua dēngan harimau itu, kata pēlandok itu sampai ditēngah jalan, "Hai hulubalang ambil olehmu akar, biar aku mēngambil kayu pēngandar." Maka tinggal harimau itu mēngambil akar dan pēlandok itu mēngambil kayu satambun tahi yang sudah ditēbang orang maka durinya panjang-panjang lēbeh kurang satu inci panjangnya. Maka yang mēngala kapangkal kayu itu tiada dibuangnya akan durinya dan yang mēngala kahujongnya dibuang oleh pēlandok itu durinya. Maka sudah itu diambil oleh pēlandok, dan harimau itu salainya masing-masing, salai harimau itu ditēlah hadapan harimau dan salai pēlandok itu di hadapan pēlandok itu. Kēmudian maka berjalantlah mēnuju hala pada sungei, maka mēntara bērjalan itu masing-masing mēmakan salai-nya. Maka harimau itu mēntara bērjalan sērta bērkata ia, "Adohai sakit aku ini kērana pēngandar jini mēnikam bēlakangku, lagi pula salaiiku ini pahit rasanya." Maka dijawab oleh pēlandok itu katanya, "Itulah hulubalang, aku khabarkan sawalam,

jangan diusek hujung sangir aku, mēnjadi pahit salai itu.” Maka kata harimau itu “ Hai Sang Di-rimba bērilah aku salai kamu itu sēdekit, boleh aku rasati kērana pēnat sangat aku ini sēmuā yang tērok.” Maka didēngar oleh pēlandok itu kasihan ia akan harimau itu lalu dibērinnya sēdikit salainya maka dirasa oleh harimau itu sēdap sangat rasanya lalu harimau itu terhēnti ia bērjalan maka kata pēlandok itu. “ Apa kēna hulu-balang bēr-hēnti kērana apa sēbab-nya tēntu jalan kita ini sudah dēkat pada sungei bēsar, lambat tibanya sēkarang bēr-jumpa kita dēngan Tuanku Raja Suleyman tēntu di-ambil-nya salai kita ini lagi kita dimarahnya lagi dihukomnya kērana kita mēmakan rusa tiada dibēri tahu kapadanya.” Maka harimau mēnēngar kata itu lalu dipikulnya pēngandar itu, lēbeh kurang sapēlaung sampailah pada tēpi sungei itu bēr-hēnti sērta masing mēmakan salai-nya.- Maka habis salai pēlandok itu kērana diberinya pada harimau itu pula salainya, di-dapat oleh harimau itu ampat kali makan, lalu minum kaduanya dan salai harimau tinggal pada tēpi sungei itu adanya.

Alkēsah tērsēbut pula pēlandok dēngan harimau itu hēndak mēnyēmbērang sungei itu maka pērgilah ka-hilir sungei pēlandok itu bērdua dēngan harimau itu. Maka bēr-jalan-lah kaduanya mēnyusor sungei itu tiba-tiba bērjumpa rakit batang pisang sangkot pada bangkar kayu bēsar tumbang dēkat tēpi sungei itu. Maka turun kadua-nya pēlandok dēngan harimau itu pada rakit itu lalu ditolaknya ka-sōbērang, yang mēnolak itu harimau dan pēlandok itu diam. Maka sudah rapat dēkat tēpi tēbing itu pēlandok itupun mēlompatlah di-atas tēbing itu dan harimau itu pun tinggal ia di-atas rakit itu lalu hanyut lagi pula. Di-kata oleh pēlandok itu “ Hai hulubalang matilah kamu itu ditangkap oleh buaia, dan salai kamu salamam aku makan habis, maka aku ganti dēngan kulit gēntong.” Maka didēngar oleh harimau itu ia pun marahlah, kata harimau itu, “ Nantilah kamu Sang Di-rimba, aku makanti.” Sērta harimau itu mēlompat lalu naik ka-atas tēbing itu ia hēndak mēnchari pēlandok itu. Maka pēlandok itu pun sudah ia pērgi bērjalan, maka dijumpanya sarang tabuan didalam langang itu maka dudoklah ia pēlandok itu dēkat sarang tabuan itu. Maka sampai dēkat pētang hari harimau itupun berjumpa ia dēngan pēlandok itu maka kata harimau itu ini, “ Baharu ku jumpa Sang

Di-rimba, aku makanti, kamu tipu aku rupanya." Maka kata pelandok itu, "Jangan aku kamu makan kerana aku ini disuroh oleh Raja Suleyman menunggu gongnya. Tidak-kah kamu lihat." Maka kata harimau itu "Mana ia-nya." "Ini yang mengaum bunyinya ini." Maka dilihat oleh harimau itu. Maka lalu berkata harimau itu, "Bolehkah aku pukol sedikit?" maka jawab pelandok, "Jangan: takut di-marah oleh Raja Suleyman." Maka kata harimau itu, "Sikit pun, jadi, aku pukol." Maka kata pelandok itu, "Nanti aku pergi pers-embakkan pada Raja Suleyman." Maka habis kata itu pelandok itupun pergilah berlari-lari lebih kurang sepeleang daripada tempat tabuan itu. Maka ia pun berlaunglah demikian bunyi-nya. "Pukol-lah hulubalang." Maka didengar oleh harimau itu iapun angkat tangan lalu dipukulnya. Maka tabuan itu pun menyerbulah pada harimau itu maka harimau itu pun lari serta hingar bunyi mulutnya, lalu bengkak badan dan muka-nya.

Alkésah tersébutlah pelandok itu maka sudah didengarnya harimau lari serta mulutnya hingar bunyinya maka ia pun berjalan pula berlari-lari jauh. Maka hari pun sudah masuk pada malam berhenti ia pada pangkal kayu besar pada chelah banirnya lalu ia berdiam dirinya serta takut akan harimau itu kerana ia sudah banyak dosanya dengan sebab tipunya pada harimau itu. Maka tiadalah tidur pada malam itu kerana lagi ia hendak mencharikan elah hendak dideranya harimau itu. Maka samalam-salam itu ia berfikir sampailah siang hari. Maka pelandok itu pun berjalanlah lebih kurang perjalanannya itu sampailah sudah setengah hari maka berjumpa pelandok dengan ular sawa chindei. Ular itu tengah tidur menengkor bunyi-nya, tetapi ular itu tidur ber-lengkar tiga lengkar dan kepalanya jauh dari lengkar itu ditengah lorong jalan besar. Maka sudah dilihat oleh pelandok ular itu nyata sudah tidornya dudok pelandok itu dekat lengkar ular itu kerana fikir pelandok itu, jikalau datang harimau itu menchari aku sekarang neschaya boleh aku berdalah aku ini menunggu ikat pinggang Raja Suleyman. Maka sudah itu pelandok itu dudok lebih kurang sampei sudah mata hari asar maka berjumpa pula oleh harimau itu. Maka dilihat oleh harimau itu pelandok dudok menyarakong. Maka harimau itu sangatlah pula marahnya fikirnya hendak diterkannya sahaja.



Maka dilihat pula oleh pelandok itu harimau itu hendak mēnēr-kam maka ber-kata pelandok itu, "Hai hulubalang, jangan kamu tērkam aku, kērana aku mēnunggu ikat pinggang Raja Suleyman. Ia suroh aku ini, kērana ini kain chindei zaman pēsaka dahulu. Maka inilah pakaian waktu Raja Suleyman tabal esok, kērana titah raja sēmua kita dipanggil lagi dua hari ia hendak naubat." Maka tērhentilah harimau itu mēnangkannya kērana dilihat oleh harimau chorak kain itu elok sangat lagi warunanya bērchampur dēngan amas mēnjadi heiran-lah harimau itu dan hati-nya pun bēr-kahēndak pula mērasa ikat pinggang itu, maka bēr-kata harimau itu. "Hai Toh Sang Di-rimba bolehkah aku chuba pandu ikat akan pada pinggang aku ini?" Maka jawab pelandok itu, "Nanti biar aku pērgi pērsēmbah pada Tuanku Raja Suleyman." Maka sudah habis chakap itu pelandok pun pērgi ia bērjalan, maka dijumpa suatu busut naik ia kaatas busut itu. Maka bērlauanglah ia pada harimau itu katanya, "Hai hulubalang, ikatkanlah." Maka didēngar oleh harimau itu, diikatnya ular itu maka dilihat oleh harimau itu mēngruit rupanya, maka bērfikir harimau itu. "Ini barang takut aku ini, kena tipu sahaja." Maka diambil oleh harimau itu kayu lalu dipukolnya kēna ular itu lalu ular itu bērjalan maka harimau itu pun heiran akan pelandok itu mēmbuat bohong atasnya maka bērtambah pula mērahnya maka dicarinya pelandok itu maka pelandok itu pun lari bērsangatan jauhnya, maka tiada bērtēmu dēngan harimau itu adanya.

Alkēsah tērsēbutlah kalakuan pelandok yang lari itu maka pelandok itu pun lalu ia mēnuju sungei yang bēsar. Maka di-tēpi sungei itu dilihatnya ada satu pohon kayu namanya chadong, buahnya lēbeh kurang sabēsar buah mata kucing, tētapi masaknya manis. Maka pelandok gēmar sangat mēmakan itu buah kayu, maka apa akalnya hendak mēnyēbērang sungei itu aynya dēras lagi dalam. Maka dilihatnya buaia banyak sangat, pērgi pelandok itu mēnchari tēmpurong nyiur satu di-pēgangnya pada tangannya maka sudah itu berdiri ia pada tēpi tēbing itu dipanggilnya sēkalian buaia itu dēmikian bunyinya "Hai sēkēlian Si Rangkak timbul kamu sēkēliannya. Raja Suleyman mēnyuroh mēmbilang kamu sēmuanya." Maka buaia itu mēnēngar bunyi kata pelandok itu timbul ia sēkēliannya

Maka sudah ia timbul semuanya disuroh oleh pelandok itu bératur rapat-rapat sampai di-sébérang sungei itu. Maka bératurlah sèkélian buaia itu maka turun pelandok di-atas kèpala buaia itu, ia pun bərbilanglah serta dikatoknya dèngan kèpala tèmputong itu akan kèpala buaia itu dèmkian bunyi-nya, "Satu dua tiga, lèkop kèchil bèsar kèpala buaia tèlukop. Satu dua tiga, lèkop kèchil bèsar kèpala tèlukop." Maka hingga sampailah pelandok itu kasébérang. Maka sudah itu naik kaatas darat bèrkata pelandok itu. "Hai sèkélian kamu Si Rangkak, akal aku sahaja hëndak mènnyèberang mèmakan buah chadong ini, aku katakan Raja Suleyman yang mènnyuroh kamu timbul, maka kèpala kamu sémua-nya itu mèrasa aku katok dèngan tèmputong, bukan-lah kamu chèrdek, bodoh sémua-nya." Maka didèngar oleh buaia itu sangatliah marah-nya sémua buaia itu akan pelandok itu. Maka bèrkata buaia itu, "Mushtabil kamu itu tiada hëndak minum ayer sèkarang. Jika kamu minum ayer sungei ini atau lainnya, maka kamu aku tangkap juga." Maka kata jawab pelandok itu "Pèrgi aku kadarat ayer paya, dan kolam, dan kubang dan lopak, mèngapa salahnya?" kata pelandok itu. Kata buaia itu, "Barang mana ada ayer ada aku, jangan kamu tiada tahu." "Hai," kata pelandok itu, "ia-lah jika chèrdek kamu sèkarang dapatlah kamu tangkap aku jika chèrdek aku sèkarang tidaklah aku mati." Maka habis kata itu pelandok itupun pèrgi ia mèmakan buah chadong itu dan buaia itu pun lèrpakatlah sèkélian buaia yang dèripada laut dan sungei dan paya bératur mènunggu semuanya.

Maka sudah habis pèrihal buaia itu maka balik pula dèrihal pelandok itu ia mèmakan buah chadong itu sudahlah kèni nyang sangat, maka ia pun sudahlah dahaga hëndak minum ayer. Maka pèrgi pada paya dan kubang dilaungnya dèmkian bunyi-nya, "Hai Si Rangkak" Maka mènnyahut ia buaia, "yui," sahut buai itu. Maka tèrhènti pelandok itu pèrgi pula ia pada sungei di-laungnya, sakali ampat yang mènnyahutnya. Maka, "Hai," kata pelandok itu, "Jika samacham ini, mati pula aku ini, hëndak minum tiada dapat." Maka pèrgi ia ka-hulu sungei itu dilaung-nya pula, sakali laung sampai sapuloh yang mènnyahutnya. Heiran-lah ia, naka dilihat oleh pelandok itu ada buloh aur duri satu pèrdu satèngahnya tumbang pada ayer itu. Maka ia

ikot batang buloh aur itu didalam rambun yang tebal sangat lalu ia minum. Maka tengah pelandok itu minum berchepak-chepak bunyinya ditangkap oleh buaia itu dari bawahnya dapat oleh buaia itu ranting buloh aur itu sahaja, maka pelandok itu terkéjut serta di-kata-nya "Aduhai-aduhai jangan-lah kuat sangat, hai Si Rangkak." Maka jawab buaia itu "Jangan kuat, ia ini ia baharu kamu mati." "Hai," kata pelandok itu, mentara ia berjalan perlahan-lahan kapangkalnya balik, "Janganlah aku ditarik." Maka ditarik oleh buaia itu rebun buloh itu berhalon-halon ayer itu. Pada halnya pelandok itu sudah lepas kadarat, buloh itu lékat pangkalnya. Maka kata pelandok itu, "Hai. Si Rangkak, apa gunanya kamu tangkap bangkar buloh itu, boleh kamu makankah? Hui kasihan aku akan kamu, téharap sahaja hendak mémakan aku." Maka méndengarkan kata itu buaia itu pun diléaskanlah buloh itu. Maka pelandok itu pun berjalan ia menchari busut kerana ia hendak tidor prut-nya sudah kényang sangat lagi léteh ia, takutkan harimau yang ditipunya itu. Maka sampeilah ia suatu busut jantan lalu pelandok itu naik keatas lalu ia tidor ménéngkor sahaja adanya.

Alkésah tersébotlah pula pri-hal harimau yang hendak menchari pelandok itu, maka berjalan-lah harimau itu lalu ia sampei pada tépi sungei itu. Maka berjumpa ia dengan sa-ekor buaia yang besar timbul. Maka bertanya buaia itu pada harimau itu "Hai Hulubalang derimana kamu tadi?" Maka jawab harimau itu, "Aku ini dari dalam hutan yang besar ini, kiranya aku hendak menchari pelandok yang tipu akan aku deripada salai bingga aku hendak bunohnya, sakali dengan sarang tabuan aku berapa banyak sakit, dan ular besar chemas lagi aku mati nyempang pun aku dapat pikir kerana lagi aku lihat ia méngruit lalu ular itu berjalan. Maka ini-lah aku hendak menchari ia hendak aku makanti." Maka méndengarkan chapak harimau itu démikian bunyinya buaia pun berchërta pula akan hal pelandok itu membuat tipu kepadanya, dengan pelandok itu hendak mémakan buah chadong "Dikatakannya ia dititahkan Raja Suleman hendak mémbilang aku sékliannya, Maka disurohnya aku sékliannya beratur rapatrapat sampei sébrang sana. Maka sudah aku beratur sémuanya ia dibawanya képala témpurong lalu dinaik képala aku sékliannya ia bilanglah

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sërta, dikatokkannya demikian bunyinya, Satu dua tiga lekop kèchil bésar kèpala tëlèkup, kata-nya, hingga habis. Maka tiba ia sèbrang sana tharulah ia chakap ia tipu sèhaja. Inilah aku sèklian-nya sakit hati padanya." Maka harimau itu mendengarkan chètra buaia itu maka lalu harimau itu bèrkata kèpada buaia itu. "Baik kita bèrpakat. Antar aku di-sèbrang sana boleh aku chariti, boleh tangkap. Jikalau tèrjun ia ka-ayèr rèzèki kamu-lah, Jikalau didarat rèzèki aku-lah." Maka kata buaia itu "Ya-lah." Maka turun harimau itu di-atas kèpala buaia itu lalu diantarnya ka-sèbrang. Maka tibalah harimau itu di-atas tèbing adanya.

Alkèsah tørsèbut pula chèritra pèlandok itu pada waktu masa harimau itu bèrpakat dèngan buaia itu ia dèngar dèri atas tèbing bèrbètulan sèbrangnya. Maka bèrpikir pèlandok itu, "Biar-lah aku bunoh juga harimau itu sekarang, kèrana janji dia dèngan buaia itu, apakala tèrjun ka-ayèr sèkarang rezeki buaia, apakala didaptnya didarat, rèzèki harimau. Maka aku tahu buat," kata pikiran pèlandok itu ada-nya.

Alkèsah tørsèbut-lah pula chèritra harimau itu yang sudah tiba ka-atas darat itu lalu-lah ia mènchari pèlandok itu. Maka Pèlandok itu bèrdiri ia ditèngah tèrang tiada sèmak sangat. Maka di-tèrkam oleh harimau itu akan pèlandok itu. Maka kata harimau itu "Ini-lah, bharu Sang Di-rimba aku jumpa-ti kamu handak aku makan-ti." Maka kata, jawab pèlandok itu, "Chubalah pandu jikalau kamu sunggoh Hulabalang dirimba dapat-lah aku sèkarang ada-pun yang mèngluar-ti kamu itu pun aku." Maka mènndèngarkan kata itu harimau itu pun mènèrkam pada pèlandok itu. Maka pèlandok itu pun lari dèkat tèpi tèbing. Maka dikèjar oleh harimau itu. Maka mèl-mat pèlandok itu balek kadarat. Maka di-dèngar oleh buaia itu bèr-gèmuroh di-atas darat itu harimau bèr-tèrkam dèngan pèlandok itu bèrhimpun buaia itu, ia jaga dèkat tèpi ayèr itu. maka harimau itu pun tèrkam pula tiada dapat mèlompat pèlandok itu dèkat tèpi tèbing itu hingga sampai di-pusing-pusingkan oleh pèlandok itu sapuluh kaki lompat. Maka ada satu tèmpat tèbing itu pantai-nya. Maka pèlandok itu-pun di-lompatkannya pada tèpi pantai itu tèr-chichah kaki pèlandok itu pada ayèr itu. Maka melompat ia balek ka-darat. Maka harimau itu ikut lompatnya pada tèpi ayèr itu, tèr-lepas dua

dépa kadalam ayer itu. Maka datang Buaia tangkap, sangka-nya buaia itu pelandok. Maka megadoblah sërta sakit-nya harimau itu. Maka buaia itu-pun masakan dapat ditangkapnya harimau itu lalu ditariknya kata harimau itu, "Tëman jangan mika tangkap." Maka jawab buaia itu "Aku tiada fehduli, kërana janji kita dahulu asa-kan kadalam ayer rëzeki aku." Maka harimau itu pun mëndëngar-kan kata buaia dëmikian itu mënangis ia lalu mati. Maka pelandok itupun sukaiah ia sambil ia berkata "Tarik-lah Si-Ringkak makan-ti. Kërana ia itu bësar dëripada aku, aku ini apa guna-nya? Satu ekor pun tiada bërasa." Maka ini-lah sëtia dëngan buaia. Inilah jangan adanya.

Alkësah tërsibut pula chëritra pelandok yang sudah lëpas idërpada mara-nya itu lalulah ia bërjalan mënuru kampung Raja Suleyman itu Maka tiba ia pelandok itu dëkat dëngan rumah orang ada didalam kampung itu didëngarnya orang itu tëngah berjawab akan bëliong. Maka adapun satu orang mëminjau satu mata bëliong kapada satu orang lamanya sudah satu tahun sudah. Maka tiada dipulngkar. oleh orang yang meminjam itu, Maka ditunggu oleh orang yang ampunya. Maka kata orang yang meminjam itu tiada lagi itu mata bëliong kërana sudah makan bubok. Maka hingga përgi orang dua orang itu bichara kapada Raja. Maka tiba orang itu kapada Raja lalu disëmbah oleh orang yang ampunya bëliong itu kapada Raja. Maka kata Raja, dipërëksa di-atas orang yang mëminjau bëliong itu, kata jawab orang itu "Ya, dia mëminjau-nya akan tëtapi itu mata bëliong sudah habis di-makan oleh bukok, tuan-ku. Maka tuan-nya yang punya itu tiada ia mahu hilang, ia mahu ada juga." Maka Raja itu pun këlamlah pikir-nya kërana tiada patut juga itu mata bëliong di-makan bubok. Kata Raja itu. "Përgi panggil oleh kamu, hai anjing, Sëlang Dirimba, kërana kamu yang tahu akan menchari Sëlang Dirimba itu lain orang tiada tahu akan tëmpat-nya." Maka përgi-lah anjing itu hingga sampai sëtëngah hari baharu-lah bërjumpa. Maka bërjumpa anjing itu dëngan pelandok itu kata anjing itu "Hai Sëlang Dirimba tuan-ku Raja Suleyman mëmanggil kamu." Maka pelandok itu pun mëndëngarkan kata anjing itu lalu-lah ia përgi pada rumah Raja Suleyman itu. Maka ia pun naiklah ka-atas rumah Raja Suleyman itu lalu ditëgor oleh Raja

Suleyman itu "Hai Sëlang Dirimba." "Tuan-ku," kat jawab-nya. Maka kata Raja itu. "Aku panggil akan Sëlang Dirimba ini orang, dua orang, ada bërbalah-balah akan pasal mata bëliong, satu orang yang punya dan satu orang yang mëminjam. Kata oleh orang yang mëminjam ini mata bëliong sudah di-makan oleh bubok. Maka kata tuan-nya ia tiada mahu ia bërkahëndak juga. Mënjadi aku tiada tahu akan pikir-nya tëlah aku mintak hukum akan pada Toh Sëlang Dirimba-lah përkara ini." Maka jawab oleh pëlandok itu, "Tëlah bënarlah tuanku akan tëtëpi-nya biar patek përgi mandi dahulu. "Maka përgilah pëlandok itu mandi ka-tëbing, lalu ia përgi pada lalang yang sdah tërbakar oleh orang dëkat dëngan kampong Rajah itu. Maka bërguling-guling ia pada tëtëpat abu lalang itu lalu badan-nya itam. Maka sudah ita pëlandok itu pun balek naik ka-rumah Raja itu hari pun sudah pëtëng. Maka dilihat oleh Raja itu badan pëlandok itu itam dëngan abu lalang itu. Maka dipërëksa oleh Raja itu "Apa këna Toh Sëlang Dirimba badan itam sangat ini? Katakan hëndak përgi mandi. Maka mandi apa macham ayer-nya." Maka jayab pëlandok itu "Ampun tuan-ku, bënar juga, patek tadi hëndak mandi; akan tëtëpi patek pun tiba ka-tëbing itu, patek lihat laut dëkat kampong tuan-ku ini tër-bakar. Maka ini-lah patek përgi tulong-ti. Maka sudah habis padam api itu patek pun balek kamari ini-lah sëbab jadi badan patek ini itam di-sënggau oleh api itu," Maka Raja itu mëndëngar-kan sëmbah pëlandok itu tëtëpënan-nya ia, "Hai," kata Raja itu, "sangat lah tiada patut, pada pikiran hati aku laut dimakan oleh api." Dan sëklian orang yang bichara itu pun hairan-lah juga mëndëngar-nya. Maka kata pëlandok itu, "Macham mana pikiran tuan-ku tiada përchaya-kah akan hal patek ini?" Maka jawab Raja itu "Hai Sëlang Dirimba tiada-lah patut pada akal aku, dan tiada përnah aku mëndëngar dëripada zaman dahulu-dahulu-kala pun hal-ini." Dan tambahan pula kata orang yang mëminjam bëliong itu pun tiada juga patut. Maka jawab oleh pëlandok itu "Ampun tuan-ku bëribu-ribu ampundëri kërana ini-lah sëbab mata bëliong itu tiada patut pada akal patek di-makan oleh bubok kërana tiada përnah mëndëngar dëripada zaman dahulu kala pun." Maka mëndëngar oleh Raja itu akan kata pëlandok itu, baharu-lah jatoh hukum pada orang yang mëminjam mata bëliong itu mahu-lah dipulang-

kan atau kamu ganti dengan samacham orang itu punya juga adanya.

Alkēsah tērsēbut pula akan dēri-hal Pēlandok itu habis sudah lēpas bichara itu. Pēlandok itu pun mēmohunkan balek. Maka balek-lah ia. Maka lalulah Pēlandok itu pērgi bērjalan pada suatu dusun ia hēndak mēnchari durian. Maka tēlah bērjumpa ia dēngan suatu harimau. Maka di-tēgor oleh harimau itu akan pēlandok itu, kata harimau itu "Hai-Sēlang Dirimba dēri-mana kamu tadi?" Kata jawab Pēlandok itu, "Aku ini datang dēri-pada rumah Raja lēpas nēnjatohkan hukum orang, dua orang bēr-balah-balah-kan pasal pinjam dan bēri satu mata bēliong. Maka tēlah sēlēsī-lah sudah ada-nya." Maka habis itu chakap, bēr-kata harimau itu kapada pēlandok itu dēmikian, kata-nya, "Ada-lah tēman ini" kata harimau itu, "tidor samalam bērmimpi aku mēmakan kambing jantan itam. Maka apa-lah pikir Toh Sēlang Dirimba kērana aku ini hēndak pērgi mēndapatkan kambing itu, pakai-kah-aku ini atau tiada." Maka sahut pēlandok itu, "Jangan kamu pērgi pada kambing itu, pērgi kamu mēndapatkan Raja Suleyman bicharakan. Neschaya Hulubalang sēkarang sēnang kērana kambing itu di-panggil oleh Raja itu." Maka harimau itu pun sēbab mēndēngarkan pērkata-an pēlandok itu lalu ia pērgi dirumah Raja Suleyman. Maka tēlah tiba pada rumah Rajaitu di-tēgor oleh Raja itu, "Dēri-mana Hulubalang Dirimba itu?" Maka sahut Harimau itu, "Tuanku, patek ini datang dēri rumah patek kērana hēndak mēngadap duli tuanku." Maka jawab Raja Suleyman, "Apa hajat?" Maka jawab Harimau itu, "Patek ini hēndak bēr-maalum-kan sēmbah kabawah duli sēpērti patek tidor samalam bērmimpi patek mēmakan kambing jantan itam. Maka apa-lah hukum-nya?" Maka jawab Raja itu, "Hai, aku pun tiada pērnah lagi mēmakan kambing jantan itam, Toh Hulubalang sudah pula mēmimpinya." Maka habis itu di panggil oleh Raja Suleyman anjing disurohnya pērgi mēmanggil Sēlang Dirimba. Maka anjing itu pun pērgi-lah mēmanggil Sēlang Dirimba dicharinya hinggā puas sudah tiada bērjumpa. Maka Sēlang Dirimba pada masa waktu harimau itu pērgi di-rumah Raja Suleyman itu, ia sudah pērgi mēndapat kambing jantan itam yang didalam kampung bērdēkat dēngan rumah Raja itu. Lalu ia Sēlang

Dirimba berkata kepada kambing itu. "Hai kambing itam, kamu jaga hendak dimakan oleh harimau kerana ia terkauangkan mimpinya pada aku tadi ia kata, 'Tidor aku samalam bermimpi aku memakan kambing itam. Maka apalah hukumnya mimpi aku ini ia Sëlang Dirimba.' Maka aku jawab-kan aku tiada tahu pergi kamu pada Raja ia-lah yang tahu akan menghukumkan. Maka habis itu harimau itu pun pergi lah tadi ka-rumah Raja. Maka kepada pikiran kamu kambing macham mana, takut-keh atau tiada?" Maka jawab oleh kambing itu, katanya kepada pelandok itu. "Hai Sëlang Dirimba apalah akhtiar aku ini kepada Toh Sëlang Dirimba-lah?" Maka jawab oleh pelandok itu, "Hai kambing siap kamu suloh daun nyiur satu batang ber-lëkas-lëkas kerana Raja hendak tiba panggil kepada aku ini." Maka kambing itu pun mëndëngarkan kata pelandok ia pun mengambil daun nyiur lalu dibuatkannya suloh. Maka sudah itu berkata pelandok itu, "Pergi kamu dahulu kepada Rumah Raja itu didalam sëmak dëkat rumah mëndëngdap mënanti aku panggil sëkarang, datang naik ka-rumah Raja itu." Maka habis itu chakap kambing pun pergilah ia kepada dëkat rumah Raja itu mëndëngdap ia didalam sëmak itu. Maka kambing itu sudah pergi anjing itu pun sampëi-lah ia pada pelandok itu sërtà disuroh dëmikian bunyi-nya "Hai, Sëlang Dirimba, tuanku Raja Suleyman mëmanggil sëkarang." Maka pelandok itu mëndëngarkan kata anjing itu lalu ia pergi hingga sampai pada rumah Raja itu sërtà disuroh oleh Raja itu, "Hai Sëlang Dirimba aku panggil akan kamu ini suatu pasal, harimau datang kepada aku, ia berkhabarkan mimpinya samalam, ia kata didalam mimpi itu ia memakan kambing jantan itam. Maka kepada pikiran Toh Sëlang Dirimba macham mana mimpi harimau itu?" Maka jawab oleh pelandok itu "Ampun tuanku ber-ribu-ribu sëmbah patek kabawah duli dëripada itu lëbeh maalumlah kepada tuan-ku pikiran patek, lëbeh baik kita panggil kambing itu." Maka habis chakap pelandok itu Raja pun suruh panggil kepada anjing akan kambing. Maka kambing itu pun mëndëngarkan hukum Raja itu ia kena panggil. Maka këluar kambing itu. Maka datang anjing itu dilihat lalulah dipanggil oleh anjing itu. "Hai, Sang Kambing tuan-ku mëmanggil." Maka kambing pun naik-lah ka-atas rumah itu dan sulohnya di-tinggal-kan-nya di-tanah. Maka tiba-tiba dudok Raja pun përéksa kepada



kambing itu. "Hai, Sang Kambing, kamu aku panggil kerana Hulubalang mēngadap kapada aku ia bērmimpi samalam mēmak-an Sang Kambing. Maka apa macham pikiran Sang Kambing?" Maka jawab oleh kambing itu "Ampun tuanku bēr-ribu-ribu" ampun kabawah duli, akan hal patek ini lébeh maalum-lah kapada tuan-ku. Jikalau boleh patek mēmuhunkan sēmbah sangat-lah tiada izin kapada hati patek kerana jalan mati itu mimpi." Maka sahut Raja itu. "Hai Sang kambing itu tēlah bēnar-lah sangat, akan tētapi-nya hukum kapada aku tiap-tiap mimpi mēmakan mau di-makan-kan dan tiap-tiap mimpi mēmakai mau di-pakai-kan dan tiap-tiap mimpi bēr-bini mau di-nikah-kan atau lain-nya." Maka habis chakap Raja itu sudah. Maka pēlandok itu tidor ia di-pējam-kan-nya mata-nya. Maka di-lihat oleh Raja itu akan kalakuan pēlandok itu tidor rupa. Maka di panggil oleh Raja itu akan pēlandok itu, "Hai Sēlang Dirimba?" Maka tērjaga-lah ia pēlandok itu mēndēngarkan panggil Raja itu. Maka tita tiba ia-pun jaga dēripada tidornya lalu disurohnya kambing itu mēngambil suloh demikian bunyi-nya; "Hai Sang Kambing pērgi kamu ambil suloh lēkas." Maka pērgi-lah kambing turun mēngambil sulohnya. Maka kata pēlandok itu, "Pasang api." Maka di-pasang oleh kambing itu api pada suloh, di-lihat oleh Raja itu pēlandok gadoh memintak suloh kapada kambing itu bēr-kata Raja itu. "Hai Sēlang Dirimba apa nama-nya mēngkin bēr-gadoh dēngan suloh ini?" Maka dijawab oleh pēlandok itu, "Tuan-ku patēk mēngantok di sini tadi, bērmimpi patek mēmakar rumah tuan-ku, ini-lah mēngkinnya patek hēndak bakar-ti akan rumah." "Siapa bēri hukum mēmakar rumah aku?" Maka kata jawab pēlandok, "Ampun tuanku bēr-ribu-ribu ampun, ada pun sēbab patek hēndak bakar ini rumah tuan-ku, kerana patek mimpi mēmakar rumah tuan-ku, ini dēngan hukum tuan-ku kerana tiap-tiap mimpi mēmakan makan-kan dan tiap-tiap mimpi mēmakai pakai-kan dan tiap-tiap bēr-istri dinikahkan." Maka Raja itu mēndēngarkan kata pēlandok itu demikian bunyi-nya, "Hai Hari-mau, jangan kamu makan kambing itu, kerana jikalau ada mimpi yang demikian, apa-apa mimpi jangan-lah dipērbuat adanya kerana thalim hukum-nya." Tamat.

## A Fourth Contribution to the Knowledge of the Hymenoptera of Sarawak.\*

BY P. CAMERON.

For the opportunity of describing the following species I am indebted to Mr. John Hewitt, the present curator of the Sarawak Museum.

EVANIIDÆ.

*Pristaulacus fasciatipennis*, sp. nov.

Black, the antennal scape red; the greater part of the anterior femora, their tibiæ and tarsi dark red, the apical 2 joints of the tarsi black; the 4 posterior tarsi dark rufotestaceous; wings clear hyaline, the median cellule except at the apex, the submedian cellules except the 1st narrowly at the base, a band at the stigma and of its width extending from it to the cubital nervure, covering the 1st transverse cubital nervure and one on the apex, fuscous violaceous; the nervures and stigma black. ♀.

Length to end of 1st abdominal segment 11 mm.

Kuching. September.

Thorax in front armed on either side above the collar with 2 stout teeth, the upper being more slender and sharper; base of mesonotum roundly incised, its sides broadly rounded. Collar longish, smooth and shining, its apex at the sides closely punctured. Midlobe of mesonotum raised, clearly separated, narrowed gradually towards the apex; stoutly transversely striated; the basal two striæ separated from the others by a space; its lateral slope is similarly striated; the apex of the mesonotum is coarsely reticulated. Scutellum in the middle stoutly transversely striated, the sides bordered by stout longi-

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\* See also "Descriptions of New Species of *Iphiaulax* and *Chaollia* (Braconidæ) from Sarawak, Borneo," Journ. Str. Br. Roy. Asiatic Soc. XLII. pp. 23-52

tudinal striæ. Median segment coarsely reticulated; the reticulations on the lower part of the pleuræ are longish, regular and oblique; above, the striæ form shorter, more rounded reticulations. Coxæ stoutly, irregularly striated; the hind femora are finely, closely punctured, almost striated, the claws with 4 teeth besides the apical one. Transverse median nervure interstitial or almost so, it touching the hinder edge of the transverse basal.

Apart from the differences in coloration this species differs from the other Sarawak species—*P. erythrocephalus* Cam. in the pronotum being toothed. It belongs to *Deraiodontus* Bradley (which, however, appears to be identical with *Pristaulacus* Kieff. *sensu str.*) except that it has 4, instead of 2 teeth on the pronotum.

## BRACONIDÆ.

## BRACONINÆ.

*Iphiaulax Hewittii*, sp. nov.

Luteous; the antennæ, a large mark occupying the front, except on the sides below and extending above to the hinder ocelli where it is roundly narrowed, the base of mesonotum, the centre and sides of median segment, the abdomen and the hinder legs, black; the ventral surface white, with large black marks on the sides; wings to the transverse basal and median nervures yellowish hyaline, fuscous beyond; the stigma black, obscure testaceous behind. ♀

Length 8 mm.; terebra 6 mm.

Kuching. September.

Face paler, more yellowish than the rest of the head; rugosely punctured; sparsely covered with long fuscous hair. Apex of mandibles black. Palpi pale testaceous, covered with pale hair. Apex of mesonotum flat. Median segment covered with longish white pubescence. First abdominal segment broad, as long as the 2nd; smooth, its centre near the apex irregularly, stoutly striated; the lateral depressions broad, smooth. The area on the 2nd segment is large, smooth, tri-

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angular, longer than its width at the base; its apical keel short; the lateral basal areae are clearly defined, smooth, triangular; except on the areae and the apex the segment is irregularly, closely striated; the 3rd segment is irregularly punctured on either side of the middle, the smooth central part being triangular. Sutureform articulation deep, closely crenulated; there is a narrow obscurely crenulated furrow on the apex of the 3rd segment and an obscure indication of one on the apex of the 4th. Hypopygium black in the centre, the sides pale.

A species closely allied to *I. thepsis* Cam., with which it agrees in colouration, except that the latter has not the head and base of thorax marked with black; otherwise *thepsis* is easily known by the very much smaller plate on the base of the 2nd abdominal segment—*I. portius* Cam. is similarly coloured, but is much larger; the area on 2nd segment is stoutly bordered by oblique striæ, the 3rd is closely striated throughout and the yellow-hyaline extends to the recurrent nervure.

*Iphiaulax sadongensis*, sp. nov.

Luteous, the antennæ, front, vertex, occiput and outer orbits, black, the wings to the lower half of the transverse basal nervure and to shortly beyond the transverse median, yellowish-hyaline, the costa and nervures reddish-luteous in the yellow basal part; the rest of the wings dark fuscous; the basal half of the stigma reddish luteous; the usual cloud in the 1st cubital cellule yellowish-hyaline. There is a small, pyriform mark on the sides of the front at the top of, and touching the eyes; the centre of the 1st abdominal segment and the 2nd and 3rd are strongly, closely longitudinally striated; the 1st with a stout keel down the middle; there is no defined area on the base of the 2nd segment, beyond the centre being more strongly striated. ♀

Length 13 mm.; terebra 5 mm.

Sadong. August.

Abdomen broad, ovate, as long as the thorax and wider than it. The face and oral region are pale yellowish testace-

ous; they are covered with longish pale hair; in the middle of the face is a deep furrow of uniform width; the face is smooth, flat. Median segment thickly covered with long fulvous hair. Basal abdominal furrows broad, deep, stoutly crenulated; the 1st is broad, deep; the lateral borders smooth; there are deep, smooth furrows on the apices of the 3rd, 4th and 5th segments; the oblique furrows on the base of the 2nd are deep. The sides of the segments are densely covered with fulvous pubescence. Wings very large, wide; the transverse median nervure is not quite interstitial. The hind tarsi are black except at the extreme base. There is a distinct transverse furrow at the clypeus. Palpi yellowish.

This species comes nearest to *I. xanthopsis* Cam., from Ceylon, both having black heads; it is larger and stouter; the 2 may be separated thus:

A broad yellow line on the upper inner orbits, extending from the ocelli to the antennæ; the furrow on the top of the face not reaching to the middle ... .. *Xanthopsis*.

Only a yellow mark on the inner upper orbits; the furrow on the face reaching to the clypeus ... .. *Sadongensis*.

*Iphiaulax curvinervis*, sp. nov.

Black, the antennal scape, head, thorax and 4 front legs red; the posterior coxæ, trochanters and femora black, tinged with brown; palpi pale testaceous, covered with white pubescence; wings highly iridescent, hyaline, the base slightly, but distinctly infuscated, the costa, stigma and nervures pale fuscous; the transverse median nervure sharply, obliquely sloped in a line with the transverse median; the prædiscoïdal nervure roundly curved towards the cubitus, the discoïdal cellule being therefore narrowed at the apex. The basal 5 abdominal segments are strongly, closely longitudinally striated; the striation on the 1st segment is sparser and more irregular; in the centre of the apical part is a stout longitudinal keel, which bifurcates at the base; the segment is of equal width throughout and is distinctly longer than the second. The area on the 2nd segment is stoutly striated, becomes gradually narrowed and extends to the apex of the segment. Sutureform articulation

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narrow, crenulated; there is a curved crenulated furrow on the base of the 4th and 5th segments, and distinct transverse ones on the apices of the 3rd, 4th and 5th; the 6th is depressed at the base and is finely closely, striated there. The 3rd segment is suffused with rufous in the middle. The hind coxæ are longer than usual; these are 3 times longer than wide. The pubescence on the legs (especially the hinder) is long and dense. ♂.

Length 8 mm.

*Hab.* Kuching.

This species is distinguished by the oblique transverse median nervure and by the præbrachial nervure being roundly curved at the prædiscoidal cellule towards the cubitus. Otherwise it is not unlike *I. ezerias* Cam.

*Iphianlax imaus*, sp. nov.

Black, the head, pro- and mesothorax and 4 anterior legs red; the wings uniformly dark fuscous, the costa, nervures and stigma black; the basal 5 segments of the abdomen closely, uniformly longitudinally striated; the plate on the 2nd segment smooth and shining, the basal part broader than long, its apex obliquely narrowed; the apical continuation extends beyond the middle of the segment and becomes gradually narrowed to a sharp point; the suturiform articulation is rufous in the middle. ♀.

Length 9 mm.; terebra 7 mm.

Kuching. December, 18th.

Head smooth, the face sparsely covered with long white hair; the head is cubital; the temples nearly as long as the upper part of the eyes; they are straight, not narrowed, with the hinder part rounded. Frontal furrow narrow, deep, extending from the ocelli to the antennæ. Antennal scape with a projection—broad at the base, narrowed towards the apex—on the apex below and extending close to the apex of the 2nd joint. Apex of mesonotum depressed, flat in the middle; its apex is bordered by a smooth, narrow transverse keel; behind which is a crenulated one. The base of

the metapleuræ and the metanotum in the centre at the base are red; the metanotum covered sparsely with long white hair; the metapleural furrow is wide and deep. The basal half of the central part of the 1st abdominal segment is smooth and shining, and there is a smooth line down the centre of the apical part, this line being aciculated towards the apex. Sutureform articulation deep, closely crenulated; there is no furrow on the apex of the 2nd segment, or on the 3rd; there is a narrow, distinct, crenulated furrow on the base of the 4th. Ventral segments white, with large black marks on the sides. The abdomen is as long as the head and thorax united and is wider than the latter. Palpi black, covered with white hair. Legs thickly covered with short, white pubescence; the middle coxæ are infuscated before and behind.

*Iphiaulax triornatus*, sp. nov.

Rufo-testaceous, the antennæ, 3 large marks on the mesonotum, the apical 2 segments of the abdomen, and the hind legs, black; wings hyaline, the costa and stigma black, the nervures paler, the base of the stigma whitish testaceous. ♀.

Length 7 mm.; terebra 3 mm.

Kuching.

Abdomen broad, ovate, as long as the thorax; the area on 2nd segment small, triangular and with a smooth keel twice its length. The central area of the 1st segment is smooth in the middle, the sides reticulated; the lateral furrows wide, irregularly transversely striated in the middle. The 2nd to 4th segments are longitudinally, closely rugose; the sutureform articulation crenulated; there is a similar furrow on the base of the 4th and a narrower one on the 5th; there are narrower crenulated furrows on the apices of the 4th and 5th. Temples long, not narrowed behind, the hinder edges rounded. Face somewhat strongly but not closely punctured; there is a triangular depression over the clypeus. Malar furrow distinct, deep. Hind legs stouter than usual; the femora on the basal half above and a ring on the base of the tibiæ testaceous; the tarsi are shorter than the tibiæ; thick, the metatarsus as long as the following two joints united. The black apical

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segment of the abdomen is narrowly edged with white at the apex.

*Iphiaulax alboornatus*, sp. nov.

Rufo-testaceous, the flagellum of antennæ black; the 4th and 5th segments of the abdomen broadly black; the 6th and the sides and ventral surface of the 7th white; the head paler coloured than the thorax; wings hyaline, the basal half suffused with fulvous; the basal nervures testaceous, the apical black; the parastigma and stigma black, the base of the latter testaceous. ♀.

Length 7 mm., terebra 4 mm.

Kuching. March.

Basal 5 segments of abdomen closely rugosely striated, the striæ becoming weaker towards the apex; area on 2nd segment smooth, triangular, not quite so long as it is wide at the base; the 1st segment is wider at the apex than it is long; the lateral furrows are transversely striated. Sutureform articulation wide, crenulated; it is the only transverse furrow. The abdomen is elongate oval and is slightly longer than the head and thorax united. Head cubital, the temples broadly rounded behind, densely covered with short pale pubescence. Face closely, finely punctured, a wide, deep, short furrow in the centre of the top. Front with a distinct furrow down the centre. Third abscissa of the radius as long as the basal two united; recurrent nervure not interstitial; there is a minute cloud below the parastigma. Parapsidal furrows shallow. The edges of the lobes of the mesonotum are paler than the centre.

EXOTHECINÆ.

*Spinaria Westwoodi*, sp. nov.

Rufo-testaceous, the back of the abdomen darker coloured, the flagellum of the antennæ black, the hinder tarsi black and thickly covered with black hair; wings fuscous, the anterior to the transverse basal nervure yellowish hyaline; the posterior with the basal half yellow-hyaline. ♀.

Length 8 mm.

Kuching. June.



Head, pro- and mesothorax smooth; the metanotum sparsely punctured, all the abdominal segments closely, strongly longitudinally striated. The spine on the pronotum is stout, long and curved. Near the apex of the propleuræ are 2 stout, curved keels; in front of them 2 short ones on the lower side; there are 3 stout keels in front of the spine on the pronotum. Scutellar depression large, with 2 keels. Base of metanotum depressed and with a keel down its centre; down the middle, extending from close of the base to the apex, is a longitudinal keel; bordering it on the apical half is, on either side, a roundly curved keel, uniting these with the central; below the middle, is an oblique curved one, from the outer edge of which runs upwards an oblique one; the sides are stoutly keeled, the keel dilated into a blunt tooth below the middle; from these teeth 2 keels run to the inner keel, forming an area, open at the lower innerside, below these are 2 longitudinal keels, forming a closed area, twice longer than wide. Pleural furrow shallow, smooth. The central keel on the apex of the 3rd abdominal segment becomes thickened into a blunt tooth; there is a similar projection on the middle of the 4th, but much larger, and it commences near the base of the segment; the sides of the 3rd segment project at the apex into a stout tooth, narrowed towards the apex; a similar, but longer and stouter tooth, is on the sides of the 4th; the last segment ends in a longish curved spine. The furrows are deep and stoutly striated; the basal slope of the 1st segment is smooth; in the middle are 2 keels, and the sides are also keeled. The median segment, breast and legs are densely covered with fulvous pubescence. The back of the abdomen may be infuscated.

Allied to *S. curvispina* Cam. and *S. dimidiata*, West. Both of these species have the abdomen for the greater part black. The species is a *Spinaria* as limited by Enderlein (Stett. Ent. Zeits., 1905, p. 229), *Spinaria* being now limited to the species with a spine on prothorax.

#### SPATHIINÆ.

*Habnoba petiolata*, Cam.

This species (described Journ. Straits Branch Royal As.

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Soc. 1905, p. 107) has been sent by Mr. Hewitt from Kuching. It is probably variable as regards the colouration of the legs and thorax and as regards the amount of red they bear. The prothorax in Mr. Hewitt's example is entirely red; the middle lobe of the mesonotum is largely suffused with rufous, the fore legs, except the tarsi, are rufous testaceous, the coxæ being of a brighter tint than the rest; the middle legs at the base are brownish, the tibiæ being lighter coloured than the femora and the tarsi, except for the white basal band, are fuscous. The palpi, it may be added, are long, the maxillary reaching to the base of the metanotum; the 4 anterior femora are dilated at the apex, the fore pair more distinctly than the middle.

## DORYCTINÆ.

*Neotrimerus nigroballeatus*, sp. nov.

Reddish testaceous, the sides of the basal two segments of the abdomen and the 3rd and following segments of the abdomen greyish green, the antennæ, an oblique mark on the sides of the 2nd abdominal segment at the area, a transverse one on the side of the 3rd and transverse ones across the 4th to 6th extending close to the sides, black; legs coloured like the thorax, the hinder tarsi blackish; the spines on the hinder coxæ pale yellow; wings to the transverse median nervure fulvous, suffused with fuscous, the rest dark fuscous, the stigma and nervures black.

Length 11-12; terobra 4 mm.

Kuching. November.

Head, pleuræ and metanotum densely covered with longish white pubescence; the mesonotum and scutellum smooth shining, glabrous; the legs, except the tarsi, are densely covered with long white hair; the pubescence on the tarsi is shorter and stiffer; the apices of the joints are spinose. Face rugosely punctured, its centre raised, narrowed below; the clypeus is distinctly punctured. Except on the pleuræ behind, the prothorax is strongly, closely punctured, the pronotum more strongly than the pleuræ, which, below the suture, are irregularly striated. The oblique suture, on the mesopleuræ and that over

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the sternum are crenulated. Metanotum closely reticulated, a keel down its centre; the metapleuræ punctured at the base, irregularly reticulated elsewhere. The basal 4 segments of the abdomen are closely longitudinally striated, the striæ becoming gradually weaker; the base of the 5th segment is weakly punctured; the apical two are smooth and shining. The basal tooth on the hind coxæ is long, curved; and its apex reaches to the end the coxæ; the lower one is much smaller, hardly one fourth of the length of the upper. The 2nd cubital cellule is clearly longer than wide, its apex being not much more than half its length on the posterior side; the 2nd transverse cubital nervure is about the length of the 1st abscissa of the radius; it is shorter than the 1st, the 2nd cellule being thus narrower at the apex than at the base.

There are 5 short, stout spines on the innerside of the fore tibiæ; the abdomen is broader than the thorax; it is longish oval and is as long as the head and thorax united; the ocelli are in a black spot; a keel runs down from them to the antennæ; the antennæ are filiform, much longer than the body. The longitudinal nervure in the hind wings is roundly curved.

#### AGATHINÆ.

##### *Disophrys tinctipennis*, sp. nov.

Luteous, the flagellum and the hinder tarsi black; wings fuscous, the base to the transverse median and to the top of the transverse basal yellowish hyaline, the hinder fuscous, yellowish hyaline at the base. ♂.

Length 8 mm.

Kuching. September.

Flagellum of antennæ thickly covered with black, the scape and thorax with fulvous pubescence. Face, clypeus and thorax distinctly, moderately closely punctured. The keel running from the outer ocelli to the antennæ is stout; in the centre is a narrower keel. Middle lobe of mesonotum separated; in its middle, on the basal slope, is a stout keel, which ends in 2 fine ones. Mesopleuræ furrow irregularly crenulated. Scutellar depression large, with 3 stout keels in the middle;

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the apex of scutellum bordered by a stout keel; the scutellum is more strongly punctured than the mesonotum. Post-scutellum stoutly keeled laterally, the united keels produced behind. Areola longer than it is wide at the apex, which is transverse, the base is narrowed obliquely to a sharp point; this is bordered at the base by a triangular area, the apex being shortly beyond the middle of the areola; a keel runs from its base to the top of the apical slope which is bordered by a stout keel; the areola thus formed is four-angled, the base being long and sharp-pointed; the spiracular area is large; on the apical slope is a large central with an irregular keel in its middle and a smaller square area. Below the middle of the mesopleuræ, on the apical half, is an oblique furrow, which encloses with the lower wider crenulated one a triangular area. The keel bordering the sides of the metanotum is twice roundly dilated at the base, the basal being the longer, below these at the apex is a small and a large bluntly rounded tooth. Abdomen smooth; the basal segment is more than twice longer than it is wide at the apex, it is as long as the following 2 segments united. The malar space is half the length of the eyes. Areolet narrowed in front, the nervures touching there; the outer one is obliquely sloped towards the cubitus, the lower, and much smaller part, is sloped towards the base of the cellule.

*Crennops borneana*, sp. nov.

Luteous, a broad band across the ocelli, the antennæ, apex of the hind tibiæ and the hind tarsi, black; wings fuscous; the base of the stigma and the nervure yellow; the base to the transverse median nervure and to near the lower part of the transverse basal yellowish hyaline; a hyaline cloud fills the 1st cubital cellule and extends across to the base of the anal nervure. ♀.

Length 7 mm.; terebra 4 mm.

Kuching. October.

Head and thorax closely covered with short white pubescence. Palpi coloured like the head. Malar space as long as the eyes. Thorax closely covered with short pale pubescence;

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mesonotum with a shallow furrow on the basal slope. Areola A-shaped, pointed to the base of the metanotum by a A-shaped furrow; it bears 3 stout, transverse keels, the basal being less distinct than the others; from it stout transverse keels run to the outer edge of the metanotum, the lower ones going beyond the spiracles. Areolet square; the recurrent nervure is dilated backwards at its junction with the cubitus; the transverse median nervure is received shortly beyond the transverse basal. The frontal depression is bordered outwardly by a stout, curved rounded keel.

ICHNEUMONIDÆ.

*Pimplinæ.*

*Epirhyssa tuberculata*, sp. nov.

Black, the basal segments of the abdomen tinged with brown; the inner orbits opposite the eyes broadly, the face, clypeus, the outer orbits from near the top of the eyes broadly, a broad, oblique mark on the sides of the pronotum in front, base of tegulæ, a mark on the scutellar keels, a mark, about the same size, on the sides of the scutellum at the base, 2 large marks on the median segment, broadly dilated inwardly at the base of the metanotum, where they are separated by a narrow black line, proceeding downwards along the outside of the spiracles and having, immediately below, on the apex of the metapleuræ, a smaller mark, longer than wide and dilated above the tubercles, a large mark immediately below these, reaching the sternum at the base and having the lower outer edge bi- if not tridentate; a minute line on the apex of the 1st abdominal segment, 2 large transverse marks near the apex of the 5th, a small, somewhat heart-shaped, mark shortly behind the middle of the 6th in the centre, a much larger mark, twice longer than wide, and slightly narrowed towards the apex, the anterior legs, except the tarsi, in front, a large, somewhat pyriform, mark on the outside of the middle coxæ, a broad stripe down the middle of the hinder coxæ, the apex of the middle femora below; the posterior almost entirely below and the middle tibiæ behind, bright sulphur yellow. Wings fulvo-hyaline, the

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brownish, black above; the ocellar region, 3 marks on the mesonotum, the central irregular, broader than long, the lateral larger, conical, twice longer than broad, almost transverse at the base, rounded and narrowed at the apex, 2 marks on the 1st, 3rd, 5th, and 7th abdominal segments—the 4 middle marks larger, broader than long, the 1st and 4th smaller rounded—and the base of the hinder tibiæ narrowly, black; wings hyaline, the apex slightly, narrowly, smoky, the ovipositor clearly longer than the hinder tarsi. ♀.

Length 12 mm.; terebra 4 mm.

Kuching.

Areola 4-angled, narrow; the tooth bearing area oblique, triangular, transverse, sharply pointed on the innerside; the basal lateral area narrowed on the innerside; the outer keel roundly curved outwardly. Face flat, closely punctured; the clypeus gradually, roundly narrowed to a sharp point. Areolet 4-angled, shortly but distinctly appendiculated; the recurrent nervure is received shortly beyond the middle. Basal two segment of abdomen smooth, shining, impunctate; the others closely punctured; the transverse furrows narrow, shallow, crenulated. First abdominal segment twice longer than its width at the base; the 2nd square, the others broader than long. Front, vertex and entire thorax smooth, shining, impunctate. Face longer than broad; the clypeal fovea deep. Scutellum roundly convex.

Belongs to Krieger's Group. I. (Berich. d. Naturf. Gess. zu Leipzig, 1898, p. 92). It is allied to *punctata* Fab. *Sec.* Krieger, but, inter alia, wants the spots on metanotum.

*Xanthopimpla bimaculata*, sp. nov.

Luteous, the head and thorax smooth, impunctate, the mesonotum with 2 large conical spots; the front and vertex broadly in the centre, the occiput with a much broader mark a small mark, wider than long, on the sides of the metanotum, and marks on the 7 basal segments of the abdomen, black; the areola large, 6-angled, longer than wide; wings hyaline, the nervures and stigma black; the ovipositor shorter than the hind tarsi. ♀ and ♂

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Length 12 mm.; terebra nearly 3 mm.

Kuching. February.

Tooth-bearing area 4-angled, of equal width throughout. The black, paler below. Face slightly longer than wide, distinctly, closely punctured. Parapsidal furrows indicated only at the base. The 1st abdominal segment longer than it is wide at the apex; the middle segments are more strongly and closely punctured than the basal or apical. Areolet 4-angled; appendiculated, the recurrent nervure received in the middle.

Belongs to Krieger's Group E. (*l. c.* p. 81.) characteristic are the 2 marks on the mesonotum, instead of the usual 3. The  $\delta$  is similarly marked, but with 8 pairs of black marks on the abdomen.

#### CRYPTINÆ.

*Polyaenus spiniferus*, sp. nov.

Black, face, clypeus, mandibles except the teeth, palpi the orbits narrowly, except near the top on the outside, the line widest at the vertex, a line on the apical half of the pronotum, narrowed in front, tegulæ, scutellum, a broad line—broadest on the sides—on the sides and round the top of the metanotum, covering the spines, the spines, tubercles, a large oblique mark, twice longer than wide, near the middle of the mesopleuræ, commencing at the base and reaching to the base of the apical third, a curved mark below the hind wings, a large mark on the centre of the metapleuræ, broad and rounded at the base, gradually roundly narrowed towards the apex, a broad line, dilated backwards laterally, on the apex of the 1st abdominal segment, lines covering slightly more than the apical third of the 2nd segment, a slightly narrower one on the 3rd and the other segments, except narrowly at the base, yellow; the ventral segments are for the greater part yellow. Four front legs pale fulvous, their coxæ and trochanters yellow; the hind coxæ yellow, broadly black round the outside and along the top of the apex, the trochanters yellow, broadly marked with black above, the femora rufo-fulvous, black at the apex; the tibiæ and tarsi yellow, the former with the base narrowly and the apex more broadly black. The antennæ

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have the 5th to the 20th joint white, spotted with black above. Wings hyaline, the nervures and stigma black. ♀.

Length 11 mm.; terebra 2 mm.

Kuching. December and March.

Face strongly, the clypeus more weakly punctured. Front and vertex smooth and shining; the frontal spines are stout, about twice longer than they are thick at the base. Mesonotum rugosely punctured, shining; the parapsidal furrows are shallow, crenulated. Scutellum flat, sparsely punctured, except at the apex; the post-scutellum smooth, shining. The metanotum behind the keel is transversely striated-punctured; the rest coarsely, closely reticulated; the spines are about twice longer than they are wide at the base; their apex is rounded. Pleuræ closely strongly punctured; the lower half of the propleuræ strongly, closely striated; the apex of the mesopleuræ is irregularly striated. Scutellum flat. Metanotum with one transverse keel, and with a closed area, longer than wide, in the middle at the base. Temples very short, almost obsolete at the top behind the eyes. Malar space distinct, half the length of the antennal scape. Transverse median nervure interstitial; the recurrent nervure is received near the apex of the areolet. Transverse median nervure in hind wings broken shortly below the middle. Tubercles small. Post-petiole widely dilated; the base of the petiole wider than the height of the sides.

The ♂ is similarly coloured, except that the marks on the pleuræ are smaller; the antennæ are much longer than the body, the post-petiole is narrower, longer compared with its width; the antennæ are not serrate and are broadly white in the middle.

This species does not appear to differ much in generic characters from the neotropical species of *Polyænus*; the only differences appear to be that in the American the transverse median nervure is not interstitial, but received behind the transverse basal; that the temples are longer, and distinctly obliquely narrowed, that the scutellum is not so flat, that there is no distinct area at the base of the metanotum, and that the abdominal petiole is longer, narrower and not nearly so much widened at the apex.

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Tosquinet, it may be added, has described a species *P. cingulatus* which he refers to *Polyenus* from New Guinea. (cf. Mem. de la Soc. Ent. de Belg. X. 45). *Polyenus* may be described as a *Skeatia* with 2 spines placed side by side on the front and with the parapsidal furrows less distinct.

## SPHEGIDÆ.

*Sphex (Isodontia) Hewitti*, sp. nov.

Black, the apex of the 2nd abdominal segment narrowly, the apical half of the 3rd and the whole of the following abdominal segments, the face, clypeus, lower inner orbits, and tubercles covered with silvery pubescence; the hair on the head long, dense, fuscous, it is longer on the vertex and on the outer orbits below, than elsewhere; the hair on the mesonotum is short, dense and fuscous; it is sparser and shorter on the scutellum and as dense and longer on the median segment. Basal segments of abdomen bare, the apical densely covered with bright fulvous pubescence. Wings almost hyaline, highly iridescent, the radial cellule and a brown band (extending to the 2nd recurrent nervure) round the apex fuscous tinged with violaceous. ♂.

Length 28 mm.

Kuching. March.

Eyes slightly, but distinctly converging at the top. The posterior ocelli, on the outer side, are united to the anterior by a narrow furrow, from the anterior a narrow one runs down to the antennæ. The vertex and upper part of the front one finely, but not closely, punctured. Clypeus broadly, roundly, uniformly, convex; its apex almost transverse; there is a minute depression at the apex, shallow and hid by the pubescence. Mandibles bidentate, the teeth large, diverging, the lower longer and sharper than the upper. Pronotum placed below the level of the mesonotum and clearly separated from it; its apex broadly depressed, obliquely depressed towards the mesonotum. Mesonotum somewhat strongly, but not deeply punctured; the scutellum is a strongly punctured and has a narrow smooth line down the middle. Post-scutel-

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lum rounded, clearly separated, not furrowed or tuberculate in the middle. Metanotum closely, distinctly and deeply punctured, the punctures appearing to form reticulations in places; there is an oval fovea in the centre near the end of the upper part; the apical slope in the centre above projects, the projection being broader than long; the part below it is slightly depressed; the spiracles are bordered behind by a deep, curved furrow; the sides of the apex of the metanotum are bordered by a deep, curved, crenulated furrow. Abdominal petiole nearly twice the length of the hinder coxæ, curved, irregularly punctured above, on either side of a shallow longitudinal furrow. The 3rd joint of the antennæ is slightly longer than the basal two-joints united; the 4th is about one fourth shorter than it; the latter is shorter than the 5th. The 1st and 2nd transverse cubital nervures are obliquely sloped, parallel; the 2nd cubital cellule is clearly longer than wide; the 3rd cubital cellule is much narrowed in front, being there not much longer than the space bounded by the 2nd transverse cubital and the 2nd recurrent nervures; the 1st recurrent nervure is received about half the length of the third abscissa of the radius from the 2nd transverse cubital, the 2nd about its length from it. The transverse median nervure is not quite interstitial; the neuration being very similar to that of *S. umbrosus*, cf. Kohl, Ann. K.K. Natur. Hofmus. V. Taf. VIII. f. 10. Claws bidentate, the basal slightly longer and thinner than the apical. The labrum is broadly rounded, neither toothed nor keeled. The 3rd to 5th ventral segments are roundly incised, the incision on the 5th being deeper than on the others; the last ends in a sharp point and is covered with long fulvous hair. The abdominal petiole is shorter distinctly than the hinder tibiæ, being almost of the length of the hinder metatarsus.

Should be readily recognized by the red apical segments of the abdomen from the known Indian and Malay species. In this respect it agrees with *S. confrater* Kohl from New Britain with which it cannot well be confounded. *Sphæx Franzi* Cam. Ann. Mag. Nat. Hist., April 1902, 246 from Borneo has the abdomen ferruginous, except the petiole and the wings are fuscous violaceous.

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MENOPTERA OF SARAWAK.

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POMPILIDÆ.

*Salius Ridleyi*, sp. nov.

tooth. Black, the abdomen with purple re-  
 and following joints of the hind tarsi, except  
 ceous; wings blackish; fuscous-hyaline, slight-  
 low, between the transverse median and the  
 and the 2nd transverse cubital and the 2nd  
 ; the hind wings blackish at the base, the  
 ie, tinged with yellow. ♂.

n.  
 tex sparsely, the outer orbits densely covered  
 ir; the lower two-thirds of the inner orbits  
 testaceous. Clypeus minutely shagreened,  
 altered punctures; bare, the apex broadly  
 large, shagreened; its apex rounded. Palpi  
 cal joints covered with a pale pile. Thorax  
 rax and the median segment covered with  
 sides of pronotum broadly rounded, not pro-  
 Post-scutellum prominent, clearly separated, tubercu-  
 late, the base with a straight oblique slope; its apical slope is  
 shorter and steeper. The striation on the metanotum is  
 coarse; the lateral tubercles are very prominent. Meta-  
 pleuræ finely, closely, obliquely striated. Tibiæ sparsely, the  
 tarsi more thickly spinose; the spines short; the long spur of  
 the hind tibiæ is thickly covered with black hair at the base;  
 it is about one third of the length of the metatarsus—as long  
 as the 2nd joint. The 2nd transverse median nervure is  
 dilated in the middle, where the recurrent leaves it, the latter  
 being also dilated (but not so strongly) at the base; in the hind  
 wings the transverse anal nervure is received beyond the cubital.

Comes near to *S. fulgidipennis* Sans. and *S. iridipennis*  
 Smith. The colour of the middle joints of the hind tarsi may  
 be clear yellow, as it is on the 2nd joint of one leg, *i.e.* the tes-  
 taceous colour of the other joints may be owing to discolour-  
 ation. The coloured tarsal joints and the testaceous (yellow?)  
 line on the inner orbits are probably characteristic.

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## VESPIDÆ.

*Vespa annulata*, Smith.

This form has been taken by Mr. Hewitt at Santabong Matang (December) and Kuching (January). In the recently published Monograph of the genus *Vespa* by the Viscount du Buysson (Ann. Soc. Ent. de France, LXX, III, (1904) p. 542), *annulata* is considered to be a variety of *bellicosa* Smith. I am not sure but that when the ♂ has been discovered, it will be proved to be a good species.

If not a distinct species it certainly forms a well-marked race of *bellicosa*.

*Vespa bellicosa* (type) has been taken by Mr. Hewitt at Pulo Burong.

*Ischnogaster clypealis*, sp. nov.

Black; the clypeus, except for a black, broad line, of equal width, transverse at the apex, about twice wider than long, on the upper two-thirds, a line on the base of the pronotum, one round its apex, a somewhat semicircular mark on eitherside of the base of the scutellum, 2 longer, almost united marks on the post-scutellum, the apex of the metanotum, the mark divided by the central furrow, the sides largely, roundly dilated, backwards and forwards; a large conical mark (the narrowed end below) on the top of the mesopleuræ, its apex bordered by the furrow, a large curved mark, roundly narrowed above, straight and oblique below, an irregular conical mark on the metapleuræ the upper part dilated at the base, a line, 4 times longer than wide, on the sides of the node of the petiole, a mark narrowed to a sharp pointed on the sides of the 2nd segment at the base, a large, transverse conical mark on the sides, the ends rounded, the narrow end on the innerside, a longish curved mark, narrowed at the base on the sides of the 2nd ventral segment and a shorter, broader one, on the sides of the 3rd yellow; the yellow on the abdomen being paler than it is on the head and thorax. Four front legs yellow, largely marked with brown above, the middle more largely than the anterior, their tarsi are for the greater part brown; the hind legs fuscous, suffused with yellow, their coxæ

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yellow above. Wings hyaline, the nervures and stigma black; the 4th abscissa of the radius distinctly longer than the 3rd ♀.

Length 13 mm.

Bidi, December. Kuching, October (Shelford).

Flagellum of antennæ fuscous below. Pubescence on the front and eye incision pale golden. Apex of mesonotum finely closely, longitudinally striated; the basal half of metanotum, on either side of the furrow, more strongly, obliquely striated. Pleural furrows weakly crenulated. Abdominal petiole as in *I. nigrifrons*. The 2nd and 3rd transverse cubital nervures are straight and parallel.

Allied to *I. nigrifrons* and *I. nigricans*. These 3 species may be separated thus:—

a. Clypeus yellow, with a broad black mark on the top, the yellow marks on the pleuræ large ... *Clypealis*.

b. Clypeus black, the marks on the pleuræ small. Pleuræ black, mesonotum and abdomen immaculate, metanotum longitudinally striated ... .. *Nigricans*, Cam.

Pleuræ for the greater part rufous, mesonotum and abdomen maculate with yellow, metanotum transversely striated ... .. *Nigrifrons*, Sm.



## Dyak Ceremonies in Pregnancy and Childbirth:

BY REV. WILLIAM HOWELL.

As soon as a woman is enceinte, restrictions come into force. These restrictions are binding on the husband as well as the wife. It is forbidden them to cut off creepers that hang over the water or over the road, lest the mother would suffer from haemorrhage after delivery. It is forbidden to dam a stream, to plait the rattan for fixing the adze, to make the broad plaiting for the hilt of a parang, to set up a dam for the fish-trap (*bubu*) and to drive a nail into a board lest the woman should have difficulty in the delivery. It is forbidden to pour out oil, lest the child should suffer from (*tuli*) inflammation of the ears; to fix the *parang* in its hilt lest the child be deaf: to break an egg, lest the child be blind; to plant a banana plant lest the head of the child be large; to burn the wood of the ficus to warm oneself, lest the child be dumb; to kill any animal lest the child be deformed and the nose bleed; to scrape smooth the shell of a coconut, lest the child's hair should not grow; to bring a fresh-water turtle into the room, lest the child should not be born; to dye anything black, lest the child be black.

As for the woman, if she goes anywhere she must return by the same way that she went so that the child should not know how it is to be delivered. It is further forbidden to eat anything in a mosquito curtain, lest the child should be still-born; to carry stones lest the child should be paralysed; to conceal anything, lest the delivery be difficult; to cast stones into the water, lest the child be not delivered and the mother die; to bend into a circle any piece of wood, else the child will not prosper; to hang a scar lest the child should cry the whole day and night.

There are several other restrictions of a minor character which are not worth mentioning. But it is interesting to

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notice that in the case of nearly all these restrictions there are ways in which the above limitations may be circumvented and no evil effects follow. For example, though a man may not kill an animal yet if he does kill anything and runs away immediately then returns a few minutes afterwards and make some remarks aloud of this nature, "I wonder who killed this animal?" he has nothing to fear. A nail may not be driven into a board, but if a man drives a nail in gently a little way and then pulls it out again, he may drive the nail in all the way, and no law is broken.

The whole period of a woman's pregnancy is passed in the deepest anxiety and fear lest the *antus* (spirits) may assault her and her innocent babe. An ill dream or a small accident such as a fall is considered a portent signifying imminent danger to the child or perhaps it may be a portent signifying coming danger during her delivery, and therefore a sacrifice of a fowl must invariably be made to propitiate the spirits. It is not unusual to hear of a woman talking about another and telling how many fowls have been killed to save her during her pregnancy.

It is considered to be a fineable offence if the husband should wilfully violate any restrictions. The wife's relations would immediately bring him to justice.

When the time of delivery is come and while she is in travail, two or three midwives are called to her assistance to accelerate the birth of the child. Nature is not allowed to pursue its own course but force is applied.

As soon as the child makes its appearance into the world, a signal is given by beating a bamboo receptacle with a stick, or a brass gong is struck, or maybe a gun is fired to announce that a child is born in the house. Immediately follows a religious ceremony a fowl being waved over the heads of all present, including the infant and its mother. The fowl is then killed and the blood is smeared on the foreheads of those present.

After the mother and the child are washed and dressed, the afterbirth is deposited in a plaited bag and hung on a tree either in their cemetery or in their *tembawai* the site of their former house. The infant is sprinkled with a compound of

*pinang* (betelnut) and *lawang* (zedoary) is bandaged and made to lie on the spathe of an areca palm, a cloth is put round it, and a Dyak sheet hung over it. One of the women who assisted at the birth washes the child and cuts the umbilical cord. She is afterwards rewarded with a *parang*, an *entadu* plate, and a long piece of the black *tina* (black split rotan worn round the waist). The mother is seated with her back against a blazing fire, she drinks freely of ginger-tea to facilitate her discharge.

As soon as the umbilical cord has dropped off, the infant, for the first time, is taken to the bathing-place. The man who carries the child takes a fowl with him. As soon as they come to the bathing-place the fowl is killed and a wing is cut off. If it be a male child this wing is tied on with a piece of red thread to a spear, and if the child be of the other sex this wing is tied on to an implement used by Dyak women in weaving (*leletan*). On the fourth day the spear or the *leletan*, as the case may be, is taken back to the house.

When the child is able to look about, to laugh, to turn on its side, to roll over, to crawl, to go on all-fours, to sit up, to walk holding on to something, to walk by itself, the restrictions with regard to the killing of animals or snakes are still binding, the child has not cut its teeth. As soon as this has taken place there is an end to all restrictions. If the child dies before it cuts its teeth the parents do not observe the mourning customs.

The Dyaks of old, it appears, did not know how to assist a woman when she was in travail, consequently many brutal practices were adopted.

The knowledge was first came to be possessed by a certain man named Kelili Badak Resa, whose wife was Teburi. When his wife was enceinte he went out into the jungle with a blow-pipe. There he saw the *maias* (*orang-utan*) assisting the female at the birth of its young and he saw that they used *lia* (ginger) and also bandages. Afterwards his wife gave birth to a child and Kelili Badak Resa was able to assist a woman when she was in travail in the same way as the *maias* did. After his child was born he called him Maling, and gave him the title of Panting Bunga Mengala.

It must not be omitted that after a woman has given birth to a child and before she is bandaged, ground ginger is placed on the abdomen and is changed once or twice a day. This process continues for a month or perhaps less, as the case may be, while the woman is still drinking the ginger-tea.

The husband or whoever takes away the afterbirth to bury or hang on a tree is solemnly warned by the mother not to look to the right or to the left as he leaves the room, lest the child might squint.

As the mother sits with her back to the fire in the room holding in her hands the handle of a native adze (*bliong*) she presses it to her stomach to assist the course of nature. For twenty-four hours she is not allowed to drink water, but if she does, it must be very little and first warmed lest fever should set in. Her food is light and simple. The husband goes out to get certain kinds of fish which is first smoked before it is eaten.

The mother is not allowed to sleep for twenty-four hours after giving birth to a child, nor is she even allowed to lie down. One would think that after such a fatiguing time, a rest was most essential and to be deprived of it would be detrimental to health. Strange to say it is not so.

The period of a Dyak woman's confinement is doubtful. It depends entirely on the strength of the woman. I have known several cases of women going out three days after their confinement to the paddy fields.

The person who takes away the afterbirth brings back with him a young shoot of a kind of fern (*Kreniong*) for his spear, a leaf of a kind of fern (*Kalindu*) for his shield, and a kind of grass (*Kejejuru*) for his plume on the head. These things are stuck up in the room.

It is interesting to know of other restrictions which come into force after a woman has given birth to a child. It is forbidden to eat prawns lest the child beats a retreat when he is on the war-path; to eat eggs lest the child should have sores on the head; to eat the fern called *paku*, lest the child be exhausted on the war-path. Pork can only be eaten when the child begins to bite or suck its toe. It is forbidden to

thresh cotton in the house or village, lest the mother should feel stiff; to prepare a kind of lily for thread, lest the mother should feel a crazy sensation; to lie down on a bemban mat, lest the mother should have rheumatism; to give suck to the child lying down, lest the child should be deaf; to give suck to the child in the water lest the child should have bad teeth; to eat sugar-cane, lest the mother should give birth frequently.

It is very often the case that the mother has no milk for the child for perhaps two or three days or a week after it is born, and the child has to live on masticated cooked rice. It is believed by Dyaks that a kind of land crab (*grama*) when cooked and eaten by the mother will produce milk.

Enough has not been said about the ceremony of taking the child to the watering place to bathe for the first time. It is not necessary to repeat what has already been written but it is a very solemn ceremony. Every family has its own peculiarities of ceremony, which are more or less attached to religious rites. With some families the village or house is tabooed when a child is born. The doors are marked with sign to denote non-admittance to strangers until the umbilical cord of the child has dropped off. Anybody trespassing in the house or village is not allowed to leave until the umbilical cord has dropped off, which may be five or seven days. Should any one leave the house before that time he is liable to a heavy fine of a full-grown pig. Unless this custom is carried out, the child might suffer from blindness.

Once on my usual tour round my mission at a place called Pua-ai, one of my followers entered into a large village when it was too dark to discern anything, to buy some rice for our consumption. He was detained in the house. Three of the people in the village came to see me and brought the rice which he bought and explained matters to me. This was unfortunate as I could not stay there more than two nights, so I had to redeem my friend by paying for a large pig.

After the umbilical cord has dropped off the village or house is no longer tabooed and the marks or signs are taken off. Some families have not got such customs.

I must mention one case in which I was the innocent victim. It happened in a Christian family whom I had converted and baptized. To my great surprise and indignation when the wife was confined, the house was pronounced tabooed, but I entered it. I was told that I had incurred upon myself a heavy fine. The wife explained that she had lost an eye. It was because some one had entered the house when she was born. With much difficulty and persuasion I answered her that every Christian was to give up all such superstitions for we had One to protect us against such calamities. I also assured them that if the child was to be so ill-fated I would be responsible for it. She has since had six children none the worse for it.

The ceremony of first taking a child to bathe is called by the Dyaks *nganjong mandi* which means to take to bathe. The mother calls a maiden and asks her to catch a fowl. The husband or anybody waves the fowl over the child and then kills it. The maiden who is asked to catch the fowl is honoured by being asked to carry the child to the bathing-place. After the fowl is killed, a wing is deposited in an areca spathe with some ashes. The maiden carries the child in a gaudy home-made blanket, wears a gaudy sun-hat, holds in one hand ignited *lukai*, which is the bark of the *lukai* tree. She marches down to the bathing-place gracefully, and the mother follows with a little boy armed with a spear and the spathe of the areca, containing the ashes and the wing of the fowl. When the bathing-place is reached, the wing of the fowl with the ashes in the spathe of the areca, is pierced with the spear and placed standing alongside the bathing place. The maiden then walks gently down into the water to give the child its ablutions, or rather to introduce the child to the general bathing-place. They return to the house and the spear is left behind. When the house is reached, beads are threaded and tied round the legs, to act as eyes to prevent the child from slipping. Beads are also tied round the hands in order not to make a miss when throwing a spear. The lips of the child are slightly besmeared with bugs in order that when it chews the lips might appear red. It is made to suck the tail

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of a *Kli* fish to prevent it from having thrush too soon. Sparrows' eggs are dashed on its head to enable it to endure the rain when its mother takes it to the farm.



## The Menagerie at the Botanic Gardens.

BY H. N. RIDLEY.

The collection of living animals in the Botanic Gardens in Singapore dates from the days when the gardens were the property of the Agri-Horticultural Society. This society was founded in 1859, but not finding sufficient support from the general public to develop and maintain the grounds adequately, eventually made over its property to the Government in 1874, and in 1875 Mr. J. Murton was appointed Superintendent. The Zoological part of the garden seems however to have been at first under the control of Mr. Krohn, who publishes in 1876 a report on the Zoological collections. That year Mr. Cheang Hong Sin presented a monkey house to the gardens, which still exists, and a list of the animals in the gardens was published. It included a rhinoceros, sloth-bear, kangaroos, and other animals, and a number of birds. In 1878 it was decided to dispose of the larger animals and most were sent to the Calcutta Zoological Gardens. Birds, monkeys and small animals were however kept. From 1888 the aviaries and enclosures were increased, and till 1902 the collection became very representative of the fauna of the Malay peninsula and islands. No funds were granted by the Government for its up-keep after 1881, but its expenses were paid out of what could be spared from the Gardens Vote. Many of the animals and birds were presented by various donors, so that the expenses were merely feeding, and housing. The cost being from about £100 to £150 per year when the collection was at its largest. In 1902, an admirer of Zoological Gardens urged that the collection was worthy of a better class of houses than could be afforded from the Gardens Vote, and an estimate for improved and more ornamental houses was prepared, but it was considered too expensive by the Government, and an

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order was received to abolish the menagerie in 1903, which had to be gradually carried into effect.

Perhaps there are few places in the world more suited for a Zoological Garden than Singapore. The climate is well suited for all the tropical animals, the cost of keeping them is much lower than in most parts of the world, for firing, an important and expensive item in many gardens, is unnecessary; forage for the deer and other herbivorous animals, costs little or nothing, and fish for the piscivorous birds is readily procured. Animals of great interest can be procured for a small cost, and indeed a great number have been presented and offered to the gardens. The neighbouring islands and mainlands produce many animals which cannot be kept in any of the European or American Menageries, but which thrive well in Singapore, and even breed in captivity. Notable successes in this way in the Singapore Gardens are the successful breeding of the Jackal, the Kijang, (*cervulus muntjac*) the Napu (*Tragulus Napu*) and the hybrid monkeys and the green viper none of which, as far as I know, have previously bred in captivity elsewhere.

To the large number of passengers who visit Singapore on their way eastwards or westwards a Zoological collection is very attractive, and the menagerie in its best days was known all over the world, and was the first thing asked for by the visitor. There seems also something eminently suitable in having a menagerie in the colony founded by Sir Stamford Raffles who was also one of the founders of the finest Zoological Gardens in the world,—that of London.

*Animals in captivity.* There are a certain number of people in the world who assume that an animal must be very unhappy in captivity, and especially if their ideas of what any given animal should enjoy do not concur with those of the animal itself. I suppose all keepers of menageries have received from time to time the most ridiculous letters with suggestions as to how to treat animals, of which the writers often know not even the name still less the habits. The descendants of the man who buttered the hay for his horse are by no means extinct.

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When the Gibbon (*Hylobates*) was proudly giving its well-known solo in its best style to an audience of globe trotter's, one mistaken individual rushed wildly into the office to say that the monkey was in great pain and making a great crying. On another occasion a lady wanted someone to be prosecuted because a fine tigress called regularly at sundown, and she thought it must be ill. Others whose idea of the shape of a living tiger was based on a badly stuffed Museum specimen think that a tiger whose body is not like a bolster must be starved, whereas a tiger is almost a greyhound among cats when in good condition.

As a matter of fact animals as a rule not only become quite accustomed to captivity in a very short time, but usually prefer it to a wild life. They get their food regularly and without having to hunt for it and can spend the rest of their day playing about or sleeping. Animals which have been in cages for quite a short time are helpless when they are turned loose or escape. People who have kept pet monkeys and on going home wish to get rid of them sometimes turn them loose in the Garden Jungle to join the other wild ones, which is as considerate as to send a child away to find and make friends with a tribe of savages. The monkeys thus released dare not go near the wild ones, do not know how to get food, otherwise than by going to the nearest house where they sometimes arrive in a starving condition. Some pelicans presented to the Gardens after remaining in an enclosure for less than a day, were put on the Garden Lake, where were plenty of fish. They got off the Lake at once and stood on one of the roads flapping their wings and opening their beaks at any carriage which came by to the alarm of the horses. Then they walked straight back to the enclosure and waited outside the door all night till the keeper returned and let them in. Some phalangers which escaped one night were very puzzled what to do. All but one sat on the top of the cage all night. The remaining one rambled aimlessly along the path where it was found next morning. Squirrels, musangs, and such small animals if they escape usually take to the woods naturally, but often remain near the cages for a long time before they disappear. If an

animal dislikes captivity at all, it is easily seen. It mopes, or is restless, feeds only when no one is by, and is certain to pine away soon. The big civets *Viverra tangalunga* and *Pagurus lencomystax* particularly dislike a bright cage. Being nocturnal animals, only coming out after dusk, the light annoys them very much and the *Viverras* dislike being looked at by a crowd of people and become very nervous. To put these animals in a fine open cage that looks nice from a popular point of view is cruel. The cages should be half dark, when the animals do very well and live for many years. Curiously some animals and birds much prefer small cages to large ones. Some love birds (*Loricula galgulus*) were put in an ornamental canary-cage, which one would have thought they preferred to the round rattan cages in which the Malays keep them and in which their heads nearly touch the top. This did not suit them at all, and nearly all died in a few days. The remaining two were put back in the Bamboo cage and lived quite well and happy.

The only way of knowing what an animal thinks is comfortable and snug is to keep it and observe its ways. It will soon let you know what it likes, which probably does not at all fall in with your ideas of what it ought to like.

#### AN ACCOUNT OF ANIMALS KEPT.

##### *Quadrumana.*

*Simia satyrus*, L. The Mias. Orangoutan.

This has often been on view. The animals are obtained from Sumatra and Borneo and are usually young, but very large adults have not seldom been brought to Singapore. Young Mias are very quiet and tame, but full grown adults are dangerous and require a very strong iron cage. The animal is very delicate and liable to a disease resembling cholera which seems almost invariably fatal. A good deal of the art of keeping one healthy consists in giving it a varied diet. Bread, boiled rice, pineapple, plantains, eggs occasionally, sugarcane, kangkong (*Ipomea aquatica*) or some such green stuff suits it well. When young and not

dangerous it is allowed to go out for walks by itself every day, to climb on the trees, and amuse itself. It requires a box or basket to sleep in with a rug, or bit of sacking to wrap itself with. It appreciates alcoholic liquors especially if sweet, such as port but it will often take whisky or beer. One which is now in the London Zoological Gardens smoked cigarettes or cigars, lighting one from the other, knocking off the ash, and puffing the smoke through its nose.

The Mias is always a quiet slow moving beast, and being constructed for arboreal life is not in its element on the ground. It is very human in the way it uses a blanket and pillow, carefully arranging the pillow under its head, and drawing the blanket over itself, and when it has arranged this to its satisfaction and lies on its back peacefully smoking a cigarette, it looks more than ever like an indolent man. Young ones rarely make any sounds with the mouth, but when quite young if annoyed it cries like a child, stamping its feet on the ground. When older, about 4 or 5 years old the Mias does not cry, and seems to be almost dumb, occasionally grunting, and blowing with its lips when vexed. They laugh however when tickled, and often, at about seven years old quite loud. The last one kept in the Gardens, was very fond of swinging on a door, sitting on the top and pushing itself backwards and forwards like a child on a gate. When young they are very docile and obedient and very much attached to anyone who is kind to them. Many are fond of having a common monkey to pet and play with, others seem to find the small monkey a bore, and a nuisance.

When pleased with anyone they protrude their lips to kiss them, and they often kiss each other.

The youngest I have seen were a pair brought for sale, undoubtedly twins as they were exactly the same size, and age. They were very scantily provided with hair. The male was very active, moving about briskly like one of the common monkeys. This baby-activity soon goes off and as they become older they seem to become more indolent.

As they grow the hair becomes longer and denser especially apparently in the male, but later in life they often

appear to lose the hair on the body to a considerable extent, and the female sometimes at least becomes almost nude about the breast and abdomen when she gets near the breeding age.

All evidence we have seems to show that the Mias develops at the same rate as a man, the teeth changing at the same period of life. Practically however nothing is known of the later development.

There are undoubtedly several forms of the Mias, perhaps species differing in the presence or absence of fleshy flanges to the face, size of apparently full grown animals, and color of the hair, which varies from bright orange colour to dark brown.

*Hylobates syndactylus.*

The Siamang is very seldom to be procured. I only remember to have seen two in captivity. One of which a very young one was in the Gardens for some time. When happy it makes a very loud booming noise, which can be heard far away. A young one brought for sale by a Malay, lived in a cloth bag, into which it would jump and its weight pulling the strings closed the bag, in which it would sleep curled up.

*H. Agilis.*

The Wawa, is one of the most popular pets, and lives well in captivity, and a number have been kept in the Gardens menagerie. There are three colour varieties; black with a white face the commonest, white, and grey the scarcest form. They are usually very gentle unless illtreated, and always give pleasure to visitors by their marvellous agility, and by their weird song or wail. They usually sing shortly after sunrise, and in captivity also often when there are a number of visitors looking at them. They have few other sounds, a kind of low plaintive wail when they are very friendly, and a kind of grunting when they are on heat, are all the noises they make. The food is boiled rice, fruit, sweet potatoes, bread, etc. They have never bred in captivity.

The Wawa often lives a long time and specimens have died of old age in the Gardens; but there was no clue to their age. The chief disease they are liable to is pneumonia from a chill,

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especially during heavy rains, and on one occasion an infectious stomatitis, killed two Wawas and a Siamang, all in the same cage, very quickly.

*Semnopithecus.*

The long tailed monkeys known as Lotongs are not at all easily kept in confinement. Even the Malays consider them very difficult to keep. The following species have been kept for a longer or shorter period.

*Semnopithecus cristatus.*

A specimen of this handsome monkey only lived a short time dying rather suddenly, apparently from heat.

*S. rubicundus.*

A very old specimen was obtained and kept for a short time. Its bright red fur and light blue face gave it a most comic appearance, which was increased by its looks of indignation when it was laughed at.

*S. maurus.*

A black species was kept also for a time.

*S. sp.*

A quite white monkey said to have come from Sumatra, lived for a short time, but it was very old and died of old age not very long after it was obtained.

*Macacus cynemolgus.*

The K'ra, has always been kept on view. It is a very easy monkey to keep and breeds readily in confinement. There are a number also wild in the Gardens.

*M. fasciatus.*

The Japanese monkey; one of these was deposited for a time in the Gardens.

*M. nemestrinus.*

The Berok was always kept, a monkey very easy to keep but which never breeds in confinement so far as I know.

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Hybrids between *M. cynomolgus* and *nemestrinus* however are readily bred.

*M. umbrinus*.

The Nicobar monkey resembles the K'ra, but is darker in colour and much larger. One presented by Dr. Abbott became pregnant by a K'ra, but both mother and child died shortly after the birth, apparently from weakness.

The first hybrid monkey that was produced was the offspring of a male K'ra with a female Berok, in 1895. He is still alive in the Zoological Gardens, London and a very handsome powerful monkey, but became rather savage, attacking the other ones in the cage and had to be separated. He quite combines the appearances of both the parents, his long face, and habit of walking on all fours reminds the observer of the Berok, his fur is colored like that of the K'ra, the tail is much longer than that of the Berok, but much shorter than that of the K'ra, and he carries it elegantly arched, like a lion, his keeper would say. He was sent to the English Zoological Gardens in 1905, where he is at present.

The other hybrid was between a male Berok and a female of the short haired *Cynopithecus niger*. In the same cage was a very savage male *Cynopithecus niger* of the long haired form. He would not breed with the other *Cynopithecus* and did not seem to take any notice of her. The female became pregnant but died at parturition being unable to deliver herself of the young one, and owing to the ferocity of the male no one could go into the cage to assist her. The young one was fully developed and had some characters of both parents. It was preserved in spirits at the museum.

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### General Notes on Monkeys.

So little seems to be known as to the habits of the commonest monkeys that the following notes may be of interest.  
*Macacus cynomolgus*.

The K'ra is the commonest and most conspicuous species here. It inhabits edges of jungle and small woods but seldom goes into high jungle. The animals live in small families

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presided over by a large male. There has long been a number of this monkey in the Botanical Gardens jungle, but of late they have diminished in numbers owing to the clearing away of the woods in the neighbourhood, and the failure of food supply due to this is probably the reason of their diminished numbers. There are now two families of them, one in the Upper Garden and one in the Economic Garden. Each of these families consists of two or more adult males, some younger males and a number of females. It would be perhaps incorrect to say that all these are descended from a single pair, or two pairs, but as there has not apparently been any admixture of fresh blood for very many years, they must all be very closely related. It is true that residents have on several occasions released their pet monkeys in the gardens so that they can join the wild ones, but the freed ones do not usually do so but almost invariably go to the nearest house for food and remain there till they are either caught or shot as nuisances. In a family of monkeys no stranger is admitted without a fight. If a female is put with the family the females attack her. If a male the males attack him. He or she generally gets badly bitten and sometimes killed. If the stranger can hold his own he may be accepted, and eventually may, if powerful enough, become head of the clan. In fighting, the top of the head and the thorax are the points generally attacked.

A Berok, *Macacus emestrinus* of no great size but a powerful monkey, during the absence of the keeper, broke his way into a cage of kras, and was set upon; when rescued he was found nearly insensible with the scalp torn and hanging from the top of his head and a bite through the thorax into the lungs, whence air was issuing. He completely recovered in about a week, or so, and lived for several years, when again he broke the cage and got among the enemy. Though a powerful monkey he offered practically no resistance and this time received a bite on the thigh, which would have been of no importance but it got infected with tetanus of which he died in about three days.

A great fight took place among the wild monkeys in the gardens on one occasion, between the old king monkey and a



younger one ; probably however some of the other males joined in. A couple of days afterwards the old veteran was found in the morning lying dead by a waterbutt, with his throat cut across, and some other fresh wounds, and his shoulder swollen and gangrened from injuries received in his first fight. He was sent to the museum to skeletonize when it was found that at some much earlier date three ribs had been broken and had mended again.

The leading monkey having established his position, takes his food first, and has his selection of the females first. The other males he drives away should they presume to attempt to usurp his rights. In processions from one place to the other he always comes last, but if one of the younger monkeys gets into a dangerous position or is attacked he always runs to its rescue, and drives off the enemy, and the other big males often assist him if necessary. The wild monkeys always sleep in particular trees, those with bare branches and very lofty, and towards evening they may be seen slowly moving along, stopping here and there to eat, till they reach the sleeping place about sundown, they then settle down for the night, sitting usually in pairs or singly on the bare boughs. The same tree is occupied every evening for weeks at a time, and wherever they are in the evening they make for the same spot. They never sleep in a bushy tree, probably for fear of being surprised at night by snakes. Young monkeys are always born in the early hours of the morning before daylight, as almost if not all mammals are, and are born in the boughs, or if in a cage on the perch ; never I believe on the ground. In cases of difficult parturition at least, the other females act as accoucheuses, with sometimes disastrous results to the baby. But difficulties in births are rare even in the cage and I have only seen one or two. The K'ra breeds very easily in captivity, the females producing one at a time about once a year. The young one when born has black hair which gets lighter colored with age. The Berok *Macacus nemestrinus* does not breed in captivity ; at least it has never done so with its own race in the gardens. But it has been successfully crossed with the K'ra, and also with *Cynopithecus niger*.

I have occasionally seen old monkeys which appeared to be insane, incessantly gibbering at nothing and behaving in a quite meaningless way. It might be said that it would be difficult to tell whether a monkey was mad or not, as their ordinary ways of going on are so wild, but as a matter of fact, any one who observes a sane monkey closely can see why it behaves as it does, and what it means by so doing. Often monkeys, Beroks especially, invent comic tricks to amuse on-lookers, thus one used to pass its hindleg over its neck, and beat it on the ground and pretend it could not get it back, but these tricks are evidently games invented for fun. Out-breaks of maniacal ferocity occur also in ordinarily quiet monkeys, and these are commonest at night and apparently in the very early hours of the morning, about 4 or 5 a.m. A male monkey ordinarily quiet thus attacked a female whom he was very fond of and inflicted severe injuries on her, destroying the sight of one eye, from which injuries she never recovered properly, but wasted away, and after producing a still born young one died.

The monkey which attacked her seemed very sad when he was found next morning, and sat by her all day trying to console her. This is not the only case of this nocturnal ferocity. I have seen among these monkeys, and cases of ferocious murder in human beings at about this period of the night are too common as is well known. Monkeys of course often quarrel for more or less valid reasons both in a wild state and in the cage, and bite each other spitefully. When one would bite the others it was found quite sufficient to nip off the tips of the canine teeth with a pair of strong wire snippers. It does not hurt the animal at all if properly done and the teeth do not decay, and when he finds he cannot bite through the skin of another monkey he gives it up. Old monkeys often have the teeth decayed, and worn away, but they never seem to suffer any pain from decayed teeth, and I have never seen any inflammation of the jaw caused by them.

The K'ra is a very loquacious animal and has an extensive vocabulary in which respects it is very different from the anthropoid apes, who seldom speak at all. Some of the noises of the K'ra have quite obvious meanings, thus the word

Krra from which it takes its Malay name, is only used as an alarm note for a man or dog in sight. A quite different sound is used for a tiger or perhaps for any large animal. If a young monkey gets into a small tree and alarmed at the approach of any one utters its little squeaks of fright, and is afraid to try a long jump into the safety of a taller tree, the king monkey comes as near as he safely can do it and utters a peculiar grunt "umh" "umh" till the little one makes a wild spring and escapes from its peril. Meanwhile the old one threatens the enemy with an entirely different bark at intervals. This latter sounds much the same as the cry that two males quarrelling begin their abuse of each other. Young monkeys have also a number of plaintive cries which do not seem to mean anything and which older monkeys do not use.

When the monkeys see a snake they get very excited and make a great chattering. On one occasion when a terrier was attacking a cobra, the monkeys came from some distance to the scene of the fight, so close I could almost touch them, and quite regardless of me and the dog, peered down to see if they could see the snake which was hidden from their sight in the thick fern. I presume they judged from the noise the dog was making what he was attacking, or they may have heard the snorting of the cobra, when they were close enough. The duration of life of these smaller monkeys seems to be about 20 years, but I cannot be certain of this. The hybrid Kra-Berok is now 11 years old and is in very fine condition showing no signs of age. The big black *Cynopithecus*, which was full grown, and probably 8 or 10 years old when he was obtained, lived for 10 years in the gardens and died of old age. Several other monkeys have died of old age, but they were old when they were obtained. Monkeys do not suffer from consumption here as they do in Europe. The causes of death of the monkeys in the gardens, have been, beside old age, pneumonia, not rare in the Wawas (*Hyllobates*), stomatitis (three *Hyllobates* apparently an infectious disease which killed all three in one cage; tetanus (one); and fatty degeneration of the heart. Two bading monkeys died of this from over feeding. Being very greedy and always getting the first food, they got

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so fat that the heart was quite enclosed in cushions of fat. One, and if I remember correctly, the other fell dead after a Chinese holiday, when crowds of people came and gave the animals so much food that the orgy proved fatal.

*Cynopithecus niger.*

Both forms of this monkey have been kept in the Gardens Menagerie. The short-haired form from Celebes and the long-haired one from Batchian. I cannot find in any books that these two apes have been separated specifically anywhere, which is rather remarkable, considering how the mammals have been divided up on very scanty characters by Zoologists. The short-haired form is the commonest, and is often brought into Singapore by the Bugis men. The long-haired one, a bigger ape, is very distinct not only in size and length of hair but it also possesses a large patch of grey hair on the buttocks. Only one of these has been on view in the gardens, a fine male. He was received when apparently full grown in 1891 and died of old age in 1905. He was a very vicious and powerful ape when he first came, and it was unsafe to go into his cage, as he flew at the throat of any one who attempted it. Later he became much quieter, but was never really safe. This monkey was the only one I ever saw who had any idea of throwing. He threw stones over-hand as a woman does, with considerable accuracy, and visitors often threw stones into his cage which he hurled back at them through the bars and on some occasions hit a visitor on the head or face. One lady indeed got a cut on the mouth from a stone she had imprudently thrown to him. When pleased with any one he would turn his back and standing erect often on one leg would grasp the back of the left thigh with the right hand. (*Macacus nemestrinus* often does the same thing). When he drank from a tin, it was his delight to suddenly throw the tin and the rest of the water over the keeper who was giving it to him. Though confined for some time in a cage with a female of the short-haired form he never attempted to breed with her, nor was otherwise than friendly with a male Berok who was in the same cage and bred with the female. The short-haired black ape is very good-tempered usually, but very mischievous.

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I have seen one on board ship seize the cap from one passing by and throw it overboard. Two which were put temporarily into an empty tiger's cage soon escaped by unroofing part of it, throwing the tiles down and speedily making a hole large enough to escape. When the coolie got on the roof with a sack to throw over one, it suddenly pulled the sack from his hand and rushed off with it. These monkeys live a long time and suffer little from sickness. One was killed by stomatitis, and some died of old age.

They are affectionate apes, and recognize acquaintances readily. Two which were bought by a passenger and kept for a short time in the gardens were sent to the London Zoological Gardens, where I saw them about a year later, when they immediately recognized me and came down to shake hands, though the keeper advised me that they were savage! Common and easily procured here, they seem to be seldom sent to European Gardens.

*Nycticebus tardigradus.*

The Slow Loris. This little lemur is common and often caught by the Malays, and many have been on view in the gardens. It does not seem to be long lived and is a dull creature in captivity, remaining curled up all day and only moving about slowly at night. Its food, in a wild state, consists of fruit, insects, and small birds. It seems strange that so slow and weak a creature should be able to hold its own in a country where there are so many predacious animals, for it appears to have no means of defence. It is however not so harmless as it appears, as it can bite sharply, and its bite is poisonous. Two instances of injury from its bite have been described to me. Many years ago Mr. H. Everett while talking to his brother, one evening in Borneo saw one of these little animals in a ditch and picked it up. It bit him on the hand, and he threw it down. His brother was walking away, and though Mr. Everett could hear his footsteps now in the distance he was unable to call him. His mouth and tongue swelled up, and he was unable to walk. He attempted to crawl up the hill to his own house, but only managed to get

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there next morning. When found he was unable to speak, with his tongue protruding from his mouth. His clerk who found him, cut the clothes round his neck, and managed eventually to recover him. In the second case a lady in Singapore was bitten by a Loris on the hand, and her mouth and tongue swelled up very much, but the swelling went down towards evening. No other part of the body seemed to be affected by the bites. The natives all know of the danger of the bite of the animal, but it is said that it is only dangerous when fresh caught, and after it has been in captivity for some time it is not poisonous.

The weird appearance of the Loris with its large round eyes, and its habit of covering its face with its paws has given rise to many tales concerning it. It is supposed to have the faculty of seeing spirits, which is why it covers its face, as presumably it does not want to see them. Its use in native medicine with other superstitions about it have been published in the Journ. Roy. As. Soc. S. Br. vol. 34.

*Galeopithecus volans.*

The flying lemur, is common in many of the Singapore woods, but it is not easy to get or keep in captivity. I have had young ones taken from the mother when killed twice, and endeavoured to rear them. They took milk readily but died in a few days from cold, as it seemed impossible to keep them dry. An adult captured in Singapore was kept for some days, and was being taught to live on bananas, when it managed to escape. In a wild state they live on leaves, the intestines of those killed being usually packed with nibbled up leaves, but the animals in captivity would not eat such leaves as I offered them. Their cry in the forests resembles the quacking of a duck.

FELIDÆ.

*Felis tigris.*

Five or more tigers have been kept in the garden at different times. They are always easily procurable, but usually the funds of the garden were not large enough for the keep of so

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expensive an animal. Two cubs were kept for a short time in order to train them to eat meat previous to shipping them to Europe. They were about as big as large cats, with ridiculously large heads and paws. Remarkably tame and friendly, they would follow me about the garden for short walks, putting up their tails and rubbing their heads against my legs like tame cats. In a few days they had learnt to eat meat instead of requiring milk, which was difficult to get on board ship, and Sir Charles Mitchell, then Governor, who owned them, had them sent home to the Zoological Gardens. They were great pets on board ship, where they ran loose. They had grown as big as leopards when I saw them in England some months later, but were still tame enough to stroke. I heard afterwards that they died during the time of change of teeth, always a risky time with tigers. Before they were shipped a live chicken was put in their cage, and though the little animals had never seen one before, the biggest one darted at it and gave it such a blow with its paw that the chicken was sent flying like a ball against the wall of the cage falling dead instantly.

A fine young tigress taken from a nest in Pahang was presented to the gardens by M. Wise, in 1895 and lived there till 1903, when it was sold. She passed safely through the ordeal of changing her teeth, though considerable care had to be taken with her at that time, and she had to be dosed with santonine put in a piece of meat. She was usually very quiet, with Europeans at least, though she disliked natives, and would charge the side of the cage and strike violently with her paws if the keeper leant with his back against the bars, but never did so when he faced her. As the cage had to be enlarged for her, she had to be temporarily transferred to a travelling cage in which she could only just turn round. She was kept there for some weeks and when the large cage was ready she absolutely refused to leave the travelling cage, so that a fire of paper had to be made near the cage in the hope that the smoke might induce her to go into the large cage, but she took no notice till a piece of paper suddenly burst into flame, when she walked slowly into the cage and then made a

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rush to the further end, and finding a wooden platform put for her to sit on, investigated it carefully by feeling with her paws underneath before she would sit on it. She was fed on pariah dogs, beef, or goat, and always supplied with grass which she would often take from the hand. She got tired of dogs after a time, and her diet had to be changed. Chickens she used to appreciate. First plucking all the feathers off she washed the carcass carefully in her water before eating it. She was also partial to rats, holding them in her paws and biting off the head and gradually eating them. Occasionally a tiger requires liquid blood, as otherwise it gets constipated, and this was always difficult to get, as she would not touch it if coagulated. A rhinoceros having died in the gardens she thoroughly enjoyed its flesh, and also drank the blood greedily. She very much delighted in rolling on her back in a shallow tank of water provided for her, especially on hot days. When she became full grown she took to roaring at sundown, and occasionally later, especially on moonlight nights, and her cry Ah-oum could be heard at a great distance. Like most of the local tigers she was very light coloured the fur being quite yellow. Another very fine tiger kept for some time in the gardens before being sent to Cairo, was of a rich chestnut brown. It had been caught in Sumatra. The food of a tiger costs about fifty dollars a month. Other examples were offered by H. H. the Sultan of Johore and other people, but the expense of keeping these big cats was too great for the limited funds of the gardens. A wild tiger inhabited the Garden Jungle for some months in 1893, having probably wandered there from Bukit Timah.

*Felis pardus.*

The Leopard though easily procurable, could not be kept on account of its cost in food. However in 1876 a spotted leopard presented by the King of Siam, was on view for some time, and a couple of cubs of the black panther were deposited in the gardens for a short time. The latter were very vicious, though quite small. They snarled and fought whenever any one came near them.

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*Felis tristis.*

A full grown female of this large cat was sent to the gardens in a stick cage one night, and was put temporarily in part of the monkey cage. It however managed to escape from its travelling cage, and as it could not be recaptured with any safety it had to be shot. The carcase was sent to the museum.

*F. Temmincki.*

A golden cat was sent from Pahang in 1893, and lived for some time, when it suddenly died. It was a very quiet and handsome animal with its marbled orange tabby fur. It was one of the most placid cats I ever saw. As there was some difficulty in getting its travelling cage into the large cage, endeavours were made to get it to walk into its new home, but nothing would induce it to move. When squirted at with water it sat still and lapped up the water; when a smoke of brown paper was made it folded its paws and went to sleep. Finally the travelling cage was got into the large cage and broken to pieces, till at last the cat remained sitting calmly on the last bit of the box.

*F. bengalensis.*

The Leopard cat is the kind most commonly brought in for sale. It is a beautiful little animal, hardly as big as a good sized English cat, yellow with round black spots. When caught full grown it is usually extremely vicious. Two kept in one cage always watched carefully at feeding time for the keeper, to try and strike him with their paws when he opened the small side door to put the food in. Being nocturnal they are generally very quiet, hardly moving all day, and frequently only feeding at night. When caught as kittens they can sometimes be made as tame as an English cat. One kept for a long time by Mr. Hervey in Malacca was presented by him to the gardens where it lived many years, and was quite tame and would play like a kitten with anyone. Formerly it was kept loose in the house in Malacca but it got so very sportive and smashed so much glass and china that it had to be shut up.

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On one occasion it got out of its cage in the gardens into a gallery at the back of the cages and no one could catch it. When I cornered it and stooped down to pick it up it sprang over my head, but it did not attempt to bite or scratch. It must have been 12 or 13 years old when it died, and I believe then it was killed by a cobra or other poisonous snake. Another kitten of the same species which was being trained to eat cooked meat, which is popularly supposed to induce tameness, died in the same way. The animals perfectly well on the previous night, were found with the head enormously swollen next day and died very shortly.

On one or two occasions there was an outbreak of a very-infectious disease among the cats, a form of diarrhœa and weakness, the cats dying always with their mouths full of the grass of their bedding. At first the disease lasted two or three days before the fatal termination, but later became more rapid, and the last of the cats attacked died in a few hours after it first showed signs of illness. Cats were not rarely sent down from the Peninsula or neighbouring Islands in small cages with a putrid fowl in the cage for them to eat. When they arrived they were found to have a violent diarrhœa which soon killed them. Being usually very wild it was difficult to give them any medicine, as they could not be handled. They were dosed by dipping a stick wrapped in cloth into the medicine and presenting it to the cat which bit it furiously so that the medicine ran down its throat.

*F. planiceps.*

The stump-tailed cat is a small grey and red cat with a thick blunt tail. It was formerly considered very rare, but at one time was one of the commonest cats sent to the gardens. It is usually a quiet cat, but I never saw one that was really tame. On one occasion a gentleman sent one which he said refused to eat and had eaten nothing for some days. I offered it fish and all kinds of tempting things, for it did not occur to me that the owner had never tried it with raw meat, but this proved to be the case, and when some raw beef was offered, it ate two pounds up as fast as it could. It is useless to try

to feed wild cats or any carnivora with cooked meat, they will never touch it, until they have been gradually trained to it, nor will any of them drink milk, though they may be trained to do so, especially if quite young. It is perhaps as well to point out that all these cats, including tigers, require grass and should be supplied with it.

#### VIVERRIDAE.

*Viverra zibetha*, and *V. tangalunga*.

The two big grey civets are often brought in by Malays. They are very handsome beasts, but do not stand captivity well, as they are usually very nervous and dislike being looked at. They live best in darkened cages as they cannot stand a bright light. During the day they are generally very quiet, and are active only at night. They are never vicious though seldom tame. Their food consists of fruit and meat, but like all these animals should be fed chiefly on bananas, papayas and such fruit, with only a little meat. One of the Tangalungas escaped from captivity on one occasion and lived wild in the gardens for a long time. It usually concealed itself during the day, but was often seen by the watchmen at night wandering about. I came across it during the day on one occasion, when the dogs pursued it but were easily beaten off. Wild ones have also been seen in the gardens.

*Paradoxurus hermaphroditus*.

The Musang. This is a very common animal, abundant in a wild state all over Singapore, and often inhabiting the roofs of houses. It is very easily kept in confinement and becomes very docile, especially when taken young, and can be trained to perform tricks, or to follow its owner about. It eats almost anything but lives chiefly on fruit. It does not appear to be a long lived animal, but it seldom suffers from any disease. Specimens brought by Malays however are very often injured in catching them. I have had one brought with its mouth sewn up with string, to prevent it biting. The string was quickly removed and the poor animal soon recovered its injuries. The common local form varies somewhat in

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coloring, but comparatively small in size. The Javanese form, of which a specimen was presented to the Gardens in 1904, is a very different looking animal, much larger, with three distinct black stripes down its creamy white back.

*P. agurus leucomystax.*

The white-whiskered Paradoxure. This is a rare beast of a light brown colour with orange eyes. Three were taken in Singapore one year, and two of these were brought to the gardens, one was injured by a dog bite in catching it, and eventually had to be killed. The other lived for over ten years. A very quiet animal sleeping nearly all day, and occasionally moving about slowly. It is not vicious but is less docile than the musang. It eats fruit, chiefly bananas, and seems to be a long lived animal. It requires a darkened cage, as it dislikes a bright light.

*Arctogale leucotis.*

This pretty brown civet has been kept in the gardens for some time. It is very tame and is very fond of being stroked by visitors. One was sent to the London gardens in 1905.

*Arctictis binturong.*

The bear-cat has often been on view in the gardens. It is easily tamed and very long lived. One remarkably fine one was kept for 16 years. Its food consists of bananas and pineapple. It will also eat meat, birds, dried fish, etc. It was also sent to the Zoological Gardens in London in 1905.

*Herpestes mungo.*

A common Indian mongoose lived for many years in the garden, and was believed to have been intentionally poisoned eventually by a native who had one to sell. It is often brought to Singapore by natives of India. The one kept was very tame and amusing and spent much of the day playing with the dogs, as it was allowed to run about. It was an excellent ratter, and a great snake-killer.

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*H. aureopunctatus.*

The small Indian mungoose, is also often imported into Singapore, and two were kept for a long time. They were very tame and playful.

*H. brachyurus.*

The water mungoose. Two of these have been kept for many years. One was presented by Dr. Johnstone who got it in Tringanu. The habits of this animal are very different from those of the two previous ones. It is never really tame nor is it at all playful. When annoyed it erects the bristles on its back whence probably the Malays call it Musang Babi. Its food is fish, but it is also partial to snakes.

*Cyon rutilans.*

The Malay wild dog. Two pairs of pups were kept for some time in the gardens, but one of the pair died soon after arrival, having been injured in catching, and the others were at different times poisoned out of spite by natives. This dog is a very handsome red animal with a beautifully plumed tail which when pleased it arches gracefully, but never wags it. It does not bark but makes a yapping noise. One used to spend much of its time rushing up the wooden partition of its cage for about 12 feet and dropping again to the ground. By bringing a terrier slut to the outside of its cage and stroking her the wild dog who evidently much admired her became tame enough to let me stroke it, and it was getting quite tame and very handsome when the native miscreant poisoned it. It is said that there are two kinds of wild dog in the Peninsula, one large and the other small, and this seems possible as one pair of pups were nearly as big as the last mentioned dog, though evidently very much younger.

*C. aureus.*

The Indian Jackal. A pair of these was presented to the Gardens in 1895, and after a short time bred producing five pups. Of these one when very small crept through a small drain-hole into the tiger's cage next to its own cage and was

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seen no more. Sometime later one escaped and lived for a short time in low scrub off Holland Road, but at length disappeared. The others grew well for a year or two, but then all were attacked by distemper. All attempts to pull them through failed except in the case of one of the young ones which completely recovered and lived for many years till it was sold. I do not know if there is any other record of the Jackal having bred in captivity. In the Handbook of Animals kept in captivity in Calcutta Gardens it is stated that it has never been successfully bred there.

These Jackals are not rarely brought to Singapore from India by natives, and another was brought to the Gardens by an Indian on another occasion, but it was so much injured that I shot it at once. The natives say that Jackals never live long in Singapore as they always die of distemper here.

#### *C. Dingo.*

The Dingo. A very handsome and tame Dingo of large size was presented to the menagerie in 1893. Though tame enough to be taken out for walks on the chain every day, it was unmanageable in sight of goats or chickens. When it was being brought to Singapore it used to run loose on the deck of the ship and play with the passengers but when two sheep escaped from the butcher's pen, the Dingo immediately dashed at them, and tore them to bits. During a spell of extremely hot weather he shed his thick coat and looked a very different animal. As he appeared to suffer much from the heat he was moved up to the stables as being cooler, but one night broke his rope and came upstairs into my house and lay down under the table whence nothing would induce him to move, and it was with great difficulty that he was taken back to his quarters. He did not attempt to bite or did he lose his temper but simply planted his feet on the floor and held on. The hot weather however was too much for him and he died a few days later.

A white Dingo was also sent to the gardens from Perth, as a great rarity, but had to be sent back to Australia, as at the time of its arrival there was a hydrophobia panic in the

Straits, and though the animal had never been outside a cage in its life, having been born in captivity, after due consideration the Government officials decided that a Dingo was a Dog and as a Dog could not be admitted to the colony. It was a curious looking animal of a rather dirty white colour, and quite young.

*C. vulpes.*

Two foxes were kept in the Gardens at different times. One was brought from China and appeared somewhat different in colour from an ordinary English fox. It was very active, playing about like a kitten all day. It was allowed a romp on the chain every day for about half an hour which it much enjoyed, but on three occasions when it was allowed this treat after a day or two's intermission it became so excited that it had a fit, and on the third occasion it died in spite of all that could be done. The fox appears to be very liable to fits when young, as similar occurrences are recorded in the account of the animals in the Calcutta Gardens.

The other fox was larger and came from Russia. It lived a long time and was eventually sold. During the hot weather it shed great masses of matted hair, as the Dingo did. At one time it became of a curious grey colour for a short time, as if it was going to put on a white winter coat. Though tame enough to allow the keeper to enter its cage, it would not allow any one to handle it, but tried to bite. It became very friendly with the jackal and used to slip through the bars between the two cages to play with it.

LUTRIDÆ.

*Lutra cinerea.*

The clawless otter lived for some time in the gardens. It was very tame, but like all others used to squeak incessantly for food. It ate fish and meat in great quantities, and eventually died suddenly from overfeeding. When its skin was taken off for stuffing at the museum it was found to be extremely fat, the fat on its tail being nearly an inch thick.

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*L. Sumatrana.*

The Malay otter. One full grown specimen of this otter caught in Singapore was bought for a dollar. It however died in a day or two, having doubtless been injured in capture. Another specimen much younger was on deposit for a time, it was quite tame and allowed itself to be handled. Like *L. cinerea* it squeaked and squealed all day if it saw anyone it thought might have something for it to eat.

## URSIDÆ.

*Ursus Malayanus.*

The Honey bear has often been kept in the gardens. The finest was one known as "Jelebu" which was presented by Sir Cecil Clementi Smith. He was very good-natured and would play with anybody, allowing people to wrestle with him, ride on his back or put their hands into his mouth, and never putting forth his great strength so as to hurt. When he had a female given him as a companion, his games with her were much rougher. The two bears would seize each other's skin in their mouths and pull so violently that one would not have thought any skin would stand such rough treatment. He had the greatest aversion to bullocks and especially when he first came used to be perfectly rabid at the sight of one. Horses he took no notice of. On several occasions he broke the chain or collar by which he was attached and escaped at night, but he was easily recaptured, though he had wandered to the further end of the garden. A watchman whom he did not like turned the light of his lantern on him and Jelebu rushed at him. He ran towards the cage and gradually the bear was got up to the cage and put back again. But on later occasions when he got out of his cage he never went far but merely rambled round the other cages, climbed up a tree where he broke off some branches and made a nest which he sat in for a minute or two, and then came down again and was easily induced to return to his cage with the offer of some bread, which he was very fond of. When given anything liquid or juicy he always lay on his back to swallow it so that the juice of sugarcane for instance ran down his throat. On one occasion some sailors gave him

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a bottle of beer which as he found it contained liquid, he lay on his back to drink, after which he played with the bottle for some time, balancing it on his hind feet and tossing it about, and then suddenly jumping up and holding it in both paws returned it to the sailors to be filled up again, which created much amusement. He was very powerful and on one occasion broke an iron bar an inch through with ease, and could bite up an inch-plank as easily as a man could bite a piece of soft bread. I have seen trees in the forest with the trunks torn to splinters by wild bears in search of honey. This bear died of pneumonia during a season of influenza when several other animals succumbed. A large female formerly belonging to a resident was presented and given him as a companion. As is often the case in private houses this bear had been so teased by the Chinese servants that its temper was quite spoilt and it took a long time to get her tame again. It was hoped to breed from the pair, but the female suffered from an uterine disease for which nothing could be done, and which proved fatal. A small bear was put in the same cage with Jelevu, and the two were quite friendly for some time but a quarrel took place and the small bear was killed.

The Borneo variety was frequently also on view. It is rather smaller than the Malayan form. In its wild state the bear inhabits low swampy parts of the forests, where I have occasionally come across them, or heard them scurry off. It gives a kind of barking snort when annoyed, and when pleased or sucking its paws it makes a low humming noise. I have also heard near the caves at Kuala Lumpur a peculiar loud humming grunt often repeated which was said to be the cry of a bear which was fully three quarters of a mile away.

*Melursus ursinus.*

A sloth bear was kept for some time in 1875.

#### RODENTIA.

*Ratufa bicolor.*

Several color forms of this handsome squirrel have been kept. It lives well in captivity and becomes very tame. The

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scarcer brown form *R. affinis* was obtained for the price of a dollar from a Malay at Jurong. It was in very poor condition and died soon after.

*Sciurus Finlaysoni* Horsf.

A very small creamy white squirrel shaded with grey on the back was purchased many years ago from Siam, and lived here till 1905 when it was sold. It probably belonged to this species, but several naturalists who have seen it are doubtful as to what species it belonged to.

*Sc. tenuis*.

The little Malay squirrel, very common in a wild state in the gardens, does not bear captivity well and soon dies.

*Sc. Prevosti*.

Raffles squirrel; makes a very nice pet, becoming quite tame and living long and happily in confinement. Many of these beautiful animals are brought to Singapore where they are sold at from a dollar or a dollar and a half upwards.

*Sc. notatus*.

The brown Malay squirrel with a red belly is very common in the gardens. It bears captivity very well and soon becomes very tame. Specimens caught in the gardens were kept for many years.

*Sc. sp.*

A little grey three-striped squirrel said to have been brought from India, of which four or five were purchased, but not very long after all managed to escape through a hole. Some of them were seen some years afterwards roaming about the gardens, but seem now to have disappeared.

Squirrels can be fed on ground nuts, Indian corn, etc. The chief danger to their life is due to intestinal worms, which often kills them. A betelnut put into the cage now and then prevents this as the squirrels will nibble it themselves and so get rid of the parasites. None have bred in confinement. Most of the kinds

live very happily together in one cage, so that they have a box nest for each one to sleep in. These squirrels make large nests of bastfibre, palmfibre etc., in the trees and are often troublesome in pulling off the cocoanut husk used in fixing orchids on the trees and throwing the orchid down on the ground. These nests are usually placed in the boughs of a tree or among the leaves of a pandanus, or sometimes low down among the thorny leaves of a Bromelia. One nest was made on the leaves beneath the office, and attention was called to it, by the cries of the young squirrels which had been attacked by an army of ants and had fallen from the nest. One had died, the other was put into a cigar-box up in a tree, where the mother squirrel had been heard calling. She quickly came and got into the box, but went away again. When however every one was gone from the building and all was quiet she returned and carried off the young one.

*Rhizomys sumatrensis.*

The Bamboo rat has often been kept, and lives well, but as it can bite its way through most things requires an iron cage. Two lived for a long time in a wooden box lined with tin but eventually bit their way through the bottom, and nearly through the wooden floor before they were found out. One or two escaped and lived in clumps of bamboo for some time. They eat rice, nuts and such food, and also are fond of bamboo shoots to gnaw. The bamboo rat has a curious way of sleeping on its back which gives it the appearance of being dead.

*Hystrix longicauda.*

The Porcupine, is still common in Singapore, and is very easily kept as a pet, eating sweet potatoes, tapioca etc., and some I have seen had a great liking for bones which they nibbled up. It is readily tamed and lives well in captivity. An albino, quite white with pink eyes was purchased some years ago, with it was a young one, normally colored. The young one was still sucking the mother though quite a large

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sized animal, and finally took to nibbling off its mother's quills so that it had to be separated. The white one was sent home in 1905 but died on the way.

The animal occurs occasionally still in a wild state in the gardens.

*Atherura macrura.*

The Brush tailed porcupine has been on view in the menagerie twice, one was a very young one and soon contrived to escape. The other was an adult. I obtained it on the Siak river in Sumatra, and during the voyage down the river at night it contrived to escape from its cage and ran up and down the boat. It was easily detected in its attempt to hide, from the powerful muskey scent it exhaled which lasted for some time wherever it had run. It was soon recaptured and lived for some time in the gardens. I have several times come across the animal or its tracks in limestone caves but it also occurs in open country.

*Mus decumanus varalbus.*

White rats were kept on view for some time, and bred easily. They gradually however died out.

*Cavia porcella.*

Guinea pigs, were also kept, but suffer much during the wet season.

UNGULATES.

The elephant has never been kept in the menagerie on account of expense.

*Rhinoceros sumatrensis.*

Three of these were kept temporarily before shipping to the Vienna Zoological Gardens in 1901 and there was one in the gardens as early as 1875. An account of one has been already published in the Journal.

*Tapirus indicus.*

The Malay tapir. A young tapir, the property of the Director lived for many years in the gardens. When bought it had the

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black and yellow spotting of the young stage, but after some years put on the black and white coloring of the adult. It was most active in the early morning and late evening. Most of its time it lived in the office or in the Director's house. When the office was opened at 6 o'clock, it would go out and browse along the road side and returning when the sun got hot would be in the office under the table most of the day. Its food consisted of boiled rice with salt, grass, bushes, sweet potatoes and fruit, and it would frequently seek for the abandoned bones which the dogs had left and bit them up. On Saturdays it came up to the Director's house for Sunday, as the office was closed on that day, and went back on Monday morning. There was no need to lead or drive it. When pushed out of the office it galloped of its own accord across the garden, choosing the direction where were the fewest paths as its feet were too soft for the gravel, and jumping all the paths it came to, returning on Monday in the same way. Like the rhinoceros it always dropped its excreta in the same spot each day, so there was no trouble about keeping it in the house.

The cryptic characters of this animal were well shown both in its young and old pelage. When in the former coloring on one occasion it went to sleep in a bush of palms, and when I went to fetch it in on opening the bush and looking down I could not see it. I seemed to be looking on the dark brown ground flecked with spots of sunlight through the leaves. The little animal lay in such a position that the yellow spots were exactly where the vertical sun rays would fall, the yellow streaks resembling the slanting streaks of light from the side. It was for a few minutes quite invisible, though I was looking down on it. The fur at this age is closer and more velvety than in the adult stage. The change is very rapid only taking a few days for the yellow spots to disappear the fur getting scantier and black and the greyish white coloring of the rump developing. It is not less well protected by its coloring when adult and at rest. In the dusk I have seen her sitting on the grass plot, the black fore parts invisible, the greyish white rump exactly resembling a rounded granite boulder, both in shape and colour; seeing it sitting like this with its rump towards me I

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could not make out at first what it was as I knew there was no granite boulder on the grass plot.

This tapir was very docile and amusing and was a great attraction, very few people even the Malays ever having seen one before. It was easily trained to draw a small cart, but its feet were too soft for hard roads, and it could only walk comfortably on grass. When very happy it would canter and curvet on the grass neighing like a pony, but its ordinary cry especially if vexed was a whistle which it gave with its trunk. This whistle is the alarm cry which one hears when one comes across them in the forest. It had considerable climbing powers and often walked upstairs. When left alone in a room it sometimes got on a chair and then climbed on to a table. On one occasion when it did this the table which bore on it a pot of white paint, some gum, and ink, collapsed with the weight of the animal who was found standing in a pool of the mixed liquids and covered all over with paint, gum and ink. It was very fond of bathing and used to go down to the lake and remain under water for a considerable time digging in the mud with its paws.

As it got bigger it was found necessary to keep it in an enclosure as there were complaints that it alarmed horses when it was feeding along the road. When shut up, or kept in a stable the tapir here is very liable to pthisis, and this one did not escape. Except that one or two occasions it was heard to give a little cough, and that it got very lazy and also slightly thinner, it showed no signs of illness. But one day it was taken to have its swim in the lake which it much enjoyed and was unwilling to relinquish, and after it came out of the water it went to lie down under a tree as usual, and half an hour later was found to be dead. At the post-mortem the lungs were found to be badly diseased with pthisis, a considerable portion being destroyed. Two other full sized tapirs were temporarily deposited in the gardens, before shipping to Europe, and both died very suddenly with evident signs of severe colic. One which was opened was found to have the stomach full of some bitten up sweet stuff which was almost certainly pineapple, and there was little doubt that some one had given these animals a quantity of pineapples which had proved fatal.

*Anoa depressicornis.*

An example of this interesting animal occasionally brought by Bugis boats from Celebes, was deposited in the gardens by the curator of the museum who had bought it to stuff. It was extremely tame, though occasionally it butted at the keeper when he went into its cage. It lived chiefly on bushes, and thrived very well till it was killed for stuffing. Recently I saw a young one in one of the animal shops which was remarkable for being covered with red wool, instead of the smooth black brown hair of the adult.

*Cervulus Muntjac.*

The Kijang. This pretty animal lived and bred very readily in confinement. A pair was procured from Sumatra and they produced eight young all males. It was very remarkable to see how quickly the newborn Kijang developed. The births took place a little before daylight and the little one very soon was staggering about on its legs; by nine o'clock it could stand and walk about quite easily. Indeed on one occasion before seven a.m. a new born one succeeded in getting between the bars of the cage and running away to a wood near by, where it disappeared and was said to have been killed by a pariah dog. The Kijang is a very tame and quiet animal though the males occasionally tried to fight and had to be separated.

Two or three died during my absence in England from what cause I do not know. The others were sold. I believe this animal has never been successfully carried to England as it does not stand a sea-voyage well. Its food is bushes, boughs of waringin, and other trees, sweet potatoes and tapioca roots.

In my account of the Mammals of the Malay peninsula, I stated that it did not occur in Singapore. Since that time however I have seen one female caught at Jurong and heard of others in Bukit Timah and elsewhere.

*Cervus unicolor.*

The Rusa or Sambar. These were constantly kept and bred regularly in confinement but chiefly produced bucks.

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Indeed females are not so common in captivity as males. This may perhaps be due to the fact that the female is much more difficult to move about than the male, as it fights violently when attempts are made to catch it and often gets injured or dies of shock. It is curious that the deer which stands injuries from gunshot wounds etc. very easily is very apt to be injured fatally in catching and transshipping. A deer to be conveyed from place to place must never have its feet tied, as if this is done the animal will almost certainly die.

The Sambur buck when adult is often extremely dangerous, and will attack people in a ferocious manner when quite unprovoked. A very fine one which had been brought up from a fawn, on one occasion attacked a cooly from behind who was filling its watertank and threw him to the top of the fence whence he scrambled down, inflicting a number of stabs on his legs and thighs. On another occasion by breaking a bar it got into an enclosure with a black buck which it attacked and lifted and carried about on its antlers. The black buck was rescued and the deer driven back into the enclosure, but taking advantage of the tub of water between the two enclosures being removed, he managed by lying down and wriggling through the small space to get again into the black buck's enclosure and killed it by one stab through the liver.

Deer in the tropics require a mudbath like a buffalo, and delight to wallow in it and cover themselves with mud. I have disturbed them at this refreshment in the forest in Singapore. They also require a dark house or stable to live in or otherwise they are pestered with flies. All attempts to stop this nuisance failed till the idea of making a perfectly dark stable in the enclosure occurred and this was found to be quite effective. The deer were quite free from the flies in the dark, and remained there most of the day. Even wild deer seem to be pestered in this manner. Once in Selangor I saw at a Sakai encampment, a pet doe, which lived loose in the woods and came out only when the Sakais called it and when they did so I observed that a number of these flies (one of the *Muscas*) came with it. A friend who was with me was anxious



to buy this deer, but the Sakai woman would not hear of it as she had brought it up from Java on her own milk and it was one of the family. The deer eat cut grass, bushes, and paddy. The doe produces one young one at a time, which has a couple of white spots on the sides near the rump, which very soon disappear. A number of bucks were bred, and eventually the whole lot were disposed of. Deer suffer occasionally from wounds caused by their cutting their legs in the fences, or by fighting, and these wounds are not very easy to heal, and are liable to get flyblown if care is not taken. A disease resembling foot and mouth, killed several on one occasion and a large doe died after producing a fawn apparently of anæmia, for it was observed when her skin was taken off that she was almost bloodless.

*C. hippelaphus.*

The Sumatran deer, a smaller beast with a golden coloring on the back and a habit of marching about with its head erect, has several times been on view. It is apt to be vicious and constantly tries to butt. It will not breed with the tam-bur, and has not been bred in the gardens menagerie. One, apparently an old beast, after several years went blind in both eyes with cataract and was eventually killed.

*C. sp.*

Philippine deer; one or more species of Philippines deer have been kept in captivity for some years at different dates, but those which have been kept within the last few years were too young to identify specifically.

*C. axis.*

The spotted deer. Formerly often kept in the Straits by Chinese and others, seems to live well. The only one presented to the gardens of late years expired shortly after arrival owing to its legs having been tied.

*Antelope cervicapra.*

The Black buck. This Indian animal has twice been kept, specimens having been presented by various regiments coming

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from India. They live well in the Straits, eating grass, paddy etc.

One belonging to one of the regiments proved a nuisance by suddenly charging the men from behind, and when it had damaged eight in this manner, it was sent to the gardens. It was otherwise very quiet and tame. It was killed by a sambur deer as described previously.

*Tragulus napu.*

The large mouse deer often trapped by Malays has been constantly kept in enclosures. These animals had a habit of sitting almost motionless in a corner of their enclosure so that after a time large bonycalli appeared on the legs at the joints. This was stopped by giving them a large soft ground enclosure, where there being several together they exercised themselves and lived and bred. Many that are brought in by the Malays are injured by having the sharp canine teeth broken off so as to prevent their biting and from that and other rough handling the poor animals frequently succumb. They eat spinach, sweet potatoes etc. In making their enclosure it is necessary to sink the palings in the ground for some depth as these animals can dig their way out beneath if it is not deep enough. On one occasion I purchased three Napus at Changi, one old and two young ones, which a Malay had had a long time, and brought them down in the same box they had always lived in but while waiting for about half an hour till an enclosure was got ready for them, unexpectedly the old female attacked the young ones and bit off their noses and ears, killing them, what provoked this maniacal attack I could not guess.

*T. javanicus.*

The Kanchil, resembles the Napu but is smaller and brown-er. It is about as common but less frequently brought into captivity, probably being more delicate and easily injured.

*T. stauleyanus.*

Is a Pelandok, as big as the Napu but of a bright foxy red. Its locality is said to be Rhio, but the species is only known

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from specimens imported into Singapore by natives. Its habits in confinement are those of the Napu. It has several times been on view.

*Sus cristatus.*

The wild boar. Does not live at all well in captivity young ones have been brought several times to the gardens but soon died. The only one that I ever saw kept well as a pet was at a house in Selangor where it ran about the garden loose. I have seen Chinese pigs which had been allowed to cross with wild pigs in the forest the young of which did as well as ordinary pigs. There seems to be some doubt as to whether this species is identical with the Indian pig. It is still abundant in Singapore and some years ago a large wild boar invaded the gardens, and remained in the garden jungle for some days. A hunt was organized for it but it had got away before.

EDENTATA.

*Manis javanica.*

The scaly anteater is common in Singapore and has occasionally been caught in the gardens. It lives under ground all day coming out of its burrows at night, when it is caught. It has often been on view for a few days in the garden's menagerie, but is impossible to keep. Its great strength and powers of digging make it difficult to retain in ordinary enclosures and it refuses to eat anything but termites, chopped meat and eggs which others of the order eat readily it will not touch. Adults and young ones of both sexes have been kept for a few days only. The young ones are very curious being pink, and climbing about their mother in an odd way.

MARSUPIALLA.

A number of Australian marsupials have been on view at different times, but the records and identifications of many have not been preserved. Kangaroos were kept as early as 1875 and among the species on view later were *Macropus giganteus*.

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and *M. rufus*, and ? *ualabatus*, and several smaller species were also kept. Kangaroos do not thrive in this country on account of the damp which appears to cause diarrhœa. Two very fine black Wallabies were sent by Mr. Le Souef from the Perth Gardens in Australia. They arrived in the wet season, and though most carefully housed and fed on dry food, both died in a few days from diarrhœa. The smaller Kangaroo rats lived much longer. One however a charming little animal the day after it came in hopping about the cage at night must have overlooked the wire fencing and struck its head against it. It was found partly paralyzed next morning and though it lived for some time all pains taken with it produced no improvements and it eventually died. Three common *Dasyures* (*Dasyurus Geoffroyi*) lived for some time, but the climate did not seem to suit them well. A fine Cuscus, *Phalangista ursinus* was presented to the gardens some years ago, but owing to the long voyage it suffered from diarrhœa and it succumbed shortly. The Australian opossum, *Trichosurus vulpecula* proved the easiest marsupial to keep. A pair presented in 1898 which had long lived in captivity and were quite old lived long in the gardens and bred regularly. They were only lively at night, sleeping most of the day. Though the old pair were very friendly to each other, they occasionally got up little squabbles about places on a perch or food, and after swearing at each other would curl up together and go to sleep. Nearly all suffered sooner or later from ulceration of the tip of the tail, which was treated with idoform, and usually healed readily, though the tip often died off.

## BIRDS.

The record of the large number of birds of different kinds kept in the aviaries is very incomplete, as owing to difficulties in identifying them in the early days, they were often simply recorded by simple names, such as parrots, pigeons, etc. No attempt was made to keep insectivorous birds as there was no means of properly feeding them, and the expense of keeping a colony to catch insects for them would have been too great. The gardens themselves abound in birds of all kinds which

find there a refuge from the shooter and trapper, and some account of those observed was published by the author in Natural Science.

The following is as complete a list of what have been kept in the aviaries as can be procured.

ORIOOLIDÆ.

*Oriolus xanthonotus* Horsf.

Malay Oriole, presented by the Duke of Newcastle, lived for some time.

EULABIDÆ.

*Eulabes intermedia* Hav.

The Tiong. Common in a wild state and occasionally nesting in the gardens.

*Acridotheres* sp.

Javanese Mynah, a very tame little bird, which readily talks. It lived for many years, and was eventually killed by a rat.

ALCEDINIDÆ.

*Halcyon smyrnensis*.

A bird of what I think was this species was brought alive having been caught in a spider's web. It was very restless and found impossible to keep alive.

PASSERINI.

*Padda oryzivora*.

Java sparrow. Was introduced to the gardens many years ago under the impression that it was insectivorous and established itself there. This graminivorous bird was distributed to various parts of the peninsula where it has settled down but never goes far from where it was first turned out.

BUCEROTIDÆ.

*Buceros Rhinoceros*.

The Rhinoceros Hornbill. One or two were kept at different times.

*Anthracoceros malabaricus.*

*Craniorrhinus corrugatus.*

*Anorrhinus galeritus.*

These Hornbills live on fruit, bread and small birds. They were very fond of mice. One was very clever at catching sparrows when they flew through its cage. It would play with its victim for a time and then swallow it. They are apt to die very suddenly from no distinct cause.

PSITTACI.

*Lorius domicella.*

*L. flavopalliatius.*

*L. garrulus.*

A number of these gay coloured birds are brought by the Bugis men for sale.

*Cacatua galerita.*

The Sulphur crested Cockatoo was frequently kept.

*C. moluccensis.*

Large Cockatoo. One specimen lived for upwards of twenty years and is still alive.

*C. sulphurea.*

Lesser sulphur crest kept in 1880.

*C. rosacea.*

Rosy Cockatoo, has been kept for some time.

*Palæornis longicauda.*

The common parrakeet, does not live well in captivity. It is common wild in the gardens.

*Calopsitta novæ hollandiæ.*

Lived well for some time.

*Eclectus viridis, E. pectoralis and E. linnaei.*

The Eclecti are often brought by Bugis men.

*Eos fuscata.*

*Psittinus incertus* Shaw.

The Pialing, is rather a dull stolid bird, sitting perched on the top of a stick the whole day.

*Trichoglossus cyanogramma.*

*Loriculus galgulus.*

The Serindit lives best in a small cage of rattan. It is a quiet little bird, chiefly attractive for its curious way of sleeping suspended by its claws to the top of the cage with its head hanging down like a bat.

#### GALLINÆ.

*Pavo muticus.*

The Malay pea-fowl, has several times been kept. Young birds are very difficult to keep, but full grown birds live well. One or two used to wander loose in the gardens, but disappeared either killed by musangs or stolen by natives. One very fine peacock was found dead in its cage one morning, with a punctured wound near the eye. This it was surmised was caused by a blow from the beak of pheasant which lived in the next cage.

*Argasianus argus.*

The argus pheasant and the Borneo-Argus have both been kept. The argus pheasants do not live well in captivity.

*Polyplectron bicalcaratum.*

Peacock pheasant, was in the aviary as early as 1875 but of late years none were obtained.

*Numida meleagris.*

The Guinea fowl lived for a number of years, and one at least must from its appearance have been very old when it died.

*Gallus varius.*

Javanese wildfowl. Cock birds lived well and long, hens seemed more delicate.

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*G. atroviolaceus.*

This beautiful chicken was described by Lieut. Kelsall from specimens brought to Singapore from an unknown locality. Another pair was seen brought in for sale in one of the animal shops, but it has not been seen since. It lived for some time in the gardens. Its habitat is not known.

*G. bankiva* vars.

Japanese fowl have been on view, and also several monstrous chickens with three or four legs. One cock had an extra half pelvis and complete leg, and a hen had two legs projecting out straight behind it. Another curious monstrosity was a cock which walked so erect that its tail touched the ground between the legs. These monstrosities, by no means rare in the east, are very attractive to natives, quite a large number were brought to the earlier agricultural shows in Penang.

*Phasianus Reevesi.*

Reeves Bartail pheasant.

*Euplocamus Veilloti.*

Often obtained ; a handsome long lived bird.

*E. Horsfielde.**E. nycthemerus.*

The silver pheasant. Lived well for some years.

*E. proelatus.*

Siamese pheasant. This beautiful bird did not live long as it was killed by a rat not long after it was obtained.

*E. nobilis.*

Borneo Fireback (1880).

*Thaumalia picta.*

Golden pheasant.

*Acomus erythroptalmus.*

Rufous tailed pheasant. This handsome bird lives easily and long.

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*Rollulus roul-roul.*

The green partridge lives tolerably well, but is very shy concealing itself in its box at the sight of visitors. They are liable to the attacks of a bird louse which crowd round the head and neck and seem always if neglected to prove fatal. The same parasite attacks and kills *calaeus nicobarica*.

*Caccabis chukar.*

The Indian partridge presented lived for a year or two.

*Rhizothera longirostris.*

The large partridge lives long and well. On one occasion a couple which had been kept in cages apart for a long time by a resident was presented to the gardens, as they were of different sexes and always calling to each other, it was assumed that they would live happily together but shortly after having been put into the same enclosure, on the absence of the keeper, the cock bird attacked the female and so pecked its head that it died.

*Coturnix* sp.

The button quail is brought in large numbers from India for food, but did not thrive when put into an open enclosure, as they seemed to suffer from damp.

*Coturnix communis.*

Common quail was in the aviaries in 1880.

## RALLIDÆ.

*Erythra phoenicurus.*

The common water rail is frequently caught as it not rarely flies into houses at night attracted by the light, most so caught lived but a short time but some presented by Mr. Down lived long, and some are still living. It is common in a wild state in the garden where it often nests.

*Porphyrio Edwardsi.*

The purple coot, lived a very long time in captivity. The feet of these birds are apt to get swollen if the floor of the cage is of stone or cement.

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*P. sp.*

From China. A dull blackish coot often kept as a pet by Chinese. Three birds have been presented, but two were killed and swallowed by a Python which found its way into the cage. I failed to identify this species.

#### CHARADRIDÆ.

*Numenius phaeopus.*

The Whimbrel. A specimen sent from Egypt lived but a short time.

#### PELECANIDÆ.

*Pelecanus Philippinensis.*

The grey pelican, has lived long in captivity. One specimen was caught in the harbour.

*P. roseus.*

A single bird was sent from the museum, which had been brought in by a Chinaman who had wounded it with a full charge of shot in the back. Of this injury, it recovered completely in a few weeks and became a very fine bird. It was eventually sent to the museum again.

*P. sp.*

Two of these birds were found being carried about in a rickshaw by a Chinaman, who had missed the owner. The police sent them to the aviary where they remained for a long time, and were never claimed.

#### FREGATIDÆ.

*Attagen minor.*

This rather rare frigate bird lived long in captivity, but was finally killed by an adjutant who shared its cage and with whom it was on good terms. Some quarrel arose between the birds when no one was by and the adjutant broke the skull of the frigate bird with a blow of its beak.

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*A. sp.*

A specimen bought for five dollars from a Malay in 1904 is still alive. These birds are the easiest of the sea birds to keep in captivity.

#### SULIDÆ.

*Sula fiber.*

The brown booby lived a long time in captivity. It was found that after a time in its enclosure its feet became stiff and it could not walk. This was cured easily by allowing it at intervals to swim in the lake with a string attached to it, which it much enjoyed.

*Leptoptilus Argala.*

The Indian adjutant. One example of this bird was kept for some time.

*L. javanica.*

The common adjutant. This bird is very long-lived and one has been in captivity for over 20 years, as no one seems to know when it came. Most of the birds brought in have been wounded by shot and the old one had its wing broken and never repaired. One which was sent to the gardens appeared to be in excellent condition but refused to eat, and died in a couple of days. It was found to have received a complete charge of shot in the abdomen. The adjutants eat meat, fish, rats and any vermin.

#### ANATIDÆ.

*Cygnus alor.*

White swans were kept for many years on the lake but both of the two last disappeared and were supposed to have been stolen.

*C. atratus.*

The Australian black swan has always been kept on the lake and not rarely bred, making a large nest of rotten leaves fished up from the bottom of the lake by the cock bird which

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threw them to the hen who arranged them by stamping on them with her feet. The young birds however were often destroyed by eagles and hawks. When a pair of swans occupied the lake they would not allow a new comer there but chased it off. They often left the lake to crop the grass on the grass plots, and one while crossing the road was run over by a carriage and its leg nearly cut off. The leg had to be removed, and the swan recovered and lived for many years, and though it could no longer walk as before, it used to wriggle along on its belly on the grass plots and so get the grass it liked.

Two were killed and eaten by a large python, on two successive months. On the occasion of the second disappearance of the swan a hunt was organised and the python 18 feet long was found on the Island in the lake and shot with the swan still inside it. The head of the swan had been crushed by the jaws of the snake, but the body was entire, giving the snake a remarkable appearance reminding one of a *Plesiosaurus*.

*Dendrocygna javanica*

The whistling teal, was constantly kept on the lake and used to nest, and rear young which however were often destroyed by eagles and kites. At one time when there was a crocodile in the lake, the teal used to roost each night on the leaves of the *Victoria Regia* water lily, and frequently laid eggs there. Though the wings of these ducks were cut at first so that they could not fly they used commonly to take long flights when the feathers grew again, and they could not be recaptured, and either flew far away or fell victims to would-be sportsmen.

*Nettopus coromandelianus*.

The goose teal, used for many years to frequent the lake in the spring, but would only remain a few weeks on passage.

*Aix sponsa*.

Mandarin Duck a pair was presented to the gardens but did not live long.

*Anas boschas* var.

Three Bali ducks were for a long time on the lake having been presented by Mr. Balfour Lees. The peculiarity of this bird consists of its curious erect habit when walking. It stands as erect as a penguin, whence it is often known as the penguin duck. A number of ducks of different kinds were sent on one occasion from Egypt, of these only two arrived alive, a widgeon (*Mareca penelope*) and a tufted duck, *Fuligula cristata* both were put on the lake, but remained there but a short time, and then disappeared.

#### STRIGES.

*Ketupa javanensis* Lam.

The Fishing owl. These are very long-lived owls and those in the gardens have been there 16 or more years.

*Bubo orientalis*.

Was on view several times.

*Ninox scutulata*.

The little Hawk owl lives but a short time in captivity.

*Scops bakkamaenus*.

This and one or two other small owls were kept for a short time.

*Asio accipitrinus*.

The short-eared owl. One caught in Singapore (the only one recorded from the peninsula) lived for some time in the gardens.

#### ACCIPITRES.

*Hieratus pennatus*.

A pair of these were found fighting in the gardens and a cooly caught one under his coat. It was transferred apparently none the worse to a cage in which was a large Sea-eagle. On being fed, the little eagle left its own piece of meat and tried to rob the Sea-eagle, who resisted and caught the small bird by the wings. It was quickly rescued, and transferred to another cage where it rearranged its plumage, erected its crest

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and seemed quite happy. Next morning after being fed it fell dead. At the post mortem examination it was found that the liver and other viscera had been cut through in several places during the first fight. Though it had showed no signs of any injury till its sudden death.

*Lophiotriorchis Kieneri.*

This beautiful bird was caught attacking the pigeons of a resident who sent it to the aviary, but not long afterwards owing to the carelessness of a cooly it escaped.

*Spizaetus Horsfieldi.*

Horsfield's Eagle is common in Singapore. This fine black Eagle has often been caught but never seems to get tame, constantly dashing against the wires of its cage.

*Haliastur leucorhynchus.*

Mace's Sea Eagle. A specimen was kept for very many years, how long was not known. It showed signs of great age, and in trying to bathe in too small a tank injured its wing. The wound refused to heal and the bird had to be killed.

*H. leucogaster.*

The common Sea-Eagle, has been caught several times in the gardens and by residents and kept in the aviaries for a long period. It lives very well in captivity.

*Haliastur indus.*

Brahminy Kite. Often caught young, and has lived for many years.

*Spilornis baha.*

A common hawk has often been presented to the gardens and lived fairly long.

*Accipiter virgatus.*

The common Sparrow-hawk, has been often caught and kept. It has been captured close to the aviary pouncing on a grass lizard. It is very restless in captivity dashing against the bars of the cage and seldom lives long.

## COLUMBÆ.

*Osmotreron vernans.*

The green pigeon can never be kept long in confinement as it refuses to feed.

*Carpophaga oenea.*

The Pergam, lives well and long.

*C. insularis.*

This pretty pigeon from the Nicobars lives easily but is seldom procurable.

*C. whartoni.*

The Christians Island pigeon is difficult to keep as it refuses most kinds of food.

*C. sylvatica.*

Indian fruit Pigeon kept in 1880.

*Myristicivora bicolor.*

The Rawei. This beautiful black and white pigeon well in captivity.

*Calaenas nicobarica*

A pretty bird easily kept. It is a very quiet bird hardly moving about. At night, it seems to be more lively and some kept at the Director's house always made a kind of cooing noise at about 9 o'clock at night. It is often brought by natives to Singapore. It feeds chiefly on paddy.

*Chalcophaps indica.*

A number of these pretty pigeons were put in a cage in the aviary, but owing to the fall of a bit of board all escaped. They however settled down in the gardens where they may be often seen.

*Columbia livia.*

Rock-pigeon kept in 1880.

*Butorion capelli.*

Five of these birds were sent from Johore in 1905, but refused to feed.

*Goura coronata.*

The Victoria crowned pigeon, lives very well in captivity. Some obtained about 1875 lived for about 16 years. Of two presented later one died of some disease resembling gapes which at that time was very prevalent among domestic fowls.

*Turtur tigrina* and *Geopelia striata* are both very common in the Gardens in a wild state.

*Macropygia assimilis.*

Two examples of this brown pigeon were kept in 1880.

## LARIDÆ.

A large gull, perhaps the glaucous gull *Larus* was received with other birds from Egypt and lived for some years. Although it ate fish, it chiefly lived towards the end of its life on bananas, which it evidently much preferred.

## PHOENICOPTERI.

*Phoenicopterus roseus.*

The flamingo. Several of these birds were received from Egypt, and were put in an enclosure on the lake but they were attacked by the large water turtles, (*Trionyx*) with which the lake was infested and some being killed, the others were removed to an enclosure in the aviary, but they did not thrive and all died.

## IBIDÆ.

*Ibis melanocephalus.*

The black-headed Ibis, was presented in 1903, it was in young plumage but shortly developed its white feathers and dusky head. It is still alive.



## ARDEIDÆ.

*Ardea sumatrana.*

The large blue heron two of these birds have lived for a very long time in the Gardens, one about 20 years. The second about 15. This latter was caught young at Changi and brought up by Malays. It used to go to fish along the sea-coast every day and return to the house at night. This heron makes a strange booming noise constantly, holding its head erect and dilating its throat. The female has laid eggs several times in the aviaries but the rats have usually destroyed them.

*Bubulons coromandus.*

The Cattle egret lives well and long in captivity. One has been kept since 1892, another was obtained later. I have seen them kept as pets by the Akits a race of Sumatrans who live on rafts in the Siak river, and catch fish. This bird produces its beautiful egret feathers once a year in spring and they can be easily removed when ready to shed without injury to the bird. The two birds were at one time put into the same cage but fought viciously, one receiving some damage to its head.

## CICONIDÆ.

*Dissemurus episcopus.*

This handsome stork was represented by two young birds sent from Pahang which lived and grew very well in confinement till they attained their full coloring. They were both killed by a curious accident. A swarm of bees took up its abode in the bushes close to the aviary, and as they were troublesome, the coolies attempted to destroy the comb. The bees flew about the aviary in swarms but none of the birds took any notice of them except the storks which snapped at them, and some of the bees getting into their mouths stung them in the throat and both died the following day.

*Nycterinia Jabiru.*

The Jabiru two of these fine birds were presented in 1899 and lived for some years when one died. The other is still living.

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Two white Indian storks were presented in 1901, one of which had its beak so bent by some accident that it could not feed itself, and had to be fed by hand. A temporarily employed keeper unaware of this did not do so and the bird eventually died. The other is still living.

## RATITÆ.

*Dromaeus Novæ-Hollandiæ.*

The Emu. These birds were kept from 1875 onwards. One pair in the Gardens bred in 1892 and the female laid one egg, unfortunately broken by accident by the male. Not long afterwards the male accidentally got his neck caught in the woodwork of his cage and though released quickly died in a few minutes perhaps from shock. The female was sold some years later.

*Casuaris uniappendiculatus.*

A female of this rare Ceram Cassowary was presented in 1891, and died in 1905 apparently of old age. It lived on bread, sweet-potatoes and the cobs of maize after the squirrels had eaten the grains off them.

*C. sp.*

Five young birds from New Guinea were purchased some years ago, and kept in an enclosure, but had to be separated as they fought. They were eventually sold.

## REPTILES.

*Trionyx cartilagineus.*

The water turtle, caught in the lake lived many years. It is not only carnivorous, living on fish and frogs, but eats also paddy and boiled rice made up into balls. They evidently breed in the lake, as they became abundant at one time and killed the flamingos by biting their legs. They were caught by a large wire trap with a falling door baited with dead birds.

*Testudo emys.*

The large Malay land tortoise. One was caught by myself in Johor, another in the Dindings and a third was presented

to the Gardens. They ate kang kong (*Ipomea aquatica*). They lived long and were eventually sold.

*Testudo amboinensis*.

The common box-tortoise, chiefly specimen, caught in Singapore, lived well eating kang-kong. These animals used not rarely to lay eggs, 2 at a time, very large for the size of the animal, oblong white with very hard thick shells. They deposited them in a corner of the enclosure and partly covered them with sand. None were ever hatched.

*Daimonia subtrijuga*.

The Siamese tortoise presented by Capt. Flower, lived but a short time and would not feed. It was discovered later that it ate exclusively a blue mussel, unprocurable in Singapore.

*Geomyda spinosa* Gray.

The red jungle tortoise, common on Bukit Timah, lived easily in captivity. It eats leaves of kang kong etc. I have found it eating agarics in the forests.

*Cyclemys platynota* Gray.

The flatbacked tortoise, caught in Singapore, is a dull dirty looking tortoise which spends almost all its time under the water.

*Chelone imbricata*.

The Hawk's bill turtle. A number of small ones were presented to the gardens, but lived a short time only, as apparently the fresh water was not suitable for them and their feet became diseased. A larger one was obtained later, which its former owner said refused food of all kinds. It was found that it could not eat whole fish but if they were cut into bits it ate them. It lived for some months only, swimming very briskly about its tank but it appears these animals require sea water.

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*Crocodilus porosus.*

The common crocodile, is easily procured and easily kept. One brought to the gardens and left tied up for a short time managed to escape into the lake where it grew to a length of 6 or 7 feet, and became troublesome, destroying the waterfowl and eventually commenced trying to seize the coolies drawing water. All kinds of methods were resorted to destroy it. It was twice wounded with shot, and both arsenic and strychnine were administered to it in chickens. Attempts were made to net it, and to catch it with hooks and bamboo spikes fastened to chickens and also to destroy it with dynamite. All proved unsuccessful, and finally the lake was drained nearly dry and attempts made to find and shoot or spear it, but it concealed itself in the mud, and during the night escaped from the lake and was never seen or heard of again. Another was kept in a tank for a considerable time, and became tame enough to come to the side whenever it was called, but was always vicious when the keeper entered the enclosure. On one occasion a visitor thrust a stick into its mouth which broke and a portion lodged transversely across its throat. This was with some difficulty extracted, but caused an abscess behind the base of the ramus of the jaw which penetrated through causing a large hole from the outside into its throat. The animal refused food for a few days, and the wound commenced to heal and in a surprizingly short time the damage was quite repaired. The crocodile lived till it was sold in 1904.

*Hydrosaurus salvator.*

The Biawak or Monitor has often been kept. It is common in Singapore, and one was actually caught in a godown in the town, having apparently come up a drain from the river. It was in a very poor starved condition. This lizard attains a very large size and is destructive to poultry. A large one living near the lake killed some Siamese teal and a black swan in 1888 before it was destroyed. One of no great size which had escaped from a cage nearly caused the death of the cooly who recaptured it. It had climbed up a tree, and he ascended the tree and noosed it with a string noose on a stick, but when he

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jerked it from its hold it fell and as it did so struck him with its sharp claws on the ankle, cutting an artery from which he nearly bled to death. The Biawak eats meat, fish, frogs, rats, etc., when given a rat it shakes it violently like a dog, and then crushes the body from head to tail in its jaws till all the bones are broken when it swallows it whole, head first, when defending itself it slashes about with its long wiry tail, inflicting sharp blows. In captivity the animal constantly pushes its nose against the wire netting so that after being in confinement for some time most of them have the skin of the nose rubbed away. It much enjoys lying in a water tank, though it does very well without one. This animal lays its eggs in holes of no great depth in sandy places. I have seen quite a number so engaged.

#### OPHIDIL

Though many kinds of the smaller snakes are abundant in Singapore and often caught in or near the gardens, few have been kept for any length of time in the aviaries, on account of the absence of a proper house for them. Glass boxes such as are used in most menageries are very hot, unless put in a properly cool house, and feeding these small snakes requires a supply of frogs and mice which would entail an extra cooly to catch them. Some of them have been kept for a short time after capture and later sent to the Museum or given away to collectors.

The following were on view from time to time.

*Dipsadomorphus dendrophilus.*

*D. Cynodon.*

*Chrysopelaea ornata.*

*Dryophis prasina.*

*Bungarus fasciatus.*

This poisonous snake was kept for some time. It is very handsome with its black and yellow rings, but very vicious readily striking at any one. It has a habit of rapidly beating

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its tail on the ground when annoyed, making a rattling sound, apparently as a warning. *Callophis gracilis*. Also a poisonous snake does the same. The specimen exhibited came from Pahang.

*Naja tripudians*.

The black cobra a common snake in the gardens has often been exhibited, but seldom lives long in captivity. Many possibly were injured in capture. It does not feed very readily in captivity, but will eat mice and small birds, and frogs. Its habit of spitting its venom into the eyes of people approaching too near it makes it a dangerous animal to keep in a close wire cage, and it seemed to suffer from heat in a glass box.

*N. bungarus*.

The Hamadryad. Small specimens caught in the gardens were exhibited on several occasions. One was caught eating a small python, and transferred to a cage but it refused to continue its meal, and others obtained refused to feed though snakes, eggs, mice, frogs and other food was offered.

This snake is now apparently rare in Singapore, none have been brought in for a long time. The last I saw was a moderately large one brought in a box by two little Malay boys who had caught it near the Barracks. They had no idea it was a dangerous snake.

*Lachesis Wagleri*.

The green viper. This has often been exhibited being a common and handsome snake, beautifully marked with black, yellow, green and prussian blue. It lives well in captivity and also breeds, producing 5 to 9 young at a time. As of course is well known to most people, the young are born free and not deposited in the form of eggs. The green viper eats rats of quite large size, birds, lizards and frogs. There is always a little difficulty in rearing young ones, as they require very small lizards for their food which are difficult to catch but some have been brought up. It is a quiet snake lying quite still on a branch for hours together. On two occasions coolies

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in the gardens have been bitten by young green vipers which had fallen from a tree and been stepped on. The bite is not fatal but gives a good deal of pain for a few hours, the inflammation being about as bad as that of a scorpion sting. A native who possessed a large pariah dog, allowed a very large fresh-caught green viper to bite the dog on the thigh. A dog uttered a shriek and ran away, returning quite well in about two hours and none the worse. A sparrow was put into the cage of a green viper and flew about taking no notice of the snake, till the viper suddenly struck it on the thigh, and the blood immediately flowed. The bird flew away to the end of the cage but did not seem at all affected by the poison. The snake followed it up and struck at it again seizing its head in its mouth and crushing it at once. As had the bird been free it could easily have flown out of the snakes reach before the snake caught it again, the action of the poison does not appear to be of much value to the reptile.

*Python curtus.*

The little red python, a short thick red and grey snake formerly considered very rare is not at all uncommon in the forests of Bukit Timah, and has often been exhibited. It is a sluggish snake unless it means to strike which it does with lightning like rapidity. It feeds on rats and mice and will take milk occasionally. It only requires feeding once a month as a rule.

*Python reticulatus.*

The Python is one of the commonest snakes in Singapore. And specimens of every size up to 26 feet long have been constantly exhibited in the aviaries. Very large ones have also been seen and killed also in a wild state in the gardens, and small one have occasionally found their way into the aviary cages and devoured some of the birds, and being afterwards unable to escape by the small hole by which they entered were captured on the following morning. Like many snakes the python is nocturnal remaining quiet all day and going out in search of food at night. Young pythons eat rats and birds, and small to middle sized pythons are common visitors

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to fowl houses where they often kill more fowls than they eat. One of about 12 or 15 feet brought to the gardens for sale was said to contain no less than 12 ducks. Large pythons in the forest live on deer, pigs and other game of that kind. Small sized pythons usually feed once a month. The large ones over 20 feet long, usually once in from six to nine months. One which was about 22 feet long, not long after it was brought in passed the remains of a deer. It fed again some time later on three chickens, and remained without food for six months when it passed the remains of the fowls and then ate a good sized pariah dog, which lasted it for 9 months. There is very little difficulty in inducing the python to live on dead food, though naturally they kill their own prey. At first however they not rarely refuse a dead chicken or rat. Live animals such as fowls if put into a cage with a python are never alarmed at it, at least until it moves about; the fowls perch on the snake and clean their feathers, the rats burrow down among the coils of the snake and seem quite contented. The mythical fascination of the reptile does not exist except in poetical imagination. If the python is hungry—he usually stretches himself, looks fixedly at his prey which take no notice whatever of them. There is a rapid motion of the head and fore part of the snake, so rapid that it is impossible to see what happens, and the prey is encircled by a coil and a half of the snake's neck with its head firmly held and crushed in its mouth. The stroke is one of the most rapid things I have seen, and it is impossible for the prey to be killed quicker in any way.

If the food is dead he examines it carefully all over and taking it in his coils pushes it head first into his mouth. All snakes I believe swallow the prey head first, and I found once in a wood in Selangor a curious frog so marked that its tail end looked like the head. So that if a snake came and attempted to seize the frog by what was apparently its head, the frog at one spring would be out of the way. The python, especially large ones, only feed at night, and they shew signs of hunger by restlessly moving about the cage. They much object to being looked at or annoyed during their slow swallowing of the prey, and if disturbed will reject the food even if partially swallowed



and will not feed again. Almost any snakes of any size will eat smaller ones. I have seen *Doliophis trivirgatus* eating a small brown snake, and the python will also occasionally do the same.

On one occasion there were five fair sized pythons put into one large cage. The biggest, a very thick snake, was about 25 feet long, the next in size seventeen feet, the others 12 to 15 feet. But during the first two nights the big snake ate the three smaller snakes, and had a try at the other who beat it off though it was slightly wounded. After this the two snakes lived at opposite ends of the cage. The large one was particularly vicious and it was unsafe for the keeper to go into its cage.

The python requires to be supplied with some arrangement for bathing, as it is very fond of water and suffers much if kept in too hot and dry a place, especially when it is changing its skin a dangerous time for any snake.

As a rule in spite of their great strength and weight these big snakes are easy to handle as in a struggle they soon get tired. One day one 21 feet long escaped from its cage and took refuge in a wood. As a little rain had fallen it was easily tracked by the broad bar across the road which it had made when passing. It was noosed by a running noose by one of the coolies and of course lashed out and fought furiously for a few minutes, but the other coolies about 20 in number seized it by the tail and body in a row and it was carried along, in spite of its struggles. It showed great ingenuity in getting a kink of its body against a tree and pulling on that, but eventually became quieter and was quite exhausted by the time it was brought to its cage. However it soon recovered, and lived for some time being finally killed by one of those pests to a menagerie, the man who cannot see an animal in a cage however tame without jobbing it with a stick. The man was arrested and fined, but the snake never recovered from the comparatively slight wounds it received. In noosing a snake the captor must wait till it raises its head, which it will generally do when threatened, and he must not miss slipping the noose over its head at the right moment or the snake will understand and dodge

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the noose afterwards every time. When noosed and the snake begins to fight, care must be taken not to get the noose too tight, but play the snake like a fish if it fights much, as it soon gives up. A python can bite severely and its strong recurved teeth make a very bad wound, especially as it will not let go. Two Malays were carrying one through the streets and the one behind who was carrying the head end dropped it, it swung downwards and seized the calf of the leg of the Malay in front, lacerating it severely. I believe the snake's head had to be cut off before the Malay could be released.

Many years ago a python in the cage at the gardens, attacked its keeper. He was an European and went into the cage in a state of intoxication to show off the snake. The snake about 15 feet long, was annoyed and seized him, getting a coil or two round him. Assistance was procured and the snake was got off, but the man was marked all over the body with bruises as if he had been beaten with a thick stick. Had the snake been really intending to crush him, doubtless he would have had some ribs broken at least.

The python has never bred in captivity in the gardens, but one new caught one laid a large number of eggs on one occasion, now of which however hatched.

The flesh of the python is eaten by Chinese, and oil from the fat is in much request by Malays as a medicine for rheumatism.

#### REPTILES OCCURRING IN A WILD STATE IN THE GARDEN.

The following reptiles have been seen in the gardens in a wild state from time to time.

##### TORTOISES.

- Trionyx cartilagineus.* In the lakes.  
*Cyclemys platynota.* In the lakes once.  
*Testudo ambomensis.* Swamp economic garden.

##### LIZARDS.

*Aelurbscalabotus felinus.*

Rare, in the economic gardens.

*Gehyra mutilata.*

Common in houses.

*Gecko monarchus.*

Common in aviaries.

*Draco volans.*

At certain times the flying lizards came to the gardens in numbers, and may be seen flying from tree to tree in the hot part of the day. They seem to have regular routes across the gardens, and a few days after their appearance they disappear again, and none are to be seen for some months.

*Calotes cristatellus.*

The chamooleon lizard is very common.

*Varanus salvator.*

Not seen of late years, though still common in Singapore.

*Mabuia multifasciata.*

The common scinc, abundant.

#### SNAKES.

*Typhlops braminus.*

The Burrowing snake not rare.

*Python reticulatus.*

Common.

*Cylindrophus rufus.*

Common.

*Chersydrus granulatus.*

A dirty looking aquatic snake, found entering the garden (1898) after a spell of very hot weather apparently seeking water.

*Tropidonotus piscator.*

Occasionally in wet spots.

*Macropisthodon rhodomelas.*

A little red snake very common in the grass.

*Coluber melanurus.*

Not rare.

*Coluber oxycephalus.*

Occasionally.

*Dendrolaptes caudolineatus.*

Very common.

*Simotes octolineatus.*

Common.

*S. signatus.*

Under tiles near the office 1898.

*Homalopsis buccata.*

In mud. Economic gardens.

*Dryophis prasinus.*

Very common tree snake.

*Chryopelea ornata.*

Common.

*Naia tripudians.*

Common.

*N. bungarus.*

Now rare.

*Callophis gracilis.*

Not very common.

*Doliophis bivirgatus.*

Rare.

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*Lachesis Wagleri.*

Common.

BATRACHIANS.

*Rana macrodon.*

Formerly common but much sought for food by the Klings.

*R. erythroca.*

Common in the ponds.

*R. labialis.*

Common do.

*R. leucomystax.*

Common depositing its spawn in the waterbutts

*R. limnocharis.*

In the ponds.

*Callula pulchra.*

The Bullfrog, very common.

*Bufo melanostictus.*

The common Toad very abundant.

## AN INDEX

In Romanised Hokkien and Cantonese

Compiled by Mr. Tan Kee Soon, of the Chinese Protectorate,  
and

Revised by Messrs. A. W. Bailey and F. M. Baddeley,  
to

### “The Chinese Names of Streets and Places in Singapore.”

Published by Mr. H. W. Firmstone in Journal No. 42

*Note.* In this Index ‘ô’ has approximately the sound of  
‘o’ in ‘go,’ ‘o’ that of ‘aw’ in ‘law.’

#### Hokkien.

A-bit-no hang Samban Street	Au-kang Serangoon Road
A-phien kong-si Cecil Street	Ban-Heng bi-kau Beach Road
Ang kiô Thomson Road Bridge	Ban-hin koi Malacca Street
Ang-kiô thau Thomson Road	Be-chhia koi Upper Circular Road
Ang-mo hue-hng Botanical Gardens	Be-chhia lo-bue Bukit Timah
Ang-mo thiong Kampong Java Road	Bih-lang koi Lorong Teluk
Ang-teng lo-thau Collyer Quay	Bo moa <sup>a</sup> -iu koi Albert Street
Au-be-chhia lo Victoria Street	Bu-khô kang Serimbun
Au-be-chhia lo Chiong-kun ia kiong Johore Road	But-lok Bedoh

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*Hokkien.—Continued.*

Chan-chu kang Selitar	Chioh-sua" Pulau Obin
Chap-peh keng Boat Quay	Chiu-long lai Cornwall Street
Chap-peh-keng au Circular Road	Beng Hoon Road Havelock Road
Chap-sa" hang Boat Quay	Chiu-long pi" Cheang Wan Seng Rd.
Chap-sa" hang au Circular Road	Cho-su-kiong khau Trass Street
Chhai-hng lai Lavender Street	Gopeng Street
Chhai-tng au Bencoolen Street	Chua-chu kang Chua Chu Kang
Chhat-bok koi South Bridge Road	Chui-bo lai Alexandra Road
Chhau-chhi New Market Road	Chui-chhu bue Boat Quay
Park Road	Chui-lan teng Club Street
Chhiang thai koi Upper Hokkien Street	Ann Siang Hill
Chhiang thai koi e chat Hokkien Street	Chui-sien mng North Bridge Road
Chiang-gi Changi	Chui-sien-mng be-liau hang- a lai Bain Court
Chin-chu sua" Pearl's Hill Road	Chui-tham thau Thomson Road Reser- voir.
Chin Heng toa chhu North Boat Quay	Ga-lan kuan Land Office
Chin Seng chhu-pi" Coleman Street	Gi-hin kong-si China Street
Chin Seng sua" khau Enggor Street	Gi-hok koi Carpenter Street
Krian Street	Gi-hök kong-si au Clarke Street
Chin sui koi Chin Swee Road	Gi-lap Siglap

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CHINESE NAMES OF STREETS IN SINGAPORE. 197

*Hokkien.—Continued.*

Gi-oh khau Amoy Street	Gu-chhia-chui mata chhu Kreta Ayer Police Station
Gia-kang ma-ti Blakang Mati	Gu-chhia-chui toa be-chhia lo South Bridge Road
Go-cho bue Crawford Road	Gu-kak hang Cheng Cheek Street
Go-cho lut Rochor Road	Gu-long lai Blanco Court
Go-cho lut bô-bue hang Bernard Street	Guan Sun koi Teluk Ayer Street
Carine Street	Hai-ki" ang-mo toa-oh pi" Bras Basah Road
Farquhar Street	Hai-ki" thih tiau-kiô Cavenagh Bridge
Go-cho ma-ta chhu Rochor Police Station	Hai-kuan Marine Office
Go-cho pa-sat Crawford Road	Hai-kuan ma-ta chhu Marine Police Station
Go-cho toa kong-si Lavender Street	Hai-lam hue-kuan au Hylam Street
Go-cho toa-peh-kong Balestier Road	Hai-lam hue-kuan hang Malabar Street
Go-tai thien-king Church Street	Hai-lam hue-kuan pi" Middle Road
Gu-chhia-chui New Bridge Road	Hai-lam koi Hylam Street
Gu-chhia-chui hi-hng au Almeida Street	Hai-lam sua" Thomson Road
Gu-chhia-chui hi-hng koi Smith Street	Hai-san koi Upper Cross Street
Gu-chhia-chui hi-hng koi cheng koi Sago Street	Hai-san koi ang-mo oh au Mosque Street
Gu-chhia-chui hue"-koi Tringganu Street	Heng-Liong koi Robinson Road
Gu-chhia-chui kia Craig Road	Hi-kuan koi Carpenter Street
Duxton Road	
Neil Road	



198 CHINESE NAMES OF STREETS IN SINGAPORE

*Hokkien.—Continued.*

Hiap Hoat koi D'Almeida Street	Hue-long koi Sambawa Road
Hiok-Ni sin chhu au Coleman Street	Hue-sia" Kallang Road
Ho Ban Ni" au koi Sago Lane	I-sio" koi Pekin Street
Ho-lan-se le-pai-tng pi" Bras Basah Road	It-ho ma-ta chhu Central Police Station
Hok-im-kuan au-hue"-hang Cashin Street	Ji-chap keng Beach Road
Hok-im-kuan au-koi Bain Street	Jalan Sultan
Hok Lam koi Hock Lam Street	Ji-ong ge-mng Colonial Secretary's Office
Hong Hin lo Kim Seng Road	Ji-ong sua"-kha Niven Road
Hong Lim pa-sat. Havelock Road.	Ji-ongsua"-kha ti tek-kha khi Wilkie Road
Hu-liau lai Kampong Martin	Sophia Road
Huan-a kam-kong lai Haji Lane	Jiau-a koi Arab Street
Huan-a thiong-cheng be-liau Jalan Kubor	Jiau-a koi kam-kong lai Haji Lane
Huan-a thiong-cheng thau- tiau Jalan Pisang	Jiau-a phah-thang koi Little Cross Street
Huan-a thiong-cheng tiong tiau Jalan Kledek	Jit-pun koi Malay Street
Hue-chhia thau Singapore R a i l w a y Station	Ka-lan-ji Kranji
Hue-hng au Holland Road	Ka-lang kiô Kallang Road
Hue-hng kak Commercial Square	Kallang Bridge
	Ka-lang lut Kallang Road
	Ka-lek lut Craig Road

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CHINESE NAMES OF STREETS IN SINGAPORE 199

*Hokkien.—Continued.*

Ka-seng koi	Kam-kong ma-lak-kah pun-
Cashin Street	sò chhia tui bin koi
Ka-tong	Kerr Street
Tanjong Katong	Kam-kong ma-lak-kah sam-
Kam-kong ka-la-bu phau-be-	pa-yang teng au
po hang	Keng Cheow Street
Buffalo Road	Kam-kong ma-lak-kah sam-
Kam-kong ka-poh	pa-yang teng hang
Dickson Road	Omar Road
Weld Road	Kam-kong ma-lak-kah sin
Clive Street	pasat koi
Kam-kong ka-poh hue" (or	New Market Road
toa) koi	Kam-kong ma-lak-kah Tan
Dunlop Street	Seng-ong au
Kam-kong ka-poh thai-tu	Fisher Street
long	Kam-kong sai-kong ang-mo
Jalan Besar	pah thih
Kam-kong ma-lak-kah bue-	Merbau Road
tiau koi	Kam-kong sai-kong khi-ki"
Solomon Street	Tampinis Road
Kam-kong ma-lak-kah chha-	Kam-kong sai-kong pah-
chun thau	thih au
Hong Lim Quay	Tampinis Road
Kam-kong ma-lak-kah hai-	Kang-kia"
ki"	Chua Chu Kang
Hong Lim Quay.	Kang-po-kek
Kam-Kong ma-lak-kah Heng	Municipal Office
Chhun hi hng tui-bin koi	Kat-ti-li hang-a lai
Angus Street	Guthrie Lane
Kam-kong ma-lak-kah hi hng	Kau-a ki"
koi	North Canal Road
Cumming Street	Kek-sng cheng
Kam-kong ma-lak-kah kang-	North Boat Quay
a ki"	Keng-chiau koi
Canal Road	Keng Cheow Street
Kam-kong ma-lak-kah kió	Kha-khu keng
Read Bridge	Gao!

200 CHINESE NAMES OF STREETS IN SINGAPORE.

*Hokkien.—Continued.*

Khe-ki <sup>a</sup>	Lam-in-tang-tho-kho kak-thau
Boat Quay	De Souza Street
Khoi-ki <sup>a</sup> hue <sup>a</sup> -koi-a	Lau-chi hang
Canton Street	Minto Road
Kiau-keng khau	Lau-chi kha
China Street	Alexandra Road
Kim-lan biô	Lau-chui khe <sup>a</sup>
Narcis Street	Stamford Road
Kit-ling-a le pai au	Lau-ia-keng khau
Pagoda Street	Phillip Street
Kit-ling-a le-pai-tng cheng	Lau kha-khu-keng khau
Muar Road	Bras Basah Road
Kit-ling biô au	Lau pa-sat khau
Pagoda Street	Malacca Street
Kit-ling biô pi <sup>a</sup>	Market Street
Mosque Street	Lau pa-sat ma-ta-chhu au
Kit-ling le-pai-tng cheng Chi-ang-kun-ia pi <sup>a</sup>	Cecil Street
Ophir Road	Lau toa-peh-kong hit-tiau
Kong-chioh-a	Anson Road
Canal Road	Leong-thau che <sup>a</sup>
Havelock Road	River Valley Road
Kong-chioh-a chiu-long lai	Lô-kun chhu
Cheang Lim Hien Street	General Hospital
Chin Swee Road	Lô-ma pan-jiang
Cheang Hong Lim Lane	Rochor Road
Kong-chioh-a chiu long thau	Lô-ma pan-jiang hang
Tong Watt Road	Fish Court
Kong-chioh hi-hng au-koi	Lô-ma pan-jiang toa-be-chhia lo
Lim Eng Bee Lane	North Bridge Road
Ku ba-li	Ma-cho-kiang au
Shaik Madersah Lane	Amoy Street
Kua <sup>a</sup> -chha tiam koi	Ma-cho-kiang hi-thai au
Macao Street	Stanley Street
Kui-lan hang	Ma-cho-kiang pi <sup>a</sup>
Tan Quee Lan Street	Japan Street

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CHINESE NAMES OF STREETS IN SINGAPORE. 201

*Hokkien.—Continued.*

Ma-kau koi Hong Kong Street	Ong-hu khau Sultan Gate
Man-li Mandi	Ong-hu khut-thau hang Padang Alley
Mang-ku-lu Middle Road	Ong-ke pe <sup>n</sup> -chhu General Hospital
Mang-ku-lu chhai-tng koi Waterloo Street	Ong-ke sua <sup>n</sup> Fort Canning Hill
Mang-kù-lu chhia-kuan Middle Road	Ong-ke sua <sup>n</sup> au Tank Road
Mang-ku-lu kang-a ki <sup>n</sup> Rochor Canal Road	Ong-ke sua <sup>n</sup> -kha Hill Street
Mang-ku-lu sau-lo koi Prinsep Street	Ong-ke sua <sup>n</sup> -kha be-liau pi <sup>n</sup> Damar Road
Mang-ku-lu Seng-ong-kong Albert Street	Ong-ke sua <sup>n</sup> -kha kong-pang-ge pah chioh Damar Road
Mang-ku-lu chhio <sup>n</sup> pi <sup>n</sup> Middle Road	Ong-ke sua <sup>n</sup> -kha thih chhio <sup>n</sup> Ord Road
Mang-ku-lu toa lo Bencoolen Street	Ong-ke sua <sup>n</sup> -kha thih- chhio <sup>n</sup> pi <sup>n</sup> Read Street
Meng-sun kang Morai	Ong-ke sua <sup>n</sup> -kha thih-long pi <sup>n</sup> -thau Tan Tye Place
Mi <sup>n</sup> -kua <sup>n</sup> keng Thomson Road	Pa-sò bué Cantonment Road
Mua <sup>n</sup> -lut Muar Road	Peh keng-a Cheang Hong Lim St.
Na <sup>n</sup> -tau hang Rangoon Road	Peh sua-pu Buggis Street
Nam Seng hue-hng pi <sup>n</sup> Tan Tok Seng's Hospital	Peh-thah koi Java Road
O-chhai hng Tiong Bahru	Peh-thah koi au-koi Palembang Road
O-kió Balestier Road	
Ong-hu hang Pahang Street	

202 CHINESE NAMES OF STREETS IN SINGAPORE

*Hokkien.—Continued.*

Pek-ki lin	Sang-che <sup>n</sup> lo
Chinese Protectorate	High Street
Pek-ki-lin tui-bin hi-hng	Sang-chiau
koi	Chancery Lane
Wayang Street	Sang khau tia <sup>n</sup>
Phah-tang koi	Alexandra Road
Sultan Road	Sang-leng
Phau-be po chhau chhi	Ulu Pandan
Kerbau Road	Sek-a-ni koi
Phau-be po hang	Manila Street
Belilios Road	Queen Street
Roberts Lane	Sek-a-ni le-pai-tng pi'
Kinta Road	Middle Road
Birch Road	Sek-a-ni le pai tng tui-bin
Kerbau Lane	hang
Phong-hut	Bain Street
Ponggol	Holloway Lane
Phue-kuan	Seng Pò toa-chhu au
Post Office	Armenian Street
Pik-ki-lin au	Si-pai po
Canal Road	Outram Road
Po-le	Si-pai po ma-ta chhu
Magistracy	Sepoy Lines Police Sta-
Po-le-au kang-a ki <sup>n</sup>	tion
South Canal Road	Siau-lang keng
Po-le-au Sun Hong koi	Lunatic Asylum
George Street	Sin ba-li
Po-le-au te-ji tiau koi	Bali Lane
Synagogue Street	Sin kam-kong
Po-le pi <sup>n</sup>	Kampong Bahru
Macao Street	Sin koi-a khau
Upper Macao Street	Merchant Road
Pun-sò chhia	Sin koi-a khau hi-hng koi
Canal Road	Merchant Road
Sai-ek-a-lui koi thai-tu long	Sin koi thau
pi <sup>n</sup>	Teo Chew Street
Syed Alwee Road	

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CHINESE NAMES OF STREETS IN SINGAPORE 203

*Hokkien.—Continued.*

Sin pa-sat pi <sup>n</sup>	Sit-lat mng
Ellenborough Street	Teluk Blangah
Fish Street	Keppel Harbour
Sin pa-sat ma-ta chhu	Sua <sup>n</sup> -a teng
New Bridge Road	Kling Street
Police Station	Sua <sup>n</sup> -kia teng
Sin pa-sat ma-ta chhu	Kling Street
cheng	Tai-jin ge
New Bridge Road	Chinese Protectorate
Sin pa-sat sin koi	Tan-jiong gu
Chin Hin Street	Tanjong Rhu
Sin sua <sup>n</sup>	Tan-jiong gu-thau
Kampong Bahru	Tanjong Gol
Siò pan-lan	Tan-jiong pa-kat
Pandan Kechil	Tanjong Pagar Road
Siò-pò ang-mo pahh-thih	Tan-jiong pa-kat Chin Seng
Middle Road	sua <sup>n</sup> -khau
Siò-pò hai-ki <sup>n</sup>	Bernam Street
Beach Road	Tan-jiong pa-kat Seng-ong
Siò-pò hue-chhia lo	kiang pi <sup>n</sup>
North Bridge Road	Wallich Street
Siò-pò pahh-chioh koi	Tan-seng-ong koi
Java Road	Magazine Road
Siò-pò pahh-thih koi	Tang-leng ma-ta chhu
Sultan Gate	Orchard Road Police
Siò-pò sam-pai yang teng	Station
hang	Tang-leng ma-ta-chhu au
Jeddah Street	Paterson Road
Siò-pò sin-koi	Tang-leng ma-ta-chhu tui-
Fraser Street	bin
Siò-pò thih-chhio <sup>n</sup> au-koi	Scott's Road
Holloway Lane	Tang-leng pa-sat kol
Siok-Ui sua <sup>n</sup> -teng	Orchard Road
Chin Swee Road	Tang-leng pa-sat tui-bin hang
Chhoa Lam Street	Killiney Road
Siong-pek koi	Tang-leng peng-pang
Nankin Street	The Barrack (Tanglin)

204 CHINESE NAMES OF STREETS IN SINGAPORE.

*Hokkien.—Continued.*

Tau-hu koi Chin Chew Street	Thih pa-sat Gek-lu-ma hang Garden Street
Upper Chin Chew Street	Thih pa-sat khau Beach Road
Tek-kha Selegie Road	Thih pa-sat khut-thau hang Beach Lane
Tek-kha chui-ti Mackenzie Road	Thih-pa-sat ma-ta-chhu tui- bin hang
Tek-kha kang-a ki <sup>n</sup> Bukit Timah Road	Clyde Street
Tek-kha khut-thau hang Annamallai Chitty Lane	Thih pa-sat tui-bin hang Garden Street
Tek-kha ma-ta-chhu Kandang Kerbau Sta- tion	Jeddah Street
Tek-kha ma-ta-chhu tui-bin gu-long pi <sup>n</sup> koi Sungei Road	Thih thiau Kling Street
Tek-kha so-si-tek hong Short Street	Thih tiau-kiô Elgin Bridge
Tek-kha tit-koi Selegie Road	Tho-kho au Battery Road
Tek-kha tng-tiam hit-tiau Selegie Road	Collyer Quay
Tek-kha tng-tiam tui-bin te- sa <sup>n</sup> -tiau Annamalai Chitty Lane	Tho-kho bue Flint Street
Tek-kha tng-tiam tui-bin te- ji-tiau Nagapa Lane	Tho-kho hue-hng Raffles Place
Tek-kha tng-tiam tui-bin thau-tiau hang Veerappa Chitty Lane	Tho-kho' khau Commercial Square
Thai-tu long khau Pulau Saigon	Tho-kho le-long-kwan D'Almeida Street
Thia <sup>n</sup> -kha keng Tan Tok Seng's Hospital	Tiam-pang lo-thau Boat Quay
	Tiau-kiô thau Hill Street
	Tiau-kiô thau bi-kau North Boat Quay
	Ti-kong Pulau Tekong
	Tio <sup>n</sup> -sian-su pi <sup>n</sup> Jalan Klapa

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*Hokkien.—Continued.*

Tiong koi	Toa-ong sua"
Market Street	Government Hill
Tit-lok a-ek bue-tiau koi	Toa-ong sua" au-koi
Mc Cullum Street	Cavenagh Road
Tit-lok a-ek kit-leng biô pi"	Toa pa-iô
Japan Street	Wayang Satu
Tng-lang leng-su-hu hit-tiau	Toa pan-lan
Japan Street	Pandan Besar
Toa-che" kha	Toa-pô sin koi-a
Kampong Glam Beach	Chin Hin Street
Toa-kau-thau-e ge-mng	Toa Tang-leng
Police Office	Tanglin
Toa kok	Tok-sun lut
Supreme Court	Duxton Road
Toa-kok-cheng chhau-po	Tsô be-chhia koi
Esplanade	Hokkien Street
Toa-kok koi	Tuan Kat tho-kho au-bue
High Street	Bonham Street
Toa-mng lai	Tui-ku-pa-sat khi tan-jiong
Ramah Street	pa-kat hai-ki" hit-tiau
Club Street	Anson Road
Toa-mng-lai hang-a lai	Ua"-tiam khau
Mohamed Ali Lane	Clyde Terrace
Toa-ong chhu	Yu-long
Government House	Jurong



206 CHINESE NAMES OF STREETS IN SINGAPORE

**Cantonese.**

Chan chü shan Pearl's Hill	Fan chai mei ma-ta liu pin Spring Street
Chan hing tai uk North Boat Quay	Fat lan sai lai pai thong pin Bras Basah Road
Chan shing shan hau Raub Street Enggor Street Krian Street	Fo chhe thau or cham Singapore Railway Sta- tion
Chan shing tai uk fong pin Coleman Street	Fuk nam kai Hock Lam Street
Chan sui kai Chin Swee Road	Fuk Yam kun hau kai Bain Street
Chheung sin sz fong pin Jalan Klapa	Fuk yam kun hau pin wang hong Cashin Street
Chha tin ma thau Keppel Harbour	Fung hing lô Kim Seng Road
Chha tin ma thau tui min Pulau Brani	Ha mun kai Amoy Street
Chhan shing wong kai Magazine Road	Hau kong Serangoon Road
Chhat muk kai South Bridge Road	Hau ma chhe lô tseung kuan ye miu Johor Road
Chheung thai kai Upper Hokkien Street	Hing Lung kai Robinson Road
Chheung thai kai ha kai Hokkien Street	Hip Fat kai D'Almeida Street
Chhiu chau kai Teochew Street	Ho man nin hau pin kai Sago Lane
Chhiu chau san kai Chin Hin Street	Hoi kuan ma-ta liu Marine Police Station
Fan chai mei Banda Street	Hoi nam kai Hylam Street
	Hoi nam wui kwun hoi pin kai Beach Road

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CHINESE NAMES OF STREETS IN SINGAPORE 207

*Cantonese.—Continued.*

Hoi nam wui kwun hong Malabar Street	Kam pong ka pok thong chü fong Jalan Besar
Hoi nam wui kwun pin Middle Road	Kam pong ka pok wang (or tai) kai Dunlop Street
Hoi pin thit tiu khiu Cavenagh Bridge	Kam pong ma-lak-kah Chhan Sheng Wong hau Fisher Street
Hoi shan kai Upper Cross Street	Kam pong ma-lak-kah hei yün kai Cumming Street
Hoi shan kai ha kai Cross Street	Kam pong ma-lak-kah hoi pin Hong Lim Quay
Hoi shan kai hung mô shü kwun hau pin Mosque Street	Kam pong ma-lak-kah khiu Read Bridge
Hung khiu Thomson Road Bridge	Kam pong ma-lak-kah Lai pai thong hau pin Keng Cheow Street
Hung khiu thau Thomson Road	Kam pong ma-lak-kah lap- sap chhe tui min Kerr Street
Hung mô fan Kampong Java Road	Kam pong ma-lak-kah san pa-sat kai New Market Road
Ka-lung khiu Kallang Road	Kam pong sai kong hung mô thit chhong Merbau Road
Ka-lung khiu Kallang Bridge	Kam pong sai kong chhung pin Tampinis Road
Ka-tei-lei hong tsai Guthrie Lane	Kam pong san kai Fraser Street
Kam fong Gaol	
Kam-lan mui Narcis Street	
Kam pong hoi pin Beach Road	
Kam pong ka pok Clive Street	
Weld Road	
Dickson Road	

208 CHINESE NAMES OF STREETS IN SINGAPORE.

*Cantonese.—Continued.*

Kam pong ta shek kai Java Road	Lo cho kai Rochor Road
Kam pong tai ma lô North Bridge Road	Lo cho kwat thau hong Carine Street
Kam pong yi ma lô Victoria Street	Lo cho lut mô mei hong Bernard Street
Kat leng lai pai thong ts'in Muar Road	Lo cho ma-ta liu Rochore Police Station
Kat leng miu pin Mosque Street	Lo cho mei Crawford Road
Kat leng miu pin kai Pagoda Street	Lo cho pa-sat Crawford Road
Kau ka-ku hau Bras Basah Road	Lo lam kai Noordin Lane
Kau ma li Shaik Madersah Lane	Lo ma pan yang hong Fish Court
Kau pa-sat Malacca Street	Lo men san kai Robinson Road
Kun-yam miu chai-thong Waterloo Street	Lo ngan nga mun Court of Requests
Kun-yam miu hei-thoi hau Stanley Street	Lo Ts'am kai Lorong Teluk
Kung Pô kuk Municipal Office	Ma chhe kai Upper Circular Road
Kwai lan kai Tan Quee Lan Street	Ma kau kai Hong Kong Street
Kwong-Fuk-miu kai Lavender Street	Ma lai fan tui min chung kan ko thiu lô Jalan Kledek
Kwun ts'oi phô kai Macao Street	Ma lai fan tui min ma fong Jalan Kubor
Lam sam tai uk kai Queen Street	Ma lai fan tui min tai yat thiu lô Jalan Pisang
Lam yin thung thô fu kok thau De Souza Street	Ma li hong Bali Lane
Lan keuk kwun Tan Tok Seng's Hos- pital.	

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CHINESE NAMES OF STREETS IN SINGAPORE 209

*Cantonese.—Continued.*

Ma miu kai Phillip Street	Ngau chhe shui hei yün wang kai Tringganu Street
Mang ku lô Middle Road Bencoolen Street	Ngau chhe shui ma-ta liu Kreta Ayer Police Sta- tion
Mang ku lô chhung pin Rochor Canal Road	Ngau chhe shui ma-ta-liu chik sheung Neil Road
Mang ku lô shau chhe kuk Middle Road	Ngau chhe shui tai ma lô South Bridge Road
Mang ku lô sô lô kai Prinsep Street	Ngau kok hong Cheng Cheok Street
Mang ku lô thit chhong pin Middle Road	Pa-so mei Cantonment Road
Man hing kai Malacca Street	Pak kheh lun Chinese Protectorate
Man hing mai kau Beach Road	Pak kheh lun chik kai Havelock Road
Mo ma yau kai Albert Street	Pak kheh lun hau pin kai Canal Road
Mui hi kuk Kallang Road	Pak kheh lun tui min hei yün hau kai Lim Eng Bee Lane
Ng toi thin kung Church Street	Pak kheh lun tui min hei yün kai Wayang Street
Ngau chhe shui ye ma lô New Bridge Road	Pak thap kai Java Road
Ngau chhe shui hei yün hau kai Almeida Street	Pak thap kai hau kai Palembang Road
Ngau chhe shui hei yün kai Smith Street	Pek shan theng Thomson Road
Ngau chhe shui hei yün ts'in kai Sago Street	Peng thau shan Government Hill
	Phai kwun Chinese Protectorate

## 210 CHINESE NAMES OF STREETS IN SINGAPORE

*Cantonese.—Continued.*

Phau ma po ts'ò shi	San pa-sat ma-ta-liu ts'in kai
Kerbau Road	New Bridge Road
Phau ma po hong	San pa-sat pin
Belilios Road	Ellenborough Street
Birch Road	Fish Street
Buffalo Road	San yi fuk kung sz hau pin
Kerbau Lane	Clarke Street
Kinta Road	Seng pò tai uk hau pin
Roberts Lane	Armenian Street
Po lei hau	Sha tsui
South Canal Road	Tanjong Rhu
Po lei hau tai yi thiu kai	Sha tsui hung nò thit chh-
Synagogue Street	ong tui min
Po lei sz	Beach Road
Magistracy	Shan tsai teng
Po lei sz fong pin	Kling Street
Macao Street	Shan yeung tai uk pin
Po lei sz hau pin kai	Craig Road
George Street	Shap pat kan
Pò tsz chheung kai	Boat Quay
China Street	Shap pat kan hau
Pun kei fan hai phò	Circular Road
Stamford Road	Shap sam hong
Sai pak mun	Boat Quay
Teluk Blanga	Shap sam hong hau
Sai yeung lai pai thong pin	Circular Road
Middle Road	Shap sam hong wang kai
San chü sek tui min	tsai
Pulau Brani	Canton Street
San kai hau	Shek lat mun
Merchant Road	Keppel Harbour
San kam kong	Shui sin mun ma fong kwat
Kampong Bahru	thau hong
San pa-sat ma-ta-liu	Bain Court
New Bridge Road Police	Shün ching theng
Station	Marine Office

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CHINESE NAMES OF STREETS IN SINGAPORE. 211

*Cantonese.—Continued.*

Si-pai lin ma-ta liu Sepoy Lines Police Sta- tion	Tai shü kwun fong pin Bras Basah Road
Si pai po Outram Road	Tai shü sun kwun Post Office
Si shü kai Cecil Street	Tai shui thong Thomson Road Reser- voir
Siu pan lan Pandan Kechil	Tai tang leng Tanglin
Siu po ta thit kai Sultan Gate	Tai wong shan hau kai Cavenagh Road
Sui lan theng Ann Siang Hill	Tai yi yün General Hospital
Sui lan theng Club Street	Tak sun lut Duxton Road
Ta thung kai Sultan Road	Tan pin kai North Canal Road
Tai cheng keuk Kampong Glam Beach	Upper Macao Street
Tai kang thau nga mun Police Office	Tan yung pa-ka Tanjong Pagar Road
Tai kot Supreme Court	Tan yung pa ka chan shing shan hau Bernam Street
Tai kot kai High Street	Tang leng Orchard Road
Tai mun noi Club Street	Tang leng ma-ta-liu Orchard Road Police Station
Tai mun noi hong tsai Mohamed Ali Lane	Tang leng ma-ta-liu hau pin kai Paterson Road
Tai mun noi tsau tim kak lei Ramah Street	Tang leng ma-ta-liu tui min Scotts Road
Tai pak kung miu kai Teluk Ayer Street	Tang leng pa-sat tui min hong Killiney Road
Tai pan lan Pandan Besar	Tang leng peng fong The Barracks (Tanglin)
Tai peng thau chü ka Government House	

212 CHINESE NAMES OF STREETS IN SINGAPORE.

*Cantonese.—Continued.*

Tau fu kai	Thô fu ham lang kwun
Chin Chew Street	D'Alneida Street
Upper Chin Chew Street	Thô fu hau hoi pin
Tei shui sz	Collyer Quay
Land Office	Thô fu mei
Tek kha chhung pin	Flint Street
Bukit Timah Road	Thong chü fong
Tek-kha kwat-thau hong	Pulo Saigon
Annamalai chitty Lane	Thong chü fong pin sai a lui
Tek-kha ma-ta-liu	kai
Kandang Kerbau Police Station	Syed Alwee Road
Tek-kha ma-ta-liu tui-min	Thung chai yi yün kai
ngau-lan-pin kai	Wayang Street
Tek-kha tong-phô tui-min	Tin fong
tai-yat thiu hong	Lunatic Asylum
Verappa Chitty Lane	Tiu khiu thau
Tek-kha tong-phô tui-min	Hill Street
tai-yi thiu hong	Tsau long noi
Nagapa Lane	Beng Hoon Road
Tek-kha tong-phô tui-min	Cheang Hong Lim Lane
tai-sam thiu hong	Cheang Lim Hien Street
Annamalai Chitty Lane	Chin Swee Road
Thit pa sat hau	Cornwall Street
Beach Road	Havelock Road
Thit pa-sat kwat thau hong	Tsau long pin
Beach Lane	Cheang Wan Seng Road
Thit pa-sat tui min hong	Ts'ô shi
Garden Street	Park Road
Jeddah Street	Tsô sz kung
Thit tiu khiu	Gopeng Street
Elgin Bridge	Tras Street
Thô fu fa yün pin	Ts'oi thong hau
Commercial Square	Bencoolen Street
Battery Road	Ts'ung pak kai
Raffles Place	Nankin Street
	Upper Nankin Street

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CHINESE NAMES OF STREETS IN SINGAPORE. 213

*Cantonese.—Continued.*

Tün kat-thô-fu hau mei Bonham Street.	Yat pun chai kai Malay Street
Wong fu hong Kampong Malayu Padang Alley	Yat pun kai Japan Street
Wong fu kwat thau hong Padang Alley	Yau wa kai Arab Street
Wong ka fa yün Botanical Gardens	Yau wa kai hong tsai Haji Lane
Wong ka shan Fort Canning Hill	Yau wa ta thung kai Little Cross Street
Wong ka shan hau Tank Road	Yi fuk kai Carpenter Street
Wong ka shan keuk River Valley Road Hill Street	Yi ma lô New Bridge Road
Wong ka shan keuk ma fong pin Damar Road	Yi ma lô khiu Coleman Street
Wong ka shan keuk thit chhong pin Read Street Tan Tye Place	Yi peng thau nga mun Colonial Secretary's Office
Wu hap thong Balestier Road	Yi seung kai Pekin Street
Wu khiu Delta Road	Yi shap kan Beach Road Jalan Sultan
Wun tim hau Clyde Terrace	Yi wong shan keuk Niven Road
Yat hô ma-ta liu Central Police Station	Yi wong shan keuk yau tek kha hui Sophia Road Wilkie Road
	Yü liu Kampong Martin





## Grasses and Sedges of Borneo.

BY H. N. RIDLEY.

The following list is compiled from the collections of the Right Reverend Bishop Hose and Miss Hose, and of Dr. Haviland and other collectors as well as the lists of those collected by myself in Sarawak and Sandakan.

In so large a country as Borneo, of which the greater part may be said to be unknown botanically, a list of this kind can only be a preliminary one, and will be very much enlarged as the country opens up. The glumaceous plants too of several large collections such as those of Beccari in Sarawak, Creagh in Sandakan, Motley and Barber in various parts of Borneo, have not at all or only partially been worked out. The best known part of Borneo is Sarawak where Bishop Hose and Miss Hose, Dr. Haviland, and I myself on a short trip have collected. Dr. Haviland whose collections of trees and shrubs were remarkably fine devoted himself but little to herbaceous plants, except on his expedition to Kinabalu.

Most of the Bornean grasses and sedges here also found in the Malay peninsula, and in the adjacent islands of the archipelago.

### GRAMINEÆ.

*Paspalum scrobiculatum*, L. Common. Kuching, Sarawak (Miss Hose), Lundu, Sarawak (Miss Hose), Matang (H.N.R.), and a large form at Bau.

*P. conjugatum*, Berg. Sarawak, Kuching (Miss Hose), Bau (Ridley), Sandakan (Ridley).

*P. distichum*, L. Sarawak at Santubong (Bp. Hose), Kudat (Bp. Hose).

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- P. sanguinale*, Lam. Common.  
 var. *commutatum*. Sarawak, Lundu, (Bp. Hose), Bau and Bidi (Ridley).  
 var. *debile*. Sarawak, Kuching (Bp. Hose).  
 var. *pruriens*. Kuching (Bp. Hose).
- P. longiflorum*, Retz. Sarawak, Kuching (Bp. Hose).
- Eriochloa polystachya*, H. B. K. Sarawak river bank (Bp. Hose). Kuching.
- Isachne australis*, Br. Sarawak, Limbang, Kuching (Bp. Hose).
- I. rigida*, Nees. Labuan. Open sandy country. (Ridley 9034). Sarawak, Mt. Matang about 1000 ft. alt (Ridley 11702).
- I. javana*, Nees. Borneo sine loc. (Hook, fil. Fl. Brit. (Ind. p. 24).
- I. Kunthiana*, Nees. Kinabalu (Haviland), Lundu (Ridley).
- Panicum colonum*, L. Sarawak, Kuching (Haviland), Limbang (Miss Hose) Lengga (Bp. Hose).
- P. muticum*, Forsk. Sandakan (Ridley).
- P. repens*, L. Sarawak, Pinding Road (Miss Hose). (Ridley) Common.
- P. plicatum*, Link. Sarawak, Saribas at Kundang Padili (Bp. Hose), Lundu. Abundant. (Ridley).
- P. pilipes*, Nees. Sarawak, Kuching (Miss Hose), Bidi, Matang (Ridley 11697); Sandakan, Bongaya River (Ridley)
- P. patens*, L. Sarawak, Matang (Ridley 11701), Bau (Ridley 11703). Quop (Miss Hose). Br. N. Borneo, Bongaya (Ridley).
- P. setigerum*, Retz. Sarawak, Bau (Ridley).

- P. latifolium*, L. Common. Sarawak, Saribas (Bp. Hose).  
Quop (Miss Hose), Bau (Ridley 11688), Limbang (Bp. Hose); Sandakan, Bongaya in Labuk Bay (Ridley).
- P. myurus*, H. B. K. Sandakan (Ridley), Sarawak, Kuching (Bp. Hose).
- P. auritum*, Presl. Sarawak, Labu (Bp. Hose); Sandakan (Bp. Hose); Bongaya (Ridley).
- P. indicum*, Linn. Common. Sarawak, Kuching (Miss Hose Dr. Haviland), Bau, Mt. Matang (Ridley); Sandakan (Ridley); Labuan (Merrill).
- P. myosuroides*, Br. Sarawak, Kuching, Bau (Ridley).
- P. nodosum*, Kunth. Sarawak, Limbang River (Bp. Hose), Bau (Ridley), Kuching (Miss Hose, Dr. Haviland 1910), Saribas (Bp. Hose).
- P. ovalifolium*, Poir. Sarawak, Kuching (Miss Hose), Bau (Ridley); Sandakan, Bongaya (Ridley).
- P. sarmentosum*, Roxb. Sarawak, Kundang Padili, Saribas (Bp. Hose).
- P. trypheron*, Schultes. Borneo (Fl. Brit. Ind).
- P. caesium*, Sarawak. Bau (Bp. Hose).
- P. maximum*, Sandakan, Kudat among rocks by the sea (Bp. Hose); Sarawak, Kuching (Bp. Hose).
- P. humile*, Nees. Borneo (Fl. Brit. Ind).
- Ichnanthus pallens*, Munro. Sarawak, Puak (Ridley).
- Thysanolaena agrostis*, Nees. Sarawak, Matang (Ridley); British North Borneo, Gaya Island (Haviland).
- Axonopus cimicinus*, Beauv. Sarawak, Saribas (Bp. Hose).

- Oplismenus compositus*, Beauv. Sarawak, Limbang (Bp. Hose), Road to Bau (Ridley), Quop (Miss Hose), Dahombang River (Haviland).
- Pennisetum italicum*, Sarawak, Quop (Cultivated) Bp. Hose.
- Cenchrus echinatus*, L. British North Borneo, Limbarra Island Labuk Bay in sand (Ridley 9040).
- Thuarea sarmentosa*, Pers. Labuan (Ridley), Sarawak, Santubong (Bp. Hose).
- Oryza sativa*, L. Cultivated.
- O. Ridleyi*, Hook, Fil. Borneo (Hook Fil. Fl. Bri. Ind. p. 93).
- Leersia hexandra*, Sw. Sarawak, Kuching (Ridley, Haviland), Saribas (Bp. Hose).
- Leptaspis urecolata*, Br. Sarawak, Santubong (Haviland); Lundu near Waterfall (Ridley); British North Borneo, Bongaya River (Ridley).
- Coix Lachryma Jobi*, L. Cult. at Labu, Sarawak, etc. (Bp. Hose).
- Zea Mays*, L. Cultivated.
- Dimeria ornithopoda*, Trin. Sarawak, Kuching (Ridley 11718), Bau (Ridley).
- Imperata arundinacea*, Cyrill. Sarawak, Kuching (Haviland, Bp. Hose), a branched form at Bidi (Ridley), Sandakan (Ridley), Labuan (Ridley).
- I. exaltata*, Brngn. Sarawak, Santubong (Bp. Hose), British North Borneo, Kudat (Bp. Hose), Sandakan.
- Miscanthus sinensis*, Anderss. Common. British N. Borneo, Kinabalu (Low), Gaya Island (Ridley), Sarawak, Common everywhere. Quop (Miss Hose), Kuching, Bau (Ridley).

- Pollinia Ridleyi*, Hack. Borneo, sine loc. (Hook. l.c. 114).
- P. nuda*, Trin. A form with the calli of the spikelets glabrous. Sarawak, Bau (Ridley).
- Saccharum arundinaceum*, Retz. Sarawak, river bank (Bp. Hose), Bau, Skerang, Saribas, etc., (Bp. Hose).
- Erianthus chrysothrix*, Hack. Borneo (sine loc. Hook. fil. l.c.)
- Ischaemum magnum*, Rendle. Labuan (Ridley); Sarawak, Kuching (Bp. Hose, Ridley 11698). Top of Matang (Ridley).
- I. muticum*, L. Sarawak, Kuching, Santubong (Miss Hose).
- I. ciliare*, Retz. Common everywhere. Sarawak, Kuching (Miss Hose, Haviland 1913).
- I. timorensis* Kunth. B. N. B., Sandakan (Ridley); Sarawak Kuching, Limbang, Labu (Bp. Hose), Labuan (Bp. Hose).
- I. Beccarii*, Hook. Borneo (Beccari).
- Pogonatherum crinitum*, Trin. Sarawak, Matang (Hullett), Bau (Ridley).
- Polytrias premorsa*, Hook. Sarawak, Kuching, river bank (Bp. Hose).
- Rottboellia glandulosa*, Trin. Sarawak, Limbang (Bp. Hose), near Bau (Ridley 11681), Quop (Bp. Hose).
- Andropogon intermedius*, Br. Sarawak, Bau (Ridley 11609).
- A. aciculatus*, Retz. Sarawak, Kuching (Haviland), B. N. B., Sandakan, (Ridley).
- A. halepensis*, Brot. Sarawak, Bidi (Ridley), abundant. Busau.
- A. squarrosus*, Linn. Cult. at Kuching (Bp. Hose).

- A. schoenanthus*, Linn. Cult.
- Anthistiria gigantea*, Cav. Sarawak, Sebayor, Saribas (Bp. Hose), Bau (Ridley), Busau.
- Eriachne trisetata*, Nees. Jesselton (Bp. Hose).
- E. pallescens*, Br. Sarawak, Kuching (Miss Hose); Labuan (Ridley 9106), Merrill.
- Sporobolus diander*, Beauv. Sarawak, Kuching, (Miss Hose), Dr. Haviland, Ridley), Bau (Bp. Hose); Sandakan (Ridley).
- Agrostis canina*, L.  
var. *Borneensis*. British N. Borneo, Kinabalu (Haviland 1399) at 13,000 feet alt.
- Deyeuxia epileuca*, Stapf. Kinabalu at 13,000 feet (Haviland).
- Deschampsia flexuosa*.  
var. *ligulata*, Stapf. Kinabalu at 13,000 feet (Haviland).
- Eleusine indica*, Gaertn. Everywhere. Sarawak, Kuching (Miss Hose), Sandakan (Ridley).
- E. aegyptiaca*, Desf. Sarawak, Santubong seashore (Miss Hose); Sandakan (Ridley).
- Cynodon dactylon*, L. Sarawak, Kuching (Miss Hose).
- Leptochloa chinensis*, Nees. Sarawak, Kuching, (Miss Hose).
- Phragmites karka*, Trin. "Tebu Ayer," "Buluh Ayer," Sarawak. Bau (Bp. Hose), Skerang (Bp. Hose).
- Eragrostis tenella*, R. and S. Sarawak, Lundu (Miss Hose). Kuching (Bp. Hose).
- E. amabilis*, Wight. Everywhere. Sarawak, Kuching (Miss Hose).
- E. malayana*, Stapf. Sarawak, Kuching (Haviland).

- E. elegantula*, Steud. Sarawak, Kuching (Miss Hose), Sandakan (Ridley).
- E. pilosa*, Beauv. Sarawak, Kuching (Ridley).
- Centotheca lappacea*, Desv. Common everywhere. Sarawak, Kuching (Bartlett, Miss Hose), Pengkulu Ampat (Haviland), Bau (Ridley).
- Lophatherum Lehmanni*. Sarawak, Quop (Miss Hose), Limbang (Bp. Hose), Rejang (Haviland).
- Bambusa* near *Ridleyi*, (fide Gamble). Kinabalu, Tawaran (Haviland 1387). Stapf. in the Linnean Transactions p. 248 gives this as *Schizostachyum Blumei*, Nees. All the specimens seem too imperfect, but the one in the Singapore herbarium seems to me no *Schizostachyum*.
- Schizostachyum brachycladon*, Kurz. Sarawak, Bau (Ridley).
- Gigantochloa Atta*, Kurz. Sarawak Riverbank (Haviland).
- Dendrocalamus flagellifer*. Sarawak, Kuching (Bp. Hose), Quop (Bp. Hose).
- Dinochloa Tjankorreh*, Buse. Penokok River (Haviland 1390), Abundant, foot of Matang, and near Kuching. A very elegant climbing bamboo.

## CYPERACEÆ.

- Kyllinga monocephala*, Rottl. Everywhere. Sarawak, Kuching (Haviland 1926), Bau (Ridley).
- K. brevifolia*, Rottl. Everywhere. Sarawak, Kuching, Lundu (Miss Hose), Bau (Ridley). British North Borneo, Sandakan (Ridley).
- Pycurus sanguinolentus*, Nees. Sarawak, Bau (Ridley).
- P. nitens*, Nees. Sandakan (Ridley 9031). A tall weak form.
- R. A. Soc., No. 46, 1906.



- P. polystachyus*, Beauv. Sarawak, Kuching, Mt. Matang (Ridley), Sandakan (Ridley).  
var. *laxiflora*. Sarawak, Santubong (Miss Hose).
- P. pumilus*, Nees. Borneo, (Motley), forma *Borneensis* (Burbidge).
- P. sulcinux*, Clarke. North Borneo, (Burbidge), Sarawak, Puak in the rubber plantation. A very pretty yellow spikeletted plant.
- Cyperus cephalotes*, Vahl. Banjermassin (Motley).
- C. cuspidatus*, H. B. K., Borneo (Motley).
- C. Haspan*, L. Sarawak, Kuching (Miss Hose), Bau (Ridley) Mt. Matang (Ridley), B. N. Borneo, Sandakan. Bongaya (Ridley), forma *Malasica*, sine loc. (Motley).
- C. pulcherrimus*. Banjermassin (Motley).
- C. malaccensis*, Lam. Sarawak, Kuching (Miss Hose, Ridley), Lundu (Miss Hose).
- C. pilosus*, Sarawak, Quop (Miss Hose), Kuching (Haviland 1916, Ridley), Bau, Matang (Ridley).
- C. zollingeri*, Steud. Sarawak, Kuching, Lundu (Miss Hose).
- C. rotundus*, L. Borneo sine-loc. (Barber), Labuan (Motley) Sarawak, Kuching, Santubong (Bp. Hose).
- C. stoloniferus*, Retz. Sarawak, Santubong (Miss Hose, Ridley). On the sandy shore.
- C. tegetum*, Roxb. Sarawak, Kuching (Bp. Hose).
- C. platystylis*, Br. Banjermassin (Motley).
- C. diffusus*, Vahl. Sarawak, Bau (Ridley), Santubong (Miss Hose).
- C. radians*, Nees. Sarawak, (Beccari), Banjermassin (Motley).

- C. compressus*, L. Sarawak, Kuching, Bau (Ridey).  
*C. Iria*, L. Sarawak, Kuching (Ridley), Lundu (Miss Hose).  
*C. distans*, L. Sarawak, Kuching (Miss Hose).  
*Mariscus dregeanus*, Kunth. Borneo, (Hook. fil. Fl. Br. Ind.)  
*M. cyperinus*, var *tenuifolius*, Schrad. Sarawak, Quop, (Miss Hose).  
*M. biglumis*, var *cylindro stachys*. Sarawak, Bau (Ridley).  
*M. albescens*, Gaud. Borneo (Barber), Santubong (Miss Hose).  
*M. microcephalus*, Presl. Sarawak, Kuching Bau (Ridley),  
 Lundu, (Miss Hose), B. N. Borneo, Bongaya River  
 (Ridley).  
*M. ferax*, Borneo (Barber).  
*Heleocharis plantaginea*, Br. Sarawak, Limbang (Bp. Hose).  
*H. variegata*, Kunth. Sarawak, Kuching (Ridley), Limbang  
 (Bp. Hose).  
*H. capitata*, Br. Labuan (Bp. Hose).  
*H. chætaria*, R. and S. Sarawak, Matang (Ridley), Bau (Bp.  
 Hose), Kuching. Common. B. N. Borneo, Bongaya  
 River (Ridley).  
*Fimbristylis acuminata*, Vahl. Sarawak, Kuching (Miss Hose),  
 Sandakan, (Bp. Hose).  
*F. nutans*, Vahl. Sarawak, Bau, Limbang (Bp. Hose) Brunei,  
 Brooketon (Bp. Hose, Labuan (Bp. Hose).  
*F. polytrichoides*, Vahl. Sarawak, Santubong (Miss Hose).  
*F. pauciflora*, Br. Sarawak, Matang (Ridley), Kuching, Santu-  
 bong (Miss Hose); Brunei, Brooketon, (Bp. Hose).  
*F. schænooides*, Vahl. Sandakan (Ridley); Sarawak, Santu-  
 bong (Bp. Hose); Labuan (Bp. Hose).

- F. diphylla* Vahl. Everywhere. Sarawak, Kuching, (Miss Hose), Sandakan (Ridley).  
 var. *pluristriata*, Clarke. A curious weak form on rocks, high up on Mt. Serapi Matang.
- F. spathacea*, Roth. Sarawak, seashore, Santubong (Miss Hose).
- F. tenera*, R. and S.  
 var. *obtusata*. Borneo (Hook. fil. Fl. Brit. Ind.) Sarawak · Kuching (Miss Hose).
- F. asperrima*, Boeck. Sarawak, Quop (Miss Hose), Bau (Ridley), Kuching (Bp. Hose).
- F. miliacea*, Vahl. Everywhere. Sarawak, Kuching (Haviland, Ridley), Quop (Miss Hose).
- F. globulosa*, Kunth. Sarawak, Pinding Road (Bp. Hose), Kuching (Miss Hose), Brunei, Brooketon, (Bp. Hose).
- F. leptoclada*, Benth. Borneo, (Hook. fil. l.c.)
- F. fusca*, Benth. Labuan (Bp. Hose, Ridley 9042).
- Bulbostylis barbata*, Kunth. Sarawak, Kuching (Miss Hose) Labuan (Merrill).
- Scirpus mucronatus*, L. Sarawak, Kuching (Ridley), Lundu (Miss Hose), Sabu (Bp. Hose).
- Sc. clarkii*, Stapf. Kinabalu (Haviland No. 1398).
- Sc. inundatus*, Spreng. Kinabalu (Haviland).
- Sc. debilis*, Pursh. Lundu, rice fields (Ridley).
- Fuirena umbellata*, Rottb. Sarawak, Kuching (Ridley, Haviland 1918), Lundu (Miss Hose).
- Lipocarpia argentea*, Br. Sarawak, Kuching (Haviland 1906) Quop (Miss Hose), Matang Bau (Ridley).

- Rhynchospora wallichiana*, Kunth. Sarawak, Kuching (Miss Hose).
- R. malasica*, Clarke. Borneo (Fl. Brit. Ind).
- R. aurea*, Vahl. Sarawak, Kuching (Haviland 1914), Pindang Road (Bp. Hose).
- R. glauca*, Vahl. Sarawak, Bau, (Bp. Hose), Kuching (Miss Hose).
- Schænus apogon*, R. and S. Kinabalu (Haviland).
- Sch. melanostachyus*, R. Br. Kinabalu (Haviland).
- Cladium undulatum*, Thw. Labuan (Ridley 9105 Bp. Hose).
- C. samoense*, Cl. Kinabalu (Haviland 1405).
- Gahnia javanica*, Moritzi. Sarawak, Matang (Ridley 11685), Santubong, Sabu (Bp. Hose).
- G. tristis*, Nees. Brit. N. Borneo, Jesselton (Bp. Hose).
- Remirea maritima*, Aubl. Sarawak, Coast opposite Santubong (Bp. Hose).
- Hypolytrum latifolium*, Rich. Common in woods. Sarawak, Matang, Bau (Ridley), Lundu (Miss Hose), Santubong (Bishop Hose).
- H. proliferum*, Boeck. Borneo (Fl. Brit. Ind).
- H. costato-nux*, C. B. Clarke n. sp. Culmo 4-6 dm. longo, remote foliato foliis perlongis, 8-10 mm. latis, panicula 5 cm. longa et lata composita polystachya, spicis parvulis; stylo 2-fids, nuce 1½ mm. longa longitudinaliter leviter 10-12 costata nec reticulata castanea nigrescente culmus basi lateraliter pullularis vix stolonifer apice triqueter fere levis, nux obvoidea compressa apice obtuse conica. Sarawak, Matang (Ridley 12345).

*Thoracostachyum bancanum*, Clarke. Sarawak, swampy ground in a wood near Puak (Ridley 12339).

*Th. Ridleyi*, Clarke. New species. Quasi umbellae radiis 5 usque ad. 5 cm. longis 1-3-stachyis spicis ovoideis densifloris 6 mm. longis, nuce  $1\frac{1}{2}$  mm. longis anguste obovoidea trigona, lucide castanea, rostro cum  $\frac{1}{2}$  partibus aequilongo lineari-conico. Rhizoma gracile lignum, culmi basi robuste pullulantes 5 dm. longi graciliores. Folia omnia basalia 3-4 dm. longa, 7 mm. lata. Bracteeae 3, ima. 12 cm. longa filiformes. Species eximia. Sarawak, Kuching. Common in the woods. (Ridley 12346).

This plant is abundant in the sandy woods near Kuching. It is about 15 inches tall with a rather hard woody rhizome, and somewhat stiff leaves; the culms is slender and ends in an umbel of about 5 rays one of which is usually branched: the globose spikes are solitary on the ends of the umbels rays: the glumes are crowded, rather pale, and the nut small and rather long beaked.

*Mapania radians*, Clarke n. sp. Rhizome stout woody. Leaves flacid linear 18-24 inches long,  $\frac{1}{4}$  inch wide, acuminate to a long point, glabrous, nine ribbed distichous crowded at base. Scapes very slender, 3-6 inches long, purple with a close fitting sheath 1 inch long halfway, spikes terminal in a head 4 to 12,  $\frac{1}{4}$  inch long dark red viscid cylindric covered with scale-like ovate obtuse bracts with ciliate edges. Outer squamellae flattened with short thick bristles on the keels; Inner squamellae 2 thin lanceolate glabrous. Stamens slender, filaments filiform. Stigmas 3, nut stalked globose, with a very long conic blunt grooved beak, much longer than the rest of the nut. Sarawak, Rocks on Matang, Siul, Puak; Sandakan, Bongaya River (Ridley).

This new species is about 2 feet tall, with a rather slender stem triquetrous above. Leaves narrow linear

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acuminate  $\frac{1}{2}$  inch broad, pale beneath, a panicle about  $3\frac{1}{2}$  inches long, and small black globular ribbed nuts.

*M. triquetra*, Ridl. Sarawak, Matang; Bau, Siul, Bidi (Ridley 11698). Common in the woods, also occurs in the Malay Peninsula.

*M. humilis*, Naves and Villars. Sarawak, Matang, etc., (Ridley). A common plant in Sarawak.

*M. debilis*, Clarke n. sp. Fere levis. Foliis 6 dm. longis, 6 mm. latis, utrinque attenuatis, scapo 15 cm. longo gracili, capite florifero 8 mm. in diametro subgloboso e 5 spicis inter se distinctis exstructo, spicis (floriferis) 5 mm. longis ferrugineis densis. Species *M. multispicatae* affinis. Sarawak, Matang (Ridley 12344).

This is a tufted plant, with long narrow grassy leaves, and a small heads of flowers on a slender peduncle about 4 inches long.

*M. zeylanica*, var. A big tufted plant, with numerous stiff rough leaves and heads of flowers on long or short peduncles. Matang (Ridley 12335), also collected in Borneo at Banjermassin by Motley. Mr. Clarke who identifies this, writes that it is otherwise a plant confined to Ceylon.

*Scirpodendron costatum*, Kurz. Sarawak, Santubong (Bp-Hose). Sandakan, Bongaya (Ridley 9038).

*Lepironia mucronata*, Rich. Labuan (Merrill).

*Scleria lithosperma*, Sw. B. N. Borneo; Kudat (Bp. Hose).

*Scl. zeylanica*, Poir. Borneo, Kuching (Miss Hose).

*Scl. caricina*, Benth. Sarawak, Kuching (Ridley 11691), Limbang, Bau (Bp. Hose).

*Scl. neesii*, Kth. Borneo (Fl. Brit. Ind.).

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- Scl. bancana*, Miq. Everywhere. Sarawak, Kuching (Miss Hose).
- Scl. multifoliata*. Sarawak, Saribas, Kuching (Bp. Hose).
- Scl. sumatrensis*, Retz. Sarawak, Kuching (Miss Hose) Matang (Ridley), Labuan (Ridley).
- Scl. trigonocarpa*, Ridl. B. N. Borneo; Gaya Island (Ridley) Kudat (Bp. Hose).
- Scl. laevis*. Common. Sarawak, Bau (Ridley).
- Carex rara*, Booth. Kinabalu (Haviland).
- Carex borneensis*, Clarke. Kinabalu (Haviland).
- C. Havilandi*, Clarke. (*C. hypsophila*, Stapf). Kinabalu (Haviland).
- C. saturata*, Clarke. (*C. filicina*, Stapf). Kinabalu (Haviland).
- C. speciosa*, Kunth. Banjermassin (Motley 1222).
- C. Dietrichiae*, Boeck. River banks at Busau. Common. (Ridley).

Mr. Clarke who names this says it is very frequent in Malaya, and North East Australia. I have never seen it from the Malay Peninsula.

## Scitamineae of Borneo.

BY H. N. RIDLEY.

The order of *Scitamineae* is as well represented in Borneo as in the Malay Peninsula, but it is probable that at present a very large number are yet uncollected or if collected not yet described. The Zingiberaceae and Marantaceae of Beccari's and Korthas' collections were described by Schumann in the *Pflanzenreich*. Some of these however, I have quite failed to identify with plants collected on the same ground, viz., Kuching and Matang in Sarawak, the scene of Beccari's researches. Dr. Haviland's collection contains but few of the order, but Mr. J. Hewitt, the curator of the museum, has added a good many species to the flora. The genera of Bornean *Scitamineae* are very much the same as those of the Malay Peninsula. I have not however seen any representatives of the genera *Geostachys* or *conamomum* or *Hedy-chium*.

The genera *Haplochorema* and *Burbidgea* are peculiar to Borneo.

Comparatively few of the Bornean species are actually the same as those of the peninsula, but closely allied forms appear, such as *Hornstedtia reticulava*, closely allied to *H. scyphifera* and *H. brachycheilus* closely allied to *H. metriochilus*. It is rather curious to note that while yellow Globbas are common in the Malay Peninsula and white ones comparatively rare, the reverse is the case in Borneo, where yellow flowered species are scanty. The number of species *Globba* is also comparatively small.

There must be very many more species of this order in Borneo. The *Marantaceae* especially want working up. I have several which are not in a good enough state to be described. The flowers are so fugacious that they want very



careful drying separately from the inflorescence. This paper must be taken therefore as a mere preliminary one for the *Scitamineae* of Borneo.

GLOBBA.

*Gl. atrosanguinea*, Teysm. and Binn.

This pretty Globba with its large bright red bracts and yellow flowers is abundant in the Sarawak woods, Kuching (a small form), Bau (Ridley 11803), Bidi, Puak, (Ridley), Barang (Haviland), Rejang, Sibul (Haviland 368).

*Gl. aurantiaca*, Miq.

Was obtained in Borneo by Korthals, no locality being given for it. It is common in the Malay Peninsula.

*Gl. (marantella) propinqua*, n. sp.

Stems about 2 feet tall. Leaves lanceolate acuminate narrowed into a short petiole glabrous above beneath slightly pubescent 6 inches long  $1\frac{3}{4}$  inch wide, sheaths roughly short hairy, ligule oblong pubescent. Raceme nodding, shortly or not branched. Bracts lanceolate oblong pubescent green approximate (when young)  $\frac{1}{4}$  inch long. Rachis pubescent. Calyx tubular rather long shortly 3 lobed, lobes ovate, mucronulate red. Corolla tube rather long, petals lanceolate acute orange yellow. Lip linear oblong, rather short apex emarginate, lobes slightly divaricate orange yellow with a red central spot. Filament long yellow, anther elliptic with four nearly equal linear acuminate lobes, upper ones slightly the broadest. Bulbils cylindric hairy reddish.

Sarawak, Matang (Ridley 12260), Lundu, Bau (Ridley).

A plant with the habit of *G. cernua*, but resembling *Gl. aurantiaca*, Miq. in the form of the flower. The only yellow globba I have seen from Borneo.

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*Gl. (§ ceratanthera) tricolor*, n. sp.

Stem about 2 feet tall spotted red. Leaves lanceolate cuspidate acuminate at both ends nearly glabrous 6 inches long 2 inches wide base slightly pubescent, sheath ribbed glabrous except the edge pubescent, ligule rather large retuse lobes rounded. Panicle large, branches distant projecting little over an inch long with a few flowers at the ends. Bracts at base of branches lanceolate cuspidate  $\frac{1}{2}$  inch long. Floral bracts ovate. Calyx rather short campanulate with two ovate cuspidate lobes longer than the third white. Corolla tube rather short little over  $\frac{1}{2}$  inch long violet. Petals elliptic upper one boat shaped violet, staminodes linear yellow. Lip narrow linear rather long apex bifid with linear obtuse yellow lobes, the rest white tinged violet. Filament long slender, anther oblong with a linear acuminate curved horn at the base on each side.

Sarawak, Kuching (Ridley 12360), Matang 11806.

*Gl. polyphylla*, Schum.

Gunong Paraeng (Korthals).

*Gl. pumila*, n. sp.

A small prostrate plant, the stems lying on the ground 6 to 9 inches long. Leaves lanceolate acuminate or lower ones ovate 1-2 inches long  $\frac{1}{2}$  inch wide above glabrous except on the nerves, the mid rib hairy, the others less so, back with the nerves elevated and hairy, petiole  $\frac{1}{2}$  inch long, sheath hairy especially the ligule. Panicle short  $1\frac{1}{2}$ -2 inches long, lower bracts lanceolate, upper ones obovate glabrous. Branches  $\frac{1}{2}$  inch or less glabrous. Calyx tubular funnel-shaped with 3 long equal teeth  $\frac{1}{2}$  inch long. Corolla tube long and slender  $\frac{1}{2}$  inch long, petals ovate obtuse boat-shaped. Lip short bilobed with oblong truncate lobes, all white. Anther with 2 processes, from the base of anther triangular at base linear ciliate longer than the anther capsule elliptic  $\frac{1}{2}$  inch long, minutely red pustular.

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Sarawak at Puak (Ridley 12357).

This curious small species lays its stems quite flat on the ground. The flowers are white, and the leaves are remarkable for the close set venis being thickly hairy giving the back of the leaf a curious ribbed appearance.

*Gl. brachyanthera*, Schum.

A small plant usually about a foot tall with lanceolate acuminate leaves, usually glabrous, 3 inches long 1 inch wide, sheath hairy. Panicle short usually 3 inches long with a few branches about  $\frac{1}{2}$  inch long. Bracts ovate persistent pure white rather large. Calyx tubular eventually turbinate white glabrous with three equal lanceolate teeth. Petals ovate boat-shaped white or tinted yellow at the tip. Staminodes linear white or pale yellow. Lip narrow linear oblong very shortly bifid, white with a bright yellow tip. Filament moderately long anther yellow with two lanceolate acuminate horns rising from close to the base.

Sarawak. Common, Kuching, (Ridley 12359), Bidi (Ridley 11805).

var. *angustifolia*. Leaves 9 inches long 1 inch wide candate, much narrower in proportion to their length than in the type. Matang, 800 feet elevation.

I do not see that the anther is remarkably short as Schumann gives it.

*Glabba versicolor*, Smith.

Borneo, Timbang-Penang near Kudat (Fraser fide Schumann) not seen. It is an Indian species.

*Camptandra angustifolia*, Ridl.

Sarawak on Matang, (Ridley, Haviland etc.).

*Kempferia gracillima*, Schumann.

Sarawak near Selebut on rocks (Haviland 448).

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*K. decus-silvæ*, Hallier.

Liang Gagang; and between Mandai and Kymas  
(Hallier).

*K. ornata*, N. E. Brown.

Introduced into cultivation 1884.

*K. atrovirens*, N. E. Brown.

Introduced into cultivation 1886.

*Haplochorema palyphyllum*, Schum.

Sarawak by Lemdu (? Lundu) (Beccari 2324).

*H. oligospermum*, Schum.

Sarawak. Marupi, Batang Lupar (Beccari).

*H. gracilipes*, Schum.

Sarawak. Gunong Wah (Beccari).

*H. petiolatum*, Schum.

Sarawak, Singhi mountain (Haviland).

*H. uniflorum*, Schum

Sarawak Gunong Tiang Ladschin, Batang Lupar  
(Beccari) abundant on Matang, a charming plant with  
deep velvety green leaves barred paler, flowers white  
except a deep red spot edged with yellow on the lip.  
(Ridley).

*H. extensum*, Schum.

Sarawak Gunong Tiang Ladschin, Batang Lupar  
(Beccari).

*Gastrochilus Hallieri*, Ridl.

*G. anomalum*, Schum. *Kampferia anomala*, Hallier.

Liang Gagang, Mandai, Kapuas (Hallier) Sarawak  
(H. N. Ridley).

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*G. parvus*, Ridl.

Sarawak. Bidi (Ridley).

*G. reticosa*, Ridl.

Sarawak, Bidi (Ridley).

*Gastrochilus pulchella*, n. sp.

Stems several short covered with red sheaths, 2 inches tall. Leaves 3, ovate to lanceolate acute base rounded  $3\frac{1}{2}$  inches long  $1\frac{1}{2}$ -2 inches wide bright shining green with about 8 pairs of nerves conspicuous above, petiole  $1-1\frac{1}{2}$  inch long. Spike shorter acute several flowered bracts lanceolate acuminate cuspidate red. Flowers opening singly. Corolla tube just projecting about 1 inch long, lobes linear oblong obtuse white. Stamminodes rounded oblong yellowish shorter than the stamen. Lip  $\frac{1}{2}$  inch long entire, sides elevated, saccate, white, a central bar **A** shaped and the tip broad and rounded cherry crimson. Filament short, anther oblong not crested pubescent.

Sarawak Bidi, Jambusan Caves. In wet woods. Flowering September to January.

This resembles *G. pulcherrima*, Wall. of Burma, but differs in its smaller size, short stem, leaves and spike, the lip is beautifully colored with its crimson red tip behind which is a white spot surrounded by the arms of a **A** of which the stem runs to the lip base.

#### CURCUMA.

*C. aromatica*, L.

"Entimut or Entimu," much used by Dyak women as soap, and in medicine for shingles. Kuching, (R. Shelford).

*Zingiber parphyrosphaera*, Schum.

Sarawak Rejang, (Haviland).

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*Z. stenostachys*, Schum.

Gunong Balacan, and Sakumbang, (Korthals).

*Z. coloratum*, N. E. Br.

N. W. Borneo, (Burbidge),

*Z. borneense*, Schum.

Sarawak, Kuching (Haviland), S. Borneo, Gunong Sakumbang, (Korthals).

*Costus speciosus*, L.

Common in Sarawak. var. *B. angustifolia*, Schum. Sarawak, (Beccari).

*C. globosus*, Bl. *C. Ridleyi*, Schum.

Schumann makes a new species of this being doubtful as to what the *C. globosus* of Blume was as he had only seen scraps of foliage and the description is incomplete. I saw however a drawing in Buitenzorg by Hasselt the collector of Blume's plant which seems undoubtedly this plant. Valetton (Ic. Bogor C. L. XIII has figured and described the same plant as *C. globosus*. Bl. Sarawak, Puak, Bau, (Ridley).

Common all over the Malay peninsula and also in Sumatra.

*C. microcephalus*, Schum.

Lumpei Island, (Korthals).

#### AMOMUM.

§ *Geanthi*, no appendage to the stamen.

*A. nasutum*, Schum. This is distinguished by the lip being prolonged into a beak. Kuching, (Beccari).

*A. bicorniculatum*, Schum. Gunong, Sakumbang, (Korthals).

*A. dictyocoleum*, Schum. Sarawak, Kuching, (Beccari).

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*A. macroglossa*, Schum. Sarawak, Matang, (Beccari).

§ *Euamomum*, Anther crested.

*A. laxisquamosum*, Schum. Sarawak, Kuching, (Beccari).

*A. oliganthum*, Schum. Sarawak, Matang, (Beccari).

*A. stenosphon*, Schum. Sarawak, Maropin, Batang Lupar, (Beccari).

*A. fimbrio-bractea*, Schum. Sarawak, Tubao River near Bintulu, (Beccari).

*A. gracilipes*, Schum. Borneo, (noloc.), Korthals.

*A. flavidulum*, n. sp.

Stems not very stout. Leaves lanceolate acuminate narrowed at the base into a short petiole, margins and tip ciliate, otherwise glabrous, 12 inches long  $2\frac{1}{2}$  inch wide, petiole  $\frac{1}{4}$  inch long, ligule papery glabrous an inch long truncate, sheath ribbed reticulate. Spike dense many-flowered cylindric 3 inches long on a peduncle 8 inches tall, sheaths papery smooth glabrous, rachis woolly; bracts smooth ovate acute, brittle when dry  $\frac{3}{4}$  inch long or less. Bracteoles similar smaller. Ovary pubescent silky. Calyx very short  $\frac{1}{8}$  inch long glabrous, campanulate shortly 3 lobed, lobes truncate. Petals linear oblong reddish yellow nearly  $\frac{1}{2}$  inch long blunt tube very short. Lip entire obovate. Anther with two side arms, no terminal crest. Capsule pubescent.

Sarawak, Matang (Ridley 11802).

*A. sylvestre*, n. sp.

Rhizome woody. Leaf stems 2-3 feet tall  $\frac{1}{2}$  inch through leaves narrow lanceolate or oblanceolate acute narrowed acuminate to base. 12 inches by  $1\frac{1}{2}$  inch wide glabrous above and beneath except the midrib on both sides faintly pubescent, ligule short broad truncate entire hairy, sheaths ribbed and with hairy transverse reticulations. Spike obconic on a peduncle

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covered with sheaths, 3 inches long. Bracts ovate papery pubescent pale brown when dry acute  $\frac{1}{2}$  inch long. Ovary silky. Calyx campanulate  $\frac{1}{4}$  inch long, pubescent with short broad rounded lobes. Corolla tube funnel-shaped, as long as calyx tube, lobes oblong obtuse white pubescent. Lip very fleshy oblong apex fimbriate, white with a yellow central bar. Staminodes long slender setiform. Anther oblong with 2 small linear side auricles, no terminal crest, pubescent, style hairy. Capsule globose pubescent, terminated by the short thick calyx tube.

Sarawak. Common in the woods at Kuching.

One plant I found had 2 complete anthers.

*A. cerasinum*, n. sp.

Stems very tall about 10 feet pruinose. Leaves oblong lanceolate with a very broad base, and a long (inch) cusp 15 inches long 4 inches wide glabrous except the edges and covered with yellowish hairs, petiole 1 inch long channelled back rounded, ligule oblong  $\frac{1}{2}$  inch long glabrous, sheath ribbed glabrous spikes 3 inches long, rachis silky. Bracts white lanceolate acute 1 inch long. Bracteoles lanceolate. Epicalyx tubular  $\frac{1}{2}$  inch long, with 3 equal ovate lobes calyx 1 inch long lobes linear white as long as the corolla tube. Corolla cherry red, petals an inch long, upper one hooded, lower ones with a white central bar oblong obtuse. Lip large side lobes broad rounded as long as the petals white dentate spotted with red on the edge, midlobe bifid short oblong narrow dentate, with 3 red bands, and 2 broad red bands on the inside of the side lobes. Stamen creamy white, the anther with a broad semilunar entire crest, no distinct central lobe. Fruit globose an inch through green.

Sarawak, on the lower slopes of Matang, (Ridley 12421).



*A. Hewittii*, n. sp.

Stem large. Leaves lanceolate cuspidate acuminate narrowed at the base petiolate 16 inches long 3 inches wide glabrous, close veined midrib on both surfaces closely ribbed and light colored, petiole  $\frac{1}{2}$  inch glabrous black ligule  $\frac{1}{2}$  inch long entire dark brown glabrous apex rounded oblong. Scape 1 foot tall slender, with a few long narrow sheaths, ribbed linear rounded and margined at the tip, spike 2 inches long obconic rachis silky pubescent. Bracts lanceolate acute ribbed  $1\frac{1}{2}$  inch long corolla yellow anther rather large oblong with a rounded short crest. Fruit elliptic pear shaped  $1\frac{1}{2}$  inch long  $\frac{1}{2}$  inch through covered with oblong processes armed with short horizontal thorus.

Sarawak, Matang (Ridley), Santubong (Hewitt).

The flowers spoilt; near *A. gracilipes*.

## HORNSTEDTIA.

This genus is well represented in Borneo.

*H. sarawacensis*, Schum.

Sarawak, Matang (Beccari).

This species is insufficiently described to be identifiable.

*H. phaeochoana*, Schum.

Sarawak, Kuching (Beccari) is also insufficiently described.

*H. velutina*, Ridl.

B. N. Borneo, Bongaya (Ridley).

*H. affinis*, Ridl.

Sarawak, Kuching (Haviland, Ridley).

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*H. villosa*, Val.

Stems tall and stout. Leaves elliptic or lanceolate acute or subobtuse narrowed at the base 12-16 inches long 4-5 inches across glabrous above softly pubescent, beneath petiole 1 inch long pubescent, ligule oblong bilobed coriaceous  $\frac{1}{2}$  inch long, lobes truncate, sheaths ribbed and reticulate. Spikes nearly sessile oblong obconic 4 inches long over 1 inch through. Bracts ovate  $1\frac{1}{2}$  inch long or less, obtuse finely ribbed and lower ones reticulate pubescent, margins strongly ciliate hairy. Calyx  $1\frac{1}{2}$  inch long tubular apex bifid 2 setiform processes from the sides. Corolla tube 3 inches long red passing abruptly into the lobes, lobes oblong obtuse, red lip stiff oblong with a rounded point  $\frac{3}{4}$  inch long little longer than the petals slightly pubescent within, flame colored. Anther shorter pubescent with a large semiorbicular crest. Capsule subglobose glabrous.

Sarawak, Matang, (Ridley 11811) also at Bau.

The flowers of this plant resemble a duck's beak. The short broad petals and stiff coriaceous lip are very striking.

*H. brachychilus*, n. sp.

Leaves elliptic cuspidate base rounded, 12 inches long, 3 inches wide glabrous except the upper edge and tip, edged with ciliate hairs, petiole distinct  $\frac{3}{4}$  inch long, ligule oblong truncate entire  $\frac{1}{4}$  inch long, sheath strongly ribbed scabrid pubescent. Spike 3 inches long, cylindric. Bracts thin oblong ribbed, more or less hairy, flowers scarlet. Bracteole  $\frac{3}{4}$  inch long lanceolate mucronulate pubescent. Calyx 2 inches long covering the corolla tube with 3 equal lanceolate mucronulate points pubescent. Corolla lobes elliptic oblong rounded broad  $\frac{1}{4}$  inch long pubescent at the tips. Lip very short not longer than the corolla lobes, broad obovate with very large rounded side lobes, pubescent within, the central line strongly elevated. Anther oblong glabrous on the back hairy in front, no crest.

Sarawak Kuching; Bau (Ridley).

This has a curious lip for a *Hornstedtia* more like that of an *Amomum*.

*H. spathulata*, n. sp.

Stems tall. Leaf oblong lanceolate cuspidate narrowed to the base, no petiole 2 feet long, 6 inches wide glabrous above finely velvety pubescent beneath, ligule oblong hispid sheath sparingly pubescent. Spike obconic, on a short  $\frac{1}{2}$  inch yellow hairy peduncle, 3 inches long. Bracts few lanceolate acute pubescent tips woolly,  $1\frac{1}{2}$  inch long, purple within ribbed thinly coriaceous. Flowers  $3\frac{1}{2}$  inches long. Bracteoles linear woolly. Calyx  $1\frac{1}{2}$  inch long tip bifid pubescent apex woolly. Corolla tube enlarged upwards 3 inches long red, lobes linear obtuse red. Lip an inch long sides elevated long rounded, limb spathulate with a narrow claw and elliptic ovate limb  $\frac{1}{4}$  inch across, whole lip red centre darker edge white at base. Anther with a short triangular acute crest.

Sarawak Matang (Ridley) Perak (Ridley).

*H. reticulata*, Schum. *H. Hævilandi*, Schumann.

A large plant with the habit of *H. scyphiphora*, but with a much branched rhizome elevated above the ground on stout roots. Leaf stems about 12 or more feet tall. Leaves lanceolate acuminate 2 feet long 4 inches wide glabrous except the edge and tip which are pubescent, base, petioled very shortly or winged to the sheath, ligule oblong yellow hairy. Spikes on longer or shorter peduncles, sometimes as much as 6 inches in length, obconic or nearly cylindrical. Bracts broad deep red ovate 2 inches long by  $1\frac{1}{2}$  or less pubescent with numerous fine ribs overlaid by larger ribs and transverse reticulations. Bracteole linear acute 3 inches long white. Calyx spathaceous shorter, white with 3 points. Corolla tube 3 inches long red, lobes narrow

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linear 1 inch long red. Lip yellow with a red central mark between the two rounded lobes limb little longer than the petals linear spatulate, dilated a little before the tip. Stamen pinkish shorter than the lip, anther oblong crest oblong ovate rounded.

Sarawak, very common Matang (Ridley 1182) also Bau, and Bidi. Pengkulu ampat (Haviland).

"Bungah Jungkal" The inner part of the leafy stem sweet and eaten.

The Penkulu ampat specimen of Dr. Haviland on which the species *H. Havilandi* is based, is not distinguishable from the common plant. It is said to differ in its more slender flowering spike, smaller flowers and unappendaged connective. The specimens in the Botanic Gardens herbarium however are as large as any other and the connective of the anther is plainly visible.

*H. Hewittii*, n. sp.

A small plant; stem only 2 or 3 feet tall. Leaves oblanceolate to lanceolate cuspidate narrowed gradually to the base 9 inches long by 3 inches wide above glabrous nerves not close, beneath pubescent. Ligule short rounded entire hairy sheath strongly ribbed pubescent, with occasionally reticulations in the upper part. Spike short lower bracts papyraceous ovate ribbed subacute pubescent, on the edges. Bracteole tubular trifold  $\frac{1}{2}$  inch long, thin. Calyx 1 inch long pubescent. Corolla tube 2 inches long lobes ovate red. Lip an inch long red with central yellow bar, wings long narrow elevated, claw narrow dilated slightly into a narrow bifid limb.

Anther short oblong deeply retuse with no crest.

Sarawak Santubong, (Hewitt). Siul (Ridley).

Near *H. metriocheilus*, of the Malay Peninsula.

## PHOEOMERIA.

*Ph. pyramidosphæra*, Schum.

Pontianak, near Sungei Kanta; (Beccari). Sarawak, Tubao in Bintulu (Beccari) also occurs in Celebes.

## PLAGIOSTACHYS.

*P. strobilifera*, Ridl.

Sarawak Puak (Ridley). British North Borneo, Bongaya River (Ridley) Sandakan (Creagh).

A fruiting specimen collected at Perak seems to me identical with the Sandakan plant.

*Pl. borneensis*, n. sp.

A large stout plant stem  $\frac{1}{2}$  inch through. Leaves large lanceolate cuspidate 12-18 inches long 5 inches wide glabrous above softly pubescent beneath, base narrowed shortly  $\frac{1}{4}$  inch petioled pubescent, ligule short rounded ribbed obtuse bifid edge pubescent hairy sheath glabrous except the keel—hairy strongly ribbed. Spike simple or three flowered conic then lengthening to 6 or 7 inches long stout densely woolly hairy. Bracts lanceolate rather narrow hairy. Flowers red. Capsule globose  $\frac{1}{4}$  inch through hairy terminated by the cylindrical remains of the calyx.

Sarawak, Matang (Ridley 11800). Bau (Ridley).

## ELETTARIOPSIS.

*E. surculosum*, (Schum. sub *Cyphostigma*).

Sarawak Matang, (Beccari, Ridley), not rare on banks.

*E. stoloniferum*, (Schum. sub *Cyphostigma*).

Sarawak at Kuching (Beccari).

## BURBIDGEA.

*B. nitida*, Hook. fil. Bot. Mag. 1879 t. 6903.

N. W. Borneo, Murat between the Lawas and Trusan rivers (Burbidge).

## ALPINIA.

*A.* § *Hellenia exostylis*, Schum.

Borneo no locality given (Korthals).

*A. Fraseriana*, Oliver. *A. rosella*, Ridl.

Brit. North Borneo; Kudat Ridley; Brunei Bay (Bp. Hose) also in Billiton (Schumann).

*A. sumatrana*, Miq.

Borneo no loc. (Korthals).

*A. cornu-cervi*, n. sp.

Leaves lanceolate acuminate 15 inches long  $1\frac{1}{2}$  inch wide glabrous petiole  $\frac{1}{2}$  inch long, ligule short truncate. Panicle on an 8 inch peduncle, 12 inches long with numerous short branches about  $\frac{1}{2}$  inch long glabrous. Bracts fugacious. Ovary glabrous. Calyx tube cylindrical as long as the corolla tube with short ovate lobes. Petals short oblong blunt  $\frac{1}{4}$  inch long. Dorsal one hooded lip shorter split to base, lobes narrow subbifid truncate, one point shorter than the other. Staminodes short thick, cylindrical obtuse. Filament short thick, anther as long, connective linear rounded.

Sarawak no locality (J. Hewitt).

*A. reticosa*, n. sp.

Stem about 4 feet tall. Leaves lanceolate acuminate 18 inches long 2 inches wide hardly petioled glabrous, midrib ribbed, ligule very large oblong rounded  $\frac{3}{4}$  inch long ribbed, sheath closely reticulated with rounded reticulations, all glabrous. Panicle shorter than the

leaf 4 inches long glabrous. Flowers small greenish corolla tube terete slender  $\frac{1}{4}$  inch long, upper sepal under  $\frac{1}{4}$  inch narrowly boat-shaped hooded with a terminal process lateral lobes oblong broader. Lip  $\frac{3}{8}$  inch long entire obovate rounded staminodes at base 2 short cylindric processes stamen shorter than the lip, filament cylindric stout anther oblong with two horn-like excurved tips, and a thin entire short rounded crest. Capsule globose smooth  $\frac{1}{2}$  inch through green, no remains of calyx.

Sarawak, Bau (Ridley).

*A. cylindrostachys*, Schum.

Matang (Ridley) Santubong (Hewitt). "Lip yellow along the centre limited by a red streak on either side rest of flower pale with a pink tinge."

I should hardly agree with Schumann in classing this plant as an *Alpinia*.

*A. brachypoda*, Schum.

Sarawak, Matang (Beccari).

*A.* § *Bintulua, polycarpa*, Schum.

Sarawak, Tubao Bintulu (Beccari).

*A.* § *Cenolophon glabra*, Ridl.

This was described from a dried specimen of Havidland's collected on Santubong, I met with it at Bidi again and drew up a description from the living plant which may be of interest. The plant is but 4 or 5 feet tall. The leaves deep green plicate. The panicle curved about 5 inches long bearing about 20 flowers, on white pedicels the ovary glabrous. Calyx tube nearly straight white with 3 ovate lobes petals linear oblong, the upper one hooded white. Lip much longer flat depressed in the centre and tip decurved obovate edges wrinkled crenulate base dark cherry red passing into

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orange at the tip, base channelled with 2 short ovate acute processes. Filaments slender red as long as the upper petal, anther oblong rather short red with a rounded toothed crest. Stigma white.

Sarawak, Santubong (Haviland). Bidi (Ridley 11810) (Bau 11807) Matang 11888.

*A. (Catimbium), Korthalsi*, Schum.

Pontianak, Sungei Unpanang (Beccari) Banjarmasin (Korthals, Motley).

*A. angustifolia*, Schum.

Sarawak, Matang (Beccari).

*A. laxiflora*, Gagnepain.

Borneo, no specific locality (Chaper).

*A. flexistamen*, Schum.

Sarawak, Matang (Beccari).

*A. borneensis*, Bull. Soc. Bot. France 1904 448. Borneo cultivated at Buitenzorg.

*A. Havilandi*, Schum.

B. N. Borneo, Kinabalu (Haviland).

*A. ptychanthera*, Schum.

Sarawak, Gading near Lundu (Beccari).

*A. Niemvenhuizi*, Val. Ic. Bog. cxcii. Borneo central (Nieuwenhuiz).

*A. assimilis*, Ridl. *A. Hookeriana*, Val. Ic. Bog. clxxxix. Borneo. Cultivated in Buitenzorg fide Schumann not seen.

*A. mutica*, Roxb. Borneo (fide Valetton).



## MARANTACEÆ.

*Phrynium parviflorum*, Roxb. Sarawak, Lundu (Ridley 12420)  
Jambusan and Bau.

*Ph. fissifolia*, n. sp.

Leaves ovate with a broad base, acuminate obtuse, eventually split up into lobes and resembling in form a *Raphidophora* leaf, 16 inches long 9 inches wide, above glabrous beneath the ribs fine hairy, stem and petiole hairy, sheath short 1 inch long hairy. Capitulum sessile 2½ inches through. Outer bracts ovate-lanceolate densely hairy, inner ones narrower covered with long hairs. Flowers white.

Sarawak, Pengkulu Ampat (Haviland) Puak (Ridley) 12358. The curious regular way in which these leaves break up so as to look like those of one of the aroids is very striking.

## MUSACEÆ.

*Musa violascens*, Ridley.

Sarawak common near Perak (Ridley).

*M. campestris*, Becc. (Foreste di Borneo p. 622). In deserted rice fields on the river Sarawak.

*M. borneensis*, Becc. "Pisang Unkaok or Pisang Unkadan."  
Sarawak at Marop (Beccari).

*M. microcarpa*, Becc. "Pisang Lenki."  
Sarawak at Marop (Beccari).

*M. hirta*, Becc. "Pisang Genta"  
Sarawak at Marop (Beccari).

## LOWIACEÆ.

*Lowia borneensis*.

*Orchilantha borneensis*, Gard.-Chron 1886 ii 5.19.  
Introduced from Borneo.

## Begonias of Borneo.

BY H. N. RIDLEY.

Borneo, at least Sarawak, appears to be tolerably rich in *Begonias* at least as compared with the Malay Peninsula. Few seem to have been described however. The most abundant are the tall woodland species of the *Petermannia* section with very insignificant flowers. Young forms often have the leaves prettily spotted, but this soon goes off and the plate becomes tall and dull-colored. This section is a difficult one owing to the variability of the species, possibly some of the abnormal forms one meets with are hybrids. The presence or absence of petals in the male flower is hardly a good character though often used in distinguishing species and groups. I have in some of this section seen flowers with none, or one or two on the same plant. The limestone rocks and mouths of the caves produce a number of pretty species of which *B. spelunca*, with its tufts of round leaves and pretty white flowers is one of the most attractive, while among foliage plants, the beautiful *B. prometha*, growing with only two or three large leaves flat on the rock faces of Bukit Tendong, near Busan, is perhaps the most worthy of cultivation.

§ *Petermannia*. Capsule 3 celled, wings 3 nearly equal narrow oblong, dehiscing by 2 valves.

Stems tall.

- |                                     |                             |
|-------------------------------------|-----------------------------|
| Panicles very small axillary ... .. | 1. <i>B. axillaris</i>      |
| Panicles subterminal lax.           |                             |
| Leaves ovate nearly entire ... ..   | 2. <i>B. propinqua</i> .    |
| Leaves ovate sinuate small ... ..   | 3. <i>B. sarawakensis</i> . |
| Leaves ovate toothed ... ..         | 4. <i>B. borneensis</i> .   |

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- Leaves oblong or lanceolate, oblique ... .. 5. *B. oblongifolia*.  
 Leaves ovate lanceolate cordate ... 6. *B. Pryeriana*.  
 Panicles compact.  
 Stipules broken up into fibres ... 7. *B. inostegia*.  
 Stipules not broken up ... .. 8. *B. congesta*.  
 Panicles diffuse flowers very small  
 leaves narrow ... .. 9. *B. polygonoides*.

## Stem short erect leafy.

- Leaves rhomboid broad hairy ... .. 10. *B. pubescens*.  
 Leaves rhomboid narrow glabrous ... 11. *B. Hullettii*.  
 Leaves narrow lanceolate toothed glabrous ... .. 12. *B. elatostemma*.

§ *Bractibegonie*.

- Bracts large. Flowers large ... 13. *B. Burbidgei*.  
 Bracts small flowers small stems  
 tufted erect ... .. 14. *B. rubida*.  
 Stems prostrate or creeping ... 15. *B. pendula*.

## Stems short rhizomatous.

- Leaves tufted orbicular cordate  
 glabrous... .. 16. *B. spelunca*.  
 Leaves ovate oblique hairy ... 17. *B. Havilandii*.  
 Leaves few large hairy orbicular  
 cordate ... .. 18. *B. Promethea*.  
 Rhizome long leaves distant orbicular  
 ... .. 19. *B. Pyrrha*.  
 Rhizome long with distant long  
 petioled reniform peltate leaves. 20. *B. calcarea*.

§ *Platycentrum*. Capsule with one large oblong wing and two smaller ones erect stemmed epiphyte ... .. 21. *B. adenostegia*.

*B. axillaris*, n. sp.

Stems slender 2 feet and more tall very succulent. Leaves remote lanceolate acuminate base rounded slightly toothed quite glabrous 3 inches long by one wide, petiole  $\frac{1}{4}$  inch. Stipules lanceolate cuspedate caducous. Panicles axillary under an inch long, one to each leaf axil. Peduncle very short branches flexuous, dichotomous. Bracts very small ovate, male flowers  $\frac{1}{2}$  inch across. Sepals oblong rounded petals none. Anthers almost sessile oblong obtuse, about 12 crowded on a torn dehiscing the whole length. Female flowers not seen. Capsule an inch long  $\frac{1}{2}$  an inch across the wings oblong, top truncate broad wings nearly  $\frac{1}{4}$  inch at the tip narrowed to the base. Pedicel  $\frac{1}{4}$  inch long.

Lingga Island 200 to 300 feet attitude 17-7-93 (Hullett 5707).

Allied to *B. oblongifolia* but very distinct in its small axillary panicles with very short peduncles and a few small dichotomous branches.

*B. propinqua*, n. sp.

Stem succulent 2 or 3 feet tall. Leaves ovate acuminate base cordate unequal 8-9 inches long 4 inches wide glabrous margins slightly sinuate, nerves prominent beneath, petiole 3 inches long, stipules lanceolate oblong  $\frac{1}{4}$  inch long. Cymes lax branches slender spreading. Flowers small white or green. Bracts small rounded male flower  $\frac{1}{2}$  inch across, sepals 2 oblong obtuse. Petals narrower liner 2 stamens oblong narrowed to the base. Female flowers not seen.

Fruit oblong  $\frac{1}{2}$  an inch long and as wide apex truncate, wings equal narrow oblong dehiscing by two slits on each face.

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Sarawak common in woods. Matang, (Hullett, Haviland, Ridley 11771) Kuching (Haviland).

*B. propinqua*, var.

Leaves ovate long acuminate dotted all over beneath with minute hairs when young. Panicle long slender as much as 9 inches or less diffuse. Flowers male as in *isoptera*. Capsule oblong longer than broad 1 inch long.

Sarawak, Sapudang (Haviland 534).

This may be a distinct species but I should like to see more than the only specimen I have.

*B. sarawakensis*, n. sp.

Stem a foot or more tall slender branched glabrous. Leaves distant ovate acuminate base very unequal margins undulate quite glabrous pale beneath nerves distinct (young leaves at first dotted with small hairs) 3 inches long  $1\frac{1}{2}$  inch wide, petiole slender 1 inch long. Stipules lanceolate acute caducous small  $\frac{1}{2}$  inch long. Panicles lax few flowered, scurfy 1-2 inches long male flowers minute  $\frac{1}{4}$  inch across, on slender pedicels  $\frac{1}{4}$  inch long bracts very small ovate. Sepals 2 oblong ovate petals 3 narrower, pale. Stamens about 12 filaments very short, anthers dehiscing the whole length, oblong longer than the filaments. Female flower 2 or 3 together larger ovary scurfy sepals suborbicular 4. Petals narrow linear oblong 2, styles. Fruit oblong quadrate wings 3 equal straight narrow  $\frac{1}{4}$  inch wide whole fruit  $\frac{1}{2}$  inch long  $\frac{3}{8}$  inch wide across the two wings.

Sarawak; Path to Tabuan (Haviland 784, 76).

Certainly near *B. isoptera* but with much smaller flowers and leaves.

*B. borneensis*. A. De C. Prod. XV, p. 320, Stapf., Trans. Linn. Soc. IV. 166.

A tall herb glabrous. Leaves obliquely ovate base unequally cordate, or subcordate toothed with a distinct

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tooth at the end of each nerve and nervule, palmately 6-7 nerved dark green above pale beneath membranaceous 9 inches long 6 inches wide, petiole  $2\frac{1}{2}$ -3 inches. Stipules oblong setaceo-acuminate caducous. Male flowers in a large panicle for the section 5 inches long branches slender with long racemes. Bracts oblong  $\frac{1}{2}$  inch long pink caducous. Sepals white ovate or oblong. Petals 0. Anthers subsessile on an elongate torus oblong. Female flowers few. Capsule obovate three winged on a  $\frac{1}{2}$ -1 inch pedicel narrowed at the base truncate at the top 1 inch across at the top and as long wings sub-equal rounded  $\frac{1}{4}$  inch wide angled at the top edge narrowing to the base.

Borneo (sine loc) Barber. Kinabalu (Haviland 1707). Labuan (Motley).

This the first Bornean species described does not seem to be at all common. I have only seen Haviland's specimen. It differs from the common *B. oblongifolia* in its large ovate strongly toothed leaves and much bigger panicle.

*B. oblongifolia*, Stapf. Trans. Linn. Soc. IV. p. 165.

A succulent herb about 2 feet tall, stem covered when young with short hairs. Leaf oblong or oblanceolate acute or acuminate, base inequilateral slightly subcuneate or obtuse, margins faintly undulate with very small teeth at the ends of the nerves, glabrous except the red scurfy nerves beneath, above dark green beneath pale, 5 inches long 2 across, nerves straight about 8, petiole  $\frac{1}{2}$  inch long hairy. Stipules oblong cuspidate green  $\frac{1}{2}$  inch long. Panicle terminal 3-4 inches with few short branches, the longest about  $\frac{1}{2}$  inch. Male flowers crowded on short  $\frac{1}{2}$  inch hairy pedicels. Bracts shorter ovate. Sepals rather firm textured oblong green  $\frac{1}{2}$  inch long blunt. Petals 0. Anthers oblong nearly sessile at the base of the torus, upper ones elliptic with a longer filament, opening by

B. A. Soc., No. 46, 1906.

a slit in the upper part, not splitting all the way down. Female flowers not seen.

Fruit an inch long oblong narrowed at the base,  $\frac{3}{4}$  inch across the two wings. Wings equal truncate at the top, broad and straight ( $\frac{1}{4}$  inch wide) to near the base.

Sarawak, Matang (Hullett, Ridley). Bau (Ridley 11774) Puak, Jambusan Lundu (R) Sepudang 1c.k.m.t. Haviland.

This is the commonest species in Sarawak, and is abundant in the woods. It is somewhat variable in the form of the foliage which in the Kinabalu plant is quite oblong. Another form has leaves similar to those of the Kinabalu form but in some specimens the young parts are covered with stiff yellowish hairs. The flowers have occasionally one petal. This plant was collected by Dr. Haviland at Tabea at 1000 feet on conglomerate. It is probably a mere form of this species.

Another form collected at Niah by Haviland and Hose no 3225, is a slender plant with oblong acuminate leaves more of the shape of those of the Kinabalu plant but altogether smaller.

*B. Pryeriana*, n. sp.

Stem slender glabrous. Leaves distant, lanceolate acuminate cordate very inaequilateral basal lobe broad round, margin sinuate quite glabrous, nerves slender about 6, 5 inches long 2 inches wide, petiole 1 inch slender stipules oblong  $\frac{1}{4}$  inch long subacute. Cymes small slender about 2 inches long. Female flowers solitary 2 on long pedicels in front at the base. Bracts (of male flowers) obovate convolute glandular denticulate. Male flowers  $\frac{1}{2}$  inch long sepals 2 orbicular. Petals 2 narrow linear obtuse. Anthers very numerous obovate cordate, filaments nearly as long. Female flowers not seen.

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Capsule  $\frac{3}{4}$  inch long wings broad  $\frac{1}{4}$  inch broad at the top and narrowed and rounded at the base nearly equal, dehiscence on two lines on each face.

Sandakan Byte Estate (Ridley).

The foliage is narrower than that of *B. Borneensis*, the bracts are very different, and the fruit differs in its broad upper edge of the wings form any an angle with the vertical edge which narrows to a rounded base. Named after Mr. Pryer of Byte Estate, with whom I found it.

*B. inostegia*, Stapf. Ic. Pl. 2309. Trans. Linn. Soc. IV p. 166.

This plant only known from Kinabalu resembles *B. congesta*, Ridl. but has more ovate leaves, and a some what longer panicle. It is peculiar in the way its stipules are broken up into long fibres at the tip.

It was collected in Kinabalu at 6000 feet elevation by Haviland (1708).

*B. congesta*, n. sp.

Stems tall hairy. Leaves distant oblong ovate inaequilateral acute edge undulate with a few minute distant teeth, nerves prominent much forked about 6-9 inches long 4 inches wide, petiole 3 inches long, glabrous except the petiole and nerves scabrid hairy. Stipules  $\frac{1}{2}$  inch long oblong. Flowers crowded into a head, 2 females and many males. Capitulum very shortly pedicelled, pedicel stout about  $\frac{1}{4}$  inch long. Bracts broad thick outer ones suborbicular, inner ones narrower rough. Male flowers pedicelled, pedicel  $\frac{1}{4}$  inch long. Sepals 2 thick oblong shorter than the stamens. Petals 0. Stamens 12, filament short thick anther oblong blunt slightly narrowed to the base, dehiscing by two linear short pores: Female flower not seen. Capsule oblong quadrate almost sessile, wings narrow linear, one smaller than the others. One inch long  $\frac{1}{2}$  inch across the two wings.



Sarawak Bau (Ridley). Flowers white; Niah Limestone (Haviland and Hose 3224).

*B. polygonoides*, n. sp.

Stem erect branched rather slender 2 feet tall, glabrous. Leaves narrowly lanceolate acuminate 4-5 inches long  $\frac{1}{2}$  inch wide slightly scaly on the midrib otherwise glabrous, base narrowed slightly almost equilateral nerves 5 prominent beneath, petiole  $\frac{1}{8}$ - $\frac{1}{4}$  inch long. Stipules ovate amplexicaul  $\frac{1}{4}$  inch long. Cyme terminal spreading with divaricate slender branches lower two or three bearing single female flowers, upper ones males. Bracts minute ovate, male flowers very small  $\frac{1}{8}$  inch rose pink sepals 2 orbicular oblong. Petals lanceolate acute smaller. Stamens 10 anthers club-shaped narrowed at the base.

Fruit with the wings almost orbicular  $\frac{1}{4}$  inch long, dehiscent by oblong valves on the face, wings rounded equal.

Sarawak, Matang (Ridley 11770, Haviland 1906.)

*B. pubescens*, n. sp. *B. hirsuta*, (Bracemss).

Stem 2 to 4 inches long erect or decumbent leafy. Leaves close together alternate oblanceolate oblong base cuneate or rounded apex subacute margins dentate 5 inches long  $1\frac{1}{2}$  inch wide margins, nerves on the back hairy with stiff slender pale hairs. Upper surface sprinkled with hairs, petiole  $\frac{1}{8}$  inch long hairy. Stem also red hairy. Inflorescence axillary short with 2 bracts lanceolate acute or acuminate keeled hairy  $\frac{1}{4}$  inch long. Male flowers in pairs on slender pedicels several together. Sepals white orbicular  $\frac{1}{8}$  inch long. Petals 0. Stamens 12 filaments free nearly to base longer than the oblong oblanceolate, anthers which possess a ridge over the top. Female flowers not seen.

Capsule ovate long beaked  $\frac{1}{2}$  inch long and wider across the broad veined wings. Capsule punctate and

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hairy dehiscing along the wing edge. Wings hairy on the edge.

Sarawak, Matang abundant (Hullett 346) Haviland 76 Ridley, on banks at 1800 feet alt.

Closely allied to *B. Hulletti* but differs in its hairiness, shorter broader leaves and beaked hairy capsule.

*B. Hulletti*, n. sp.

Stems erect or decumbent 3 to 6 inches tall glabrous, leafy. Leaves alternate sessile lanceolate falcate or oblique base cuneate, apex long acuminate, margin toothed at the apex, nerves alternate 3 pairs nervules reticulated, margins and nerves armed with bristles. Flowers axillary in strongly nerved lanceolate acuminate bracts, white, upper flowers male lower ones female male flowers  $\frac{1}{2}$  inch across pedicels nearly  $\frac{1}{2}$  inch long. Sepals 2 oblong obtuse. Petals 0. Stamens 13 or 14 filaments slender, free nearly to the base. Anthers elliptic short dehiscing by slits in the side. Female flowers sepals 2 or 3 petals. Styles three free for half their length, stigmas bifid with long arms. Capsule  $\frac{1}{2}$  inch across the wings, wings long oblong rounded.

Sarawak, Matang at 800-1000 feet (Hullett, Ridley 11776).

*B. elatostemma*, n. sp.

Stem slender glabrous. Leaves narrow lanceolate long acuminate base acute, margins with a few distant teeth rather large about 12 on each side 4-5 inches long  $\frac{1}{2}$  to  $\frac{3}{4}$  inch wide glabrous petiole slender  $\frac{1}{2}$  inch long stipules oblong cuspidate  $\frac{1}{4}$  inch long. Panicle small 1-2 $\frac{1}{2}$  inch long. Bracts obovate oblong  $\frac{1}{2}$  inch long male flowers crowded  $\frac{1}{4}$  inch across pedicel as long as the sepals. Sepals oblong 2. Petals 0. Stamens 8-10. Anthers ovoid opening by short slits at the top, filaments as short as anthers. Female flowers in pairs.

Capsule  $\frac{1}{2}$  inch long, cylindric swollen shortly beaked, wings 3 equal narrow  $\frac{1}{8}$  inch across, sides straight narrow to apex and base, slightly;  $\frac{1}{4}$  inch across the two wings.

Sarawak Rejang (Haviland 2946).

*B. Bractei* (*Begoniae*) *Burbidgei*. Stapf. l.c. 165.

A tall branched plant 6 to 8 feet tall with ovate acuminate oblique leaves, glabrous, a short terminal panicle of large white flowers  $1\frac{1}{2}$  inch across, with large persistent greenish white bracts. Capsule semiorbicular an inch across the truncate top, the wings broadest at the upper angles rounded.

Kinabalu at 7600 feet (Haviland 1706) and at Kiau (Barbidge).

The biggest flowered Begonia I have seen from Borneo. A plant collected at Tambusan by Haviland at 5000 feet on Kinabalu is rather more slender with smaller bracts but apparently the same, as Dr. Haviland suggests.

*B. rubida*, n. sp.

Stems tufted succulent about 3 feet tall slender glabrous. Leaves distant ovate inaequilateral acute, base cordate glabrous succulent 8 inches long,  $1\frac{1}{2}$  inch wide, margins almost entire, nerves radiating from the base about 5, petiole 2 inches long. Bracts of long obtuse  $\frac{1}{2}$  inch long caducous. Inflorescence paniced loose terminal racemes flexuous branches slender. Bracteoles obovate convolute  $\frac{1}{2}$  inch long rounded truncate edges glandular dentate crowded. Male flowers  $\frac{1}{2}$  inch across. Sepals semiovate dark red, petals 2 narrower and shorter linear oblong. Stamens crowded yellow aciniform. Female flowers solitary on the lower branches ovary semiovate with 3 equal rounded wings  $\frac{1}{2}$  inch long red sepals 2 ovate blunt rounded. Petals 3, 2 nearly as large as the sepals oblong, one linear sub-acute. Styles connate for more than half their length

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arms 3, stigmas reniform with rather strong processes. Fruit  $\frac{1}{2}$  inch long, 1 inch wide across the broad triangular rounded wings.

Sarawak on the Limestone rocks at Jambusan caves, (Ridley 12393) Braang (Haviland 94).

The flowers and fruit are considerably larger in Haviland's specimens than in mine, but I think they are the same species.

*B. pendula*, n. sp.

Stems slender a foot or more long creeping and rooting at the nodes. At each node a pair of oblong lanceolate cuspidate, scale leaves  $\frac{1}{2}$  inch long. Leaves fleshy lanceolate, base rounded apex acute 2-2 $\frac{1}{2}$  inch long 1-1 $\frac{1}{2}$  inch across, glabrous, margins irregularly toothed or nearly entire, petiole slender 1 $\frac{1}{4}$  inch long. Panicles slender lax. Flowers few very small pink males terminal in cymes, female solitary at the base. Bracts minute lanceolate pedicels slender  $\frac{1}{2}$  inch long, male flowers  $\frac{1}{2}$  inch long. Sepals 2 obovate obtuse. Petals 0. Stamens numerous filaments free longer than the elliptic anthers. Female sepals 3 red oblong. Petals 2 smaller. Styles 3 connate at base, stigmas reniform hairy. Capsule elliptic with the broad rounded wings transversely elliptic  $\frac{1}{2}$  inch wide  $\frac{3}{8}$  inch long one wing smaller than the others.

Sarawak on Limestone rocks at Jambusan, Bau (Ridley 11772).

A slender creeping plant hanging down over the rock faces, with fleshy leaves the nerves of which are invisible and red stems, at least in the long trailing stems of the Jambusan plant. In the stouter Bau plant the nerves are more conspicuous the leaves inaequilateral and ovate acuminate. This appears to be the lowest part of the plant, the Jambusan one being creeping sprays.

*B. spelunca*, n. sp.

Stems very short. Leaves tufted orbicular cordate,  $1\frac{1}{2}$  inches across glabrous strongly reticulate petioles slender 2-3 inches long. Cymes on slender peduncles 2 inches long flowers small white those on terminal branches male the lower are female. Bracts very small lanceolate acuminate. Male flower  $\frac{1}{2}$  inch across sepals 2 obovate petals 2 linear narrow. Stamens free near by to the base about 20, anthers oblong, pale dehiscing the whole length, filaments as long. Female flower sepals and petals as in male, stigmas 3, styles separate for part of their length. Capsule fusiform with 3 large broad rounded wings  $\frac{1}{2}$  inch across the wings and  $\frac{1}{4}$  inch long dehiscing by two slits on each face.

Sarawak, Limestone caves, Bidi; Jambusan (Ridley 11773). Mt. Braang (Haviland 873). Tabea on conglomerate at 1000 feet (Haviland.)

This pretty little white flowered begonia reminding one of a violet grows abundantly in the mouths of the caves in the limestone districts.

*B. Havilandii*, n. sp.

A small herb with a short creeping rhizome and erect branches 2 inches tall leaves ovate broad acute, base very unequal, broad lobe rounded  $\frac{1}{4}$  inches long  $2\frac{1}{2}$  inch wide, margins toothed each tooth bearing a hair, nerves reticulate, bearing on nerves and nervules rather stiff pale hairs, petiole  $\frac{1}{4}$  to  $1\frac{1}{2}$  inch long hairy when young. The leaves apparently purple marbled when young. Stipules persistent ovate cuspidate keeled  $\frac{1}{4}$  inch long. Panicle terminal 3 inches little branched. Bracts persistent ovate white, toothed, each tooth bearing a glandular hair. Male flowers  $\frac{1}{4}$  inch across pedicel about as long. Sepals oblong 2 petals smaller 2. Stamens about 12 oblong nearly sessile.

Female flowers not seen "segments 6." Capsule orbicular with broad rounded wings,  $\frac{1}{4}$  inch across the

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two wings. Wings semilunar narrowed to the tip broader at base. Ovary 3 celled placentas bifid.

Sarawak, Pengkulu Ampat (Haviland 279).

*Begonia promethes*, n. sp.

Stem very short prostrate one inch long. Leaves 2, rarely 3 ovate rounded at the tip unequal at the base petiole an inch long thick hairy red, lamina glabrous except a few hairs on the edge and veins on the back, shining light or emerald green with broad brown bars, finally entirely olive green, nerves depressed on the upper surface, lower surface red with elevated nerves, 6 inches long 4 inches wide. Scape rather slender 9 inches long peduncle glabrous red. Bracts oblong  $\frac{1}{2}$  inch long or more in pairs light green. Panicle of few usually two branches, terminal branch bearing one or two female flowers opens first the lower branch bears male flowers and after the female flowers are almost over grows till it is much longer than the female branch, and the male flowers then open.

The male flowers in three or more terminal sepals 2 semiorbicular  $\frac{1}{4}$  inch long, red shining outside, pale pinkish white within. Stamens connate, torus cylindric rather thick, anthers very numerous in a round head, yellow oblanceolate 2 celled with a short stalk.

Female flowers one or two only, ovary equally 3 winged with rounded wings,  $\frac{3}{8}$  inch long, as broad as long. Sepals 4, 2 ovate obtuse white with red backs 2 narrower all white. Petals linear white narrow (not always present) styles 3 short thick stigmas four lobed unequally all yellow, 2 curved hornshaped, 2 reniform.

Borneo, Sarawak on sandstone rocks at Bukit Tondong near Busau, also Haviland 485.188. This very pretty begonia grows quite flat on the vertical surfaces of the high rocks. I could reach but few plants of it, but two I brought to Singapore grew very readily and flowered in December and January.

*B. Pyrrha*, n. sp.

Stem creeping slender woolly. Leaves distant orbicular, base cordate 2 inches across, margins hairy with rather pale long hairs upper surface sprinkled with hairs under surface glabrous except the veins covered with wooly appressed hairs, petiole  $\frac{1}{2}$  inch long wooly. Panicle lax few branched and few flowered 3 inches long hairy. Bracts in pairs convolute oblong denticulate  $\frac{1}{4}$  inch long, green. Male flowers nearly sessile,  $\frac{1}{4}$  inch across. Sepals 2 oblong obtuse pink. Petals 2 obovate oblong shorter white. Stamens 13-14 filaments free to the base as long as the linear oblong anthers. Female flower pink, sepals and petals oblong obtuse subequal. Styles separate about halfway, stigmas 3 capsule oblong elliptic with three broad subtriangular obtuse wings  $\frac{1}{2}$  inch across the wings,  $\frac{1}{3}$  inch long.

Sarawak, Saribas, Haviland 2034, 1848.

The flowers both male and female are very shortly pedicelled, the toothed bracts being longer than the pedicel. *B. repens*, Miq., from Java and Borneo might possibly be intended for this but the flowers are not described and it is impossible to be certain what was intended.

*B. calcarea*, n. sp.

Rhizome long creeping, over 4 inches covered with appressed hairs roots long and wiry. Leaves erect from the rhizome with stout hairy petioles 6 inches long densely brown hairy, blade peltate almost reniform rounded 6 inches wide, 4 long base rounded margins sinuate with distant teeth, nerves palmate spreading about 8; blade pale green (when dry) above glaucous beneath, fleshy, sprinkled with short stiff hairs above, backs glabrous except the main nerves dark brown hairy. Inflorescence on a very short peduncle rising directly from the rhizome covered with scale like leaves. Male flowers not seen. Capsule obovoid in outline with 3

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equal wings,  $\frac{1}{2}$  inch long narrow at the base widened towards the apex, perianth apparently 6 lobed.

Sarawak, top of Mount Braang old jungle limestone (Haviland).

I have only seen one specimen of this curious begonia with a single capsule and no flowers. It is hardly sufficient to describe.

- B. (Platycentrum), adenostegia*, Stapf., Trans. Linn Soc. IV. 164. An erect epiphytic plant under a foot tall glabrous with leaves entire acute shortly petioled a short little branched panicle with small persistent oblong bracts male flowers  $\frac{1}{2}$  inch across, sepals 2 petals 2 white. Female flowers 5 lobed capsule with one large oblong wing and two smaller ones.

Kinabalu, at Kinitaki 4500 feet, (Haviland 1270).





## Short Notes.

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### Curious Nesting Place of *Simotes Octolineatus*.

In September last an old *Spathodea nilotica* tree which had been sickly for some time was cut down in the Botanic Gardens. In breaking it up one bough was found to be full of old borings of some longicorn beetle, and ensconced in one of these tunnels was found a living female snake (*Simotes octolineatus*) about a foot long which had already laid about a dozen oblong eggs an inch long in the tunnel. The bough was more than twenty feet from the ground, and the tree was isolated and with a bare trunk so that the snake must have climbed up the slightly roughened bark of the trunk. There were several openings into the bough whence the beetles had escaped and through one of these the little snake must have entered the burrow.

H. N. Ridley.

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### Fertilization of *Barringtonia*.

In Journal No. 41. p. 124 a description of the fertilization of *Barringtonia racemosa* was given. The moth described as conveying the pollen to the stigma and so fertilizing the flower has been identified by Sir George Hampson as *Zethes rufipennis* Hampson.

H. N. Ridley.

## Errata.

Journal No. 45 p. 89 line 2 " and *Nymphalina* " lego subfam. *Nymphalina*, fam. *Lemoniidae*.

Line 9. Amaen leg. Amoen.

Page 90, line 25, Nias leg. Nicev.

" 91,	" 6,	Woodmajor leg. Woodmason.
" "	" 20,	et. seq. <i>Crymanthis</i> leg. <i>Erymanthis</i> .
" 93,	" 27, 28	<i>tenthras</i> leg. <i>teuthras</i> .
" 95,	" 7,	<i>iphitat osca</i> leg. <i>iphita tosca</i> .
" 101,	" 21,	<i>Dugapa</i> leg. <i>Ducapa</i> .
" 102,	" 3,	<i>Stibochiana</i> leg. <i>Stibochiona</i> .
" "	" 8,	Mr. leg. Mt.
" 103,	" 76,	<i>clandius</i> leg. <i>claudius</i> .
" "	" 7,	♂ leg. ♀.
" 106,	" 22,	<i>ambara</i> leg. <i>amhara</i> .
" 108,	" 2,	<i>discoval</i> leg. <i>discoidal</i> .
" "	" 18,	<i>sclenophora</i> leg. <i>selenophora</i> .
" "	" 19,	<i>zeroco</i> leg. <i>zeroca</i> .
" 109,	" 7,	<i>mils</i> leg. <i>mihi</i> .
" 110,	" 14,	<i>cognitia</i> leg. <i>cynitia</i> .
" 117,	" 5,	Here leg. there.
" "	" 34,	blade leg. black.
" 118,	" 26,	place leg. phase.
" 122,	" 23,	on leg. all.
" 125,	" 13,	<i>Rhinopoepa</i> leg. <i>Rhinoepepla</i> .
" 127,	" 3,	<i>sericins</i> leg. <i>sericeus</i> .
" 129,	" 16,	<i>Wioeus</i> leg. <i>Uraeus</i> .
" 134,	" 1,	<i>zenera</i> leg. <i>zemara</i> .
" "	" 25,	Kina leg. Kinabalu.

Journal 45, on p. 56 the notes are misplaced. *Sus verrucosus* should refer to the Javan, *Sus barbatus* to the Bornean pig.

Page 286,	line 17,	for	Negrite	read	Negrito.
" 286,	" 22,	"	Fascicugi	"	Fasciuli.
" 286,	" 23,	"	L'nougs	"	G'ngongs.
" 286,	" 26,	"	interwove	"	internode.
" 286,	" 33,	"	g'noug	"	g'ngong.













