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Notes on the Millipedes, Centipedes, Scorpions, etc., of the Malay Peninsula and Siam.

By Captain Stanley S. Flower, 5th Fusiliers.

I. Introductory Remarks.

The animals which this paper is about, from their strange shapes, curious habits and the power of inflicting dangerous wounds which some possess, are of interest to most people, but especially to those who, having been brought up in England, where none but very small and harmless species exist, come to live in the East Indies, where a wonderful variety of these creatures flourish. However little one may care for natural history, one must come in contact with them, millipedes, centipedes, scorpions and spiders all entering houses and often turning up where least wanted, even in one's bath-sponge and bedding. When I arrived in the Straits Settlements, in March 1895, I knew practically nothing of these animals, how they were classified, how to distinguish between them, or which were poisonous and which harmless, and in no book or paper could I find the information wanted, so I set to work to collect and examine specimens, and compare them with such literature on the subject as was available. Mr. R. J. Pocock, of the British Museum of Natural History, most kindly gave me invaluable assistance in identifying specimens, and answering questions of all sorts about these animals, and finally has been so good as to look through my notes made in the Peninsula and Siam from 1895 to 1898. These notes, then, I venture to lay before the Society, hoping they may be of use to residents in the Straits, Native States and Siam, who are interested in these strange animals, and also hoping that they may help some more competent writer to compose a full catalogue.

The specimens I collected were distributed between the British Museum, and the Royal Siamese Museum, Bangkok; except some now in the Raffles Museum.

II. Position in the Animal Kingdom.

Millipedes, centipedes, scorpions and spiders all belong to the great collection of invertebrate animals with jointed legs which is for convenience grouped together and called the Sub-kingdom ARTHROPODA (or GNATHOPODA). Various opinions are held by naturalists as to the divisions into which this Sub-kingdom should be divided. Valuable papers on the subject appeared in "Natural Science" in 1897, by Mr. R. J. Pocock in the February number (p. 114), and by Prof. Ray Lankester in the April number (p. 267); from these the following provisional classification is adopted.

Sub-kingdom *Arthropoda*.

SECTION I. Prototracheata (or Malacopoda).

Class (i). *Prototracheata* (or *Peripatoidea*).

Containing the single family Peripatidæ, now divided into about four genera. A single specimen is on record from Sumatra, and Mr. H. N. Ridley informs me that the Skeat expedition recently obtained it in the Malay Peninsula. This very interesting animal has somewhat the general external appearance of a caterpillar, it has a pair of antennæ, and in the Sumatran specimen 24 pairs of legs (t. Sedgwick, Cambridge Nat. Hist., vol. v, 1895, p. 26).

SECTION II. Tracheata (or Lipobranchia).

Subdivision A.—Progoneata (or Prosthogonea).

Class (ii). *Diplopoda*. "Millipedes" (vide post).

Class (iii). *Pauropoda*. Containing the single family Pauropidæ.

Minute creatures with twelve body segments and branched antennæ; which I believe have not so far been found in Malaya.

Class (iv). *Symphyla*. Containing the single family Scolopendrellidæ (vide post).

Subdivision B.—Opisthogoneata (or Opisthogonea).

Class (v). *Chilopoda*. "Centipedes" (vide post).

Class (vi). *Hexapoda* (or *Insecta*). The true insects, such as wasps, flies, butterflies, beetles, grasshoppers, etc., etc., divided into several orders.

SECTION III. Branchiata (or Acerata, or Sozo-branchia).

Class (vii). *Crustacea*. Crabs, lobsters, shrimps, woodlice, barnacles, etc., etc., divided into several orders.
Class (viii). *Gigantostraca*, divided into 3 orders:—
1st Order *Xiphosura*. Containing the single family Limulidæ (vide post).
2nd order *Merostomata* (or *Eurypterida*), extinct.
3rd order *Trilobita*, extinct. [It is probable that the Trilobita should form a distinct class].
Class (ix). *Arachnida*. Scorpions, spiders, etc., (vide post).
Class (x). *Pantopoda* (or *Pycnogonida*) "Sea-spiders."

II. Diplopoda.

The Millipedes, Class *Diplopoda*, are invertebrate animals found in all temperate and tropical regions, herbivorous, slow-moving and incapable of biting a human being, some are nearly 10 inches (254 mm.) in length. *Head*. The head is distinct and has a pair of short antennæ (composed of seven or eight segments) in front and two pairs of jaws on its lower surface. *Body*. The body is more or less elongated and consists of from 9 to over 100 segments, all much alike in structure. The majority of species are nearly cylindrical in cross section (but some are flattened), each segment being cased in a horny ring. *Legs*. The bases of the legs are almost in contact in the middle of the lower surface of the body, there are two pairs to most of the segments, the last pair of legs are never elongated.

Native Names for Millipedes.

Malay, *Gongok*, *Ulat-bulan*.
Siamese, *King keu*. [1894, p. 56).
Jakan, *Gr-gok* (Lake+Kelsall, J. S. B. R. A. S., No. 26,

Occasionally Millipedes are met with in very large numbers. The late Mr. Whitehead in his book "Kinabalu," p. 17, describing his visit to Malacca, writes, "On the way down from Mount Ophir I saw a wonderful gathering of pale yellow Millipedes,

about six inches long; they were in a mass, one on the top of the other, which must have numbered several hundreds, and reminded me of a huge dish of macaroni." And I myself saw enormous numbers on the island of Kosichang, in the Gulf of Siam, when visiting it on the 27th and 28th of August 1897; the following extract from my diary may be of interest:—

"The chief living feature of the island was the Millipedes. From sea-level to the top of the hill, all about the ground under the shade of the trees and in the hot midday sunshine they were crawling about in hundreds and hundreds; the big red-brown ones (*Thyropygus*) were particularly conspicuous, 5, 6 or 7 often to be seen crossing the path within a few yards: some of these were uniform in colour, others banded alternately lighter and darker; then there were smaller Millipedes of a beautiful grey colour, and flattened ones (*Orthomorpha*); when we turned over dead leaves in the wood we found in the soil many small white-legged Millipedes, which when disturbed sprang about, very lively, hopping an inch or two off the ground, and were quite difficult to catch; a contrast to the numberless "Tikal" Millipedes (*Zephronia*), which were exceedingly numerous on the artificial stone work, and which when picked up always rolled into a ball and remained quite quiet." At the end of February 1898, I was again at Kosichang; *not one single Millipede was to be seen* abroad, but we found a few by searching in damp spots, underneath timber, old tins, etc. This shows how the different seasons affect these animals; and how a locality where in the dry season there seem to be none, in the wet season literally swarms with Millipedes.

An anomymous writer in a Singapore paper of(? 13th) October 1897, gives the following Malay account of the evolution of Millipedes, etc.:—"There is a belief that if the vertebral bone of a fish is kept under a mattress for some time it becomes a centipede, and that the strands which are found between the pulp and the rind of a plantain, commonly known as pisang klat, when securely bottled up and kept in a dark corner become Millipedes. There is also a belief that a fresh water fish, not unlike the European sly, and known to the natives as 'ekan klee,' is generated from a tadpole."

Key to Classification of Millipedes.

I. Body furnished with tufts of scale-like hairs. Antennæ eight jointed. Scent-glands absent. *Sub-class PSELAPHOGNATHA;* contains the single family *Polyxenidæ*, minute millipedes, "only about one tenth of an inch long" (Pocock, R. N. H. vol. vi, p. 209), so far not known from the Malay Peninsula.

II. Body not furnished with tufts of scale-like hairs. Antennæ seven jointed. Scent-glands usually present. *Sub-class CHILOGNATHA*; divided into three orders.

A. Body short and broad, 12 or 13 segments, second and last segments enormously enlarged, capable of being rolled into a ball, no scent-glands. *Order* ONISCOMORPHA.

B. Body elongate, 19 or more segments, none of them very much larger than the rest, capable of being spirally coiled (except *Sphæriodesmus*).

A. Last back plate forms a hood over the last pair of legs, 19 or 20 segments, no scent-glands, no known species exceeds a quarter of an inch (6 mm.) in length. *Order* LIMACOMORPHA, contains the single family *Glomeridesmidæ;* a species occues in Sumatra.

B. Last back plate forms a complete ring, enclosing the anal valves, 19 to over 100 segments, some species exceed $9\frac{3}{4}$ inches (say 250 mm. in length). *Order* HELMINTHOMORPHA.

a' Mandibles degenerate, from about 30 to over 100 segments, species seldom exceed $1\frac{1}{2}$ inch (38 mm.) in length. Sub-order *Colobognatha.*

b' Mandibles normal.

a''. Pedal laminæ free, 30 to 32 segments, Sub-order *Chordeumoidea.* Small Millipedes known from Sumatra, Burmah, etc., but so far not from the Malay Peninsula.

b''. Pedal laminæ united to the terga.

a'''. From about 30 to over 70 segments, Sub-order *Iuloidea.*

b'''. 19 or 20 segments, Suborder *Polydesmoidea.*

Sub-class *Chilognatha.*

Order *Oniscomorpha.*

Short, robust Millipedes, convex above and flat below, capable of rolling themselves into a ball, hence popularly called "Pill Millipedes." The body consists of 12 or 13 segments, of which the first is very small, the second is enermously expended at the sides, and the last expended laterally and posteriorly, so as to entirely cover the anal region. Each typical body segment consists of 7 pieces; a large vaulted semi-circular horny plate forming the upper surface, and concealing the legs, beneath this on each side a small pleural plate, and between this and the two legs two still smaller tracheal plates bearing the stigmata, one corresponding to each leg. The legs are in contact in the middle line of the body, and those of the last pair, or last two pairs, are enlarged in the male and transformed into a pair of clasping organs. The back plates are not furnished with scent-pores. Pill-millipedes are found in North America, Europe, Africa, Asia and Australasia; some species attain a length of over $2\frac{1}{4}$ inches (or 60 mm.); they are divided into two families:—

A. 12 segments, antennæ close together. *Glomeridæ.*
B. 13 segments, antennæ further apart. *Zephroniidæ.*

Pill-millipedes may possibly be confounded at first sight with Woodlice, belonging to the Crustacea, and with certain wingless Cockroaches, belonging to the Hexapoda, which both occur in similar localities and surroundings; the cockroach can be at once detected by having only 3 pairs of legs, and the woodlouse by its having only one pair of legs to each segment, instead of two pairs to most segments as in the Millipedes. "Moreover, the hinder end of the body in the crustacean is composed of a number of small segments more or less closely crowded together, but in the Pill-millipede the last segment is much enlarged, and acts as a kind of protective cover to the lower side of the body when it is spherically rolled. Of course there are other differential characteristics between the two not less striking than that already mentioned; but it is needless to enter into them here." Pocock, J. B. N. H. S. vol. xii, p. 269 (1899).

Family *Glomeridæ*.

Pill-millipedes with the antennæ relatively close together on the front of the head, eyes with a single (lateral vertical) row of ocelli, a conspicuous horse-shoe shaped "sensory" organ between the eyes and the antennæ, and the body consisting of twelve segments; they are usually of small size, under $\frac{5}{8}$ of an inch (15 mm.) in length, and are found in England, Europe, North America, and parts of Asia. Though species of *Glomeris* are known from Tenasserim, Sumatra and Borneo, they have not yet, to my knowledge, been recorded from the Malay Peninsula.

Family *Zephroniidæ*.

Pill-Millipedes with the antennæ widely separated, situated completely at the sides of the head, eyes composed of a spherical cluster of ocelli, no "sensory" organ on the face between the eyes and the antennæ, and the body consisting of thirteen segments; they attain a length of over $2\frac{1}{4}$ inches (say 60 mm.), and are found in Africa, Madagascar, India, Ceylon, Sikkim, Burma, Siam, Cochin China, the Malay Peninsula and Archipelago, Australia and New Zealand. Over sixty species are known, divided into about seven genera. "A Monograph of the Zephroniidæ inhabiting India, Ceylon and Burmah" by Pocock, will be found in the Journal of the Bombay Nat. His. Society, vol. xii, (1899), pp. 269-285 and 465-474.

Genus *Sphæropæus*, Brandt.

Apex of the legs broad and truncate, the upper angle bearing a long spine above the claw, there being a considerable space between the claw and the spine.

1. *Sphæropæous zonatus*, Pocock. A.+M.N.H. Ser. 6, vol. xvi, 1895, p. 412. Recorded from Malacca.

2. *Sphæropæus bimaculatus*, Pocock. A.+M. N. H. Ser. 6, vol. xvi, 1895, p. 412. Recorded from Singapore.

Genus *Zephronia*, Gray.

Apex of the legs narrowed and pointed, the spine and the claw nearly contiguous.

3. *Zephronia anthracina*, Pocock. A.+M. N. H. Ser. 6, vol. xvi, 1895, p. 413. Entirely black, shining; reaches a length of 52 mm. recorded from Perak.

4. *Zephronia impunctata*, Pocock. A +M. N. H. Ser. 6, vol. xvi, 1895, p. 413. Pitchy black hinder borders of terga obscurely ferruginous, legs olivaceous; length 36. mm. I found a single specimen (the type) in the jungle near the big waterfall in the Botanical Gardens, Penang, in March 1895.

I got specimens of *Zephronia* also from Singapore, Selangor and Kosichang, of so far undetermined species.

Order *Helminthomorpha*,

Sub-order *Colobognatha*.

Small Millepedes, largest about 1½ inches (or 40 mm.) in length, with elongate bodies composed of from about 30 to over 100 segments; head often tucked under the first segment; mouth more or less adapted for sucking, the jaws being degenerate; known from England and also from most warm parts of the world; divided into several families.

Family *Pseudodesmidæ*.

5. *Pseudodesmus verrucosus*, Pocock. A.+M. N. H. Sept.'87, p. 222. Originally described from a Perak specimen, 34 mm. in length. In Sept. '97 I found one specimen of a beautiful pale cream colour at Dumdruan Estate, 700 feet elevation, Gunong Pulai, Johore.

6. *Pseudodesmus* sp. Yellow millipedes, 23 mm. in length. Ten specimens found under logs, etc., in the jungle near Hinlap, 700 feet elevation, and Muok Tek, 900 feet, in the Dong Phya Phai, Siam; November 1897.

Sub-order *Iuloidea*.

This sub-order includes the most typical millipedes, and also the largest, some being nearly 10 inches (254 mm.) in length; it is cosmopolitan. The mandibles are normal, the pedal lamina united to the terga, and there are from about 30 to over 70 segments.

Families *Spirostreptidæ* and *Spirobolidæ*.

The Millipedes of these two families are numerous in the East Indies both in species and individuals; they may be thus distinguished:—*Spirostreptidæ*, first three segments with a pair of legs each, fourth legless. *Spirobolidæ*, first four segments with a pair of legs each. The collector will soon get to know the form of eye characteristic of each family, a useful way of distinguishing them, but not infallible, some species having eyes of intermediate shape.

Family *Spirostreptidæ*.

Genus *Spirostreptus*.

Ventral grooves short; distance between eyes about equal to half the long diameter of an eye.

7. *Spirostreptus vittatus*, Newport.

Pocock has given a coloured figure and description of this species:—

Max Weber, Zool. Ergebnisse III, p. 387, plate xxi, fig. 8 (1894).

This is a very handsome creature when alive, coloured in alternate bands of black and red-brown. When walking it carries the head low, and the antennæ are constantly employed feeling everything the animal approaches. Each leg seems to move independently, thus crossing each other in walking, and apparently impeding any rapid motion. They are usually found in jungle, crawling on tree trunks or on the ground, in the middle of the day, quite fearless of any enemy, and as far as my experience goes submit quietly to be picked up by a collector. I have found them on Penang Hill from 1100 to 2500 feet elevation (March and Nov. '96), near Chumar, Perak (Dec. '96), and on the Kuala Kangsa Pass, Perak (May '98); this last was the largest specimen I have seen measuring in total length 9¾ inches (= 248 mm.).

I also obtained a *Spirostreptus* of this, or an allied species, at Kulim, Kedah, in 1895; and two specimens near Muok Lek, 900 feet elevation, in the Doug Phya Phai, Siam, in Nov. 1897.

Genus *Thyropygus*.

Ventral grooves long and deep, distance between eyes about equal to or greater than the long diameter of an eye.

8. *Thyropygus perakensis*, Pocock.

Spirostreptus perakensis, Pocock, Linn. S. J. Zool. xxiv, p. 322 (lead figured). [1892].

The type specimen, from Perak, was presented to the British Museum by Mr. J. H. Leech; it is described as a male, 210 mm. in length, with 69 segments, and in colour polished black, with antennæ and legs reddish yellow.

9. *Thyropygus bowringii*, Pocock.

Spirostreptus bowringi, Pocock, Linn. S. J. Zool. xxiv, p. 321 (head fig. p. 322) [1892].

During the rainy season this species is very plentiful in Siam, coming out usually towards evening and wandering about gardens and paths, and also occasionally entering houses; during the rest of the year it seems to quite disappear, presumably it hides away in holes. I have met it in the following localities:—

Bangkok (May, June, July and August).
Ayuthia (June).
Pachim (April).
Kosichang (August).

Adults, of both sexes, have from 60 to 72 segments. The longest male I measured was about $5\frac{3}{4}$ inches (148 mm.), the longest female about $8\frac{5}{8}$ inches (or 220 mm.).

Colour (from life), drawn up from a large series of Bangkok specimens.

The whole animal is of a very rich warm yellow ochre, with these exceptions:—the front surface of the head is a rich red-yellowish brown, sometimes darker between the eyes, it also gets darker towards the mouth shading into black on the upper lip. The antennæ are rich red-yellowish brown. The eyes black. The first segment behind the head is rich red-yellowish brown, getting darker towards its posterior edge. The remaining segments have each on their posterior part a very dark brown band, in some individuals pure glistering black, this band gets narrower and lighter in colour underneath as it approaches

the bases of the legs, and is broadest on the centre of the back, where it is about twice the width of the intervening yellow spaces. The tail (last segment) is yellow, on its broader portion obscurely banded once with reddish-brown, and the hinder portion (as for instance the sides of the anal valves) are picked out with reddish brown, the sharp tip of the tail is, in some specimens, black. The legs are *more or less* shaded with light-reddish brown, differing in individuals. The position of the foramen-repugnatorum is marked on the sides of the somites by a dark grey half-moon shaped line.

These big Thyropygi when caught in the hand do not passively submit as most millipedes do, but twist about, rear up their heads, and bite one's fingers with their jaws, but of course without breaking the skin or hurting in the least; but their show of resistance is so vigorous that anyone unaware of their harmless character would naturally not attempt to touch them twice.

I have kept many individuals of this species in captivity; they feed readily on bananas, etc., but never seem to stop eating as long as food is available. One I noted (as far as I was able to attend to it) eat without stopping for fifteen hours on end. The difficulty of keeping them alive is to strike the medium between starving them and allowing them to overeat themselves, which results in a week or so in diarrhœa, and then death soon supervenes. While eating the lower jaws work away steadily with a lateral in and out motion, and all the time the antennæ keep moving, examining every bit of food just before it enters the mouth. The females seem always ready to eat, but the males (in the early summer in Bangkok) suffer much from sexual excitement, refuse to feed and become very pugnacious.

In the jungle near Hinlap, 700 feet elevation, in the Dong Phya Phai, Siam, I obtained three specimens of a *Thyropygus*, *T. bowringii* or an allied form, in November 1897. A male was 195 mm. in length, a female 180. The female rolled up quietly when picked up, the male struggled hard, rearing its head up off the ground and trying to bite.

10. *Thyropygus sp.*

At about 300 feet elevation on Bukit Timah, Singapore, on the 19th Jan. 1896, I found one crawling among dead leaves in

the jungle at midday. It was about 9 inches in length (230 mm.) I have also found large Thyropygi in Johore, from near sea-level near Johore Bahru, to 1000 feet elevation on Gunong Pulai.

11. *Thyropygus sp.*

Another species of this genus I have found very numerous on Penang Hill from 2200 to 2500 feet elevation; it reaches $4\frac{1}{2}$ inches in length (114 mm.). Its colour, when alive, is as follows: upper parts dark olive brown, with transverse bands of lighter and darker brown, there is a pale yellowish-brown vertebral line, which interrupts the narrow dark brown bands but not the wider paler bands. The lower parts and legs are pale reddish yellow.

Family *Spirobolidæ*.

Genus *Trigoniulus*.

Labral peres 2+2. First dorsal plate acutely angled.

12. *Trigoniulus goësii* (Porat).

This small round red Millipede is extensively distributed in the East and West Indies, and has got introduced into conservatories in England. I found it numerous in:—

Singapore; Spring of 1896, October 1897.
Penang; Botanical Gardens, March 1898.
Penang; the Crag, 2260 feet elev., March and Nov. 1899, March 1898.
Perak; Taipeng, May 1898; Kuala Kangsa Pass and Batu Gajah, Dec. 1896.
Kedah; Alor Star, June 1898; and I found an allied species near Kulim, Kedah, in May 1895.

13. *Trigoniulus sp.* The red-legged Trigoniulus.

This species was very numerous in Bangkok during the rainy season from April to August, and was also numerous on Kosichang. In Bangkok in June specimens were observed copulating.

The number of segments of adults varies from 55 to 60. Males reach 74 mm. in length, females 80 mm.

Colour (from life), drawn up from many Bangkok specimens. Head red, except forehead between the eyes which is brown. First segment (behind head), brown, anterior border red, posterior border pale reddish brown. Remaining segments brown, posterior border very pale brown, reddish on the back, yellowish at the sides, underneath (about bases of legs) pale yellow. Tail (*i.e.*, last segment) red, shading to brown at the sides. Antennæ, mouth and legs, red. The red of the head, legs, etc., is a rich brick red. The brown of the body is a dark brown, dull in some lights, in others more grey than brown with distinct purple shades in it. In spirits the whole colouring becomes darker and less conspicuous. At any rate, in some cases the males are more purplish-grey in colour, and the females (who are also larger) are more reddish-brown.

14. *Trigoniulus sp.* The blue-green and red Trigoniulus.

Of this very beautiful species, apparently undescribed but allied to *T. caudulanus* of Karsch, I got three specimens in the jungle south of Tahkamen, Siam, on the 19th March 1897. The number of segments varied from 48 to 52, and the largest individual was 64 mm. in length.

Colour (from life). Upper surfaces and sides pale bluish bottle green, each segment with a broad, distinct, black transverse band; along each side is a very narrow black line enlarged into a black spot on each segment; from the eighth segment to the penultimate one the back is bright brick-red; this red line is narrow anteriorly and gets broadest about the middle of the back. The head between the eyes is darkish French grey; the remainder of the head, anterior border of the segment next behind the head, the whole of the legs, and the last segment and tail are bright brick-red, the lower surface of the body (between the legs) is yellowish-red.

Genus *Spirobolellus*.

Labral peres 4+4. First dorsal plate very large, expanded laterally.

15. *Spirobolellus sp.* The white-legged Millipede.

This elegant, elongated Millipede, with its conspicuous little white legs, is one of the most active members of the Class.

We found it fairly common at Pachim in March and April 1897, and in Bangkok in May, June and July. This species is particularly addicted to walking up the vertical walls of houses at night.

I also obtained a species of *Spirobolellus* in Singapore in 1896.

Sub-order *Polydesmoidea*.

The Flat-Millipedes are distributed all over the habitable world. They attain to a length of $5\frac{1}{4}$ inches (134 mm.), the number of segments is always 19 or 20. They have no eyes. The pedal laminæ are united to the terga. The large platelike processes springing from the sides of the segments easily distinguish these Millipedes from those of the other sub-orders.

Family *Platyrhachidæ*.

Millipedes of large or medium size, in which the body is composed of 20 segments, each segment except the first and last being furnished on each side with a large, more or less square and horizontal plate, which bears the scent-pore; they occur in tropical America and Asia, and attain a length of 134 mm.

16. *Acanthodesmus pinangensis*, Pocock. A. + M. N. H. Ser. vi 1897, vol. 20, p. 433, Fig. 6 + 6a, p. 431.

The type specimen, a male, was obtained by Mr. H. N. Ridley; subsequently in March 1898, I also caught a specimen at 1300 feet elevation on Penang Hill.

17. *Acanthodesmus perakensis*, Pocock l.c.s. p. 434, Fig. 7, p. 431. Obtained in Perak by Mr. J. H. Leech.

18. *Acanthodesmus petersii*, Pocock, l.c.s. p. 434, Fig. 8, p. 431.

The type species, a male, is from the Malay Peninsula.

19. *Acanthodesmus lineatus*, Pocock, l.c.s. p. 434, Fig. 9, p. 431.

This specimen was discovered by Mr. H. N. Ridley in Singapore.

When in the Larut Hills in April 1898 I collected a large series of Millipedes of this family, representing two hitherto undescribed species of *Acanthodesmus*, and two species of a new

genus allied to *Acanthodesmus*; all the specimens being now in the British Museum I am unable to describe them here. Every individual (thirteen were collected) of one species of *Acanthodesmus* had a faint but distinct and pleasant smell, like "vanilla" or "bitter almonds." These Millipedes are all very slow in their movements and easily caught.

20. *Practodemus ridleyi*, Pocock. l.c.s. p. 438.

The type specimen, a female, was obtained by Mr. H. N. Ridley in Singapore. Another species of *Phractodemus*, *P. subrittatus* (Peters) has been recorded from the island of Singa.

21. *Anoplodesmus* sp.

I found one specimen of this genus on rotten wood in the Botanical Gardens, Penang, 21st Nov. 1896. Colour, upper parts shiny black, protuberances at sides bright yellow. Lower surface and legs, reddish brown.

Family *Strongylosomatidæ*.

Millipedes of small size, reaching 35 mm. in length, occurring in tropical America, Africa and Asia, and also in Europe (England).

22. *Orthomorpha coarctata* (Saussure).

A widely distributed species in the East Indies, I have met with it in Singapore, Kedah and Bangkok. In the latter place during the month of May, June and July I had opportunities of watching the development of individuals. The smallest I got were 2 mm. in length, cylindrical in section, had 19 segments, were covered with fine bristles of hair and were *pure white* in colour, except for a pair of reddish-brown spots above the base of the antennæ. As the animal grows the hind portions become dark first, and upper greyish brown, then the head and forepart become a reddish-brown, the centre portion gradually following suit; these changes of colour will be observed in animals of from 8 to 12 mm. in length. In individuals of 10 mm. long the body is still cylindrical but the lateral processes are becoming pronounced, and the general colour is now *pale yellow*, the dorsal plates being pale reddish brown; there is also a reddish-brown patch on the head at the

base of the antennæ. The whole Millipede is still sparsely clad with hair, but the hairs are less numerous and much shorter in proportion to the bulk of the animal than in the 2 mm. stage. When the Millipede is about 18 mm. in length all the upper surface is a *rich dark-reddish brown*, the sides are a paler reddish brown, and the underneath, legs, antennæ, tail and lateral processes are bright yellow. The whole animal looks neat and glossy, there are scarcely any hairs on the body except a few large ones under the tail, and many very short, fine hairs on the head, antennæ and legs; and it is at this period that the body becomes slightly depressed.

I observed this species in copula in Bangkok in May 1897, the males seem rather smaller than the females when they clasp by the forepart of the body, and suffer themselves to be dragged along.

23. *Orthomorpha Vicaria*, Karsch.

I found large numbers of this species on the walls of the Government Rest House, Kuala Kangsa, Perak, 10th Dec. 1896.

24. *Orthomorpha crucifera*, Pocock.

This species known from the Mergui Archipelago probably also occurs in Penang; I have collected Millipedes, apparently referable to it, on rocks near "the Crag," 2263 feet elevation above sea, in March and November 1896. Specimens reached a length of 33 mm. (1¼ inches); and their colour in life was, upper parts reddish brown, with dark brown centre line, and narrow transverse dark brown lines, three on each somite, one being central and two marginal. The lateral processes are rich very dark brown, their backward projecting spines being yellow. Sides of body very dark brown, underneath of body buff. Legs yellow.

25. *Orthomorpha gracilis.*

I got one specimen at Ayuthia; February 1888.

Other specimens, some probably representing other species of *Orthomorpha*, I have collected at Chantaboon, Tahkamen and in the Larut Hills of Perak up to 4000 feet elevation, but the most noticeable was a *black and scarlet* form I found in the jungle near Muok Lek, Dong Phya Phai, Siam, in November 1897

IV. Class Symphyla.

Family *Scolopendrellidæ*.

Scolopendrella sp. incert.

In May, June and July 1897, I found Scolopendrellæ very numerous in the Wang Na Garden at Bangkok; they could usually be found under flower-pots. They were most elegant little creatures, about 5 mm. in length (not including the antennæ), very active, and required careful catching to get them alive and undamaged. We found the best way was to drive then into a test-tube by means of a camel-hair paint brush.

They were pure dead white in colour when alive.

The antennæ are long, slender and conspicuous; they usually resemble a row of beads threaded on a string, but in one specimen I examined the left antenna was normal and consisted of 23 bead-like joints, but the right antenna was less than half as long, apparently unjointed, enlarged and rounded at the tip and covered with distally directed hairs (unlike the hairs on normal antennæ which radiate from the centre of each "bead"). These little animals can suspend themselves in the air by a silk line, after the manner of spiders.

On the 22nd November 1897, I found a *Scolopendrella* under a log in the jungle near Muok Lek, in the Dang Phya Phai.

V. Chilopoda.

The Centipedes, Class *Chilopoda*, are invertebrate animals found in all temperate and tropical regions, carnivourous, active and capable of giving a poisonous bite. Some are nearly one foot (305 mm.) in length.

Head. The head is distinct and has a pair of elongate antennæ in front and four pairs of jaws on its lower surface. The 4th pair are large and powerful and project forward below the other pairs of jaws, so as to more or less conceal them from view. The last segment of this 4th pair forms a long fang with a minute hole in the tip, through which the poison is exuded.

Body. The body is elongated, very flattened in section and consists of from 15 to over 121 segments all much alike in structure.

Legs. The legs start from the sides of the lower surface of the body, there is only one pair to each segment, the last pair of legs is generally longer than the rest. The number of pairs of legs is invariably odd.

Native Names for Centipedes.

Malay, "*Halipan*" or "*Lipan.*"
Siamese, "*Takhāp.*"

Centipedes are divided into two sub-classes :—

1st. ANARTIOSTIGMA.

1. *eyes*, large, compound, faceted.
2. *antennæ*, widely separated at base, very long, thread like.
3. *body*, composed of 15 segments, but only 8 dorsal plates, all of which, except the last, are furnished in the middle of the hinder border with a single large respiratory stigma.
4. *legs*, very long, their tansi composed of a large number of minute segments.
5. basal-segments of poison-jaws not united.

Length of head and body (exclusive of antennæ and legs)* reaches over 2 inches (or 55 mm.) contains only one genus *Scutigera.*

2nd. ARTIOSTIGMA.

1. *eyes*, simple ocelli, or entirely absent.
2. *antennæ*, shorter, stouter and not thread-like.
3. *body*, composed of from 15 to over 121 segments, each having its own dorsal plate; the stigmata are arranged in pairs and open on the sides of the body.
4. *legs*, of moderate length, usually tipped with a claw.†
5. basal-segments of poison-jaws united to form a coxal plate. Length of head and body (exclusive of antennæ and legs) reaches over 11 inches (or 281 mm.) divided into three orders, with many families and genera.

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* These dimensions only refer to the largest specimens I have myself measured; they may grow larger.

† In the family *Cermatobiidæ* (Order Lithobiomorpha), known from a single species from Halmahira, the tarsi of the legs are many jointed. *Vide* Pocock, Royal Nat. Hist. vi., p. 205.

Sub-class *Anarstiostigma.*
Order *Scutigeromorpha.*
Family *Scutigeridæ.*

1. *Scutigera longicornis*, Fabr. The long-horned Shield-bearer.

Localities. I have met this fine species in three localities, in each case under quite different circumstances. One was inside a rotten, fallen tree-trunk near the foot of Gunong Pulia, Johore, 13th September, 1897. One I found at night on the outside wall of my house in Bangkok, on the 27th February 1897. And on the 28th June 1898, I saw large numbers of the Centipedes, perhaps 30 or 40 individuals in less than two hours, in deep caverns (where no daylight ever penetrates) of the Batu Caves, near Kuala Lumpur, Selangor; these were easily caught in forceps, if one picked them up as soon as the torch-light showed them, but once disturbed they did not give a second chance of being captured but ran along the wall at immense speed. This species occurs in Java, as well as in Siam and the Malay Peninsula.

Colour (of Bangkok specimen mentioned above).

Upper surface of body moderately dark brown, at the posterior end of each dorsal plate is a double spot of light yellow (very distinct in life). Head yellowish brown with dark brown markings. Antennæ uniform yellowish brown. Legs yellow with narrow bands of dark bluish-grey. Lower surface of body pale yellow. In life the whole animal is slightly iridescent.

Size.	*Bangkok specimen.*	*Batu laves specimen.*
Length, head and body	32 mm. or 1.28 inch.*	55 mm. or 2.16 in.
„ antennæ	64 „ 2. 5	88 „ 3.46
„ hind-legs	70 „ 2.75	187 „ 7.36
„ from tip of antennæ to end of hind-legs	164 „ 6. 4	325 „ 12.75

2. *Scutigera birmanica*, Poc. The Burmese Shield-Bearer.

Localities. On the 16th March 1896 I caught two specimens at the "Crag," Penang Hill, elevation 2260 feet; and subse-

* End of body projects 2 mm. beyond base of hind legs.

quently in March 1898 obtained a third specimen at the same place. They are exceedingly active, running so fast that unless you know them by sight it is hard to tell what sort of animals they are; if found at rest they may be picked up with a pair of forceps or else made to walk into a wide-necked cyanide-of-potassium bottle, but if first frightened all you will probably see of them is a glimpse of (apparently) a spider with an improper number of very attenuated legs disappearing round the corner. It is very difficult to secure a perfect specimen, as when caught they seem to shed their legs voluntarily, almost as if to spite the collector.

District. Burma and Penang.

3. *Scutigera marmorea*, Poc. The Marbled Shield-Bearer.

Localities. On the 14th March 1896 I caught one specimen under the bark of a tree at "Richmond," Penang Hill, elevation about 2300 feet; its general colour was reddish-brown. In March 1898 I got another specimen also on Penang Hill at nearly the same height above sea-level.

District. Burma and Penang.

Sub-class *Artiostigma.*

1st Order, LITHOBIOMORPHA. 15 pairs of legs.

Contains only the Family *Lithobiidæ.* Species of *Lithobius* are known to occur in Java, Sumatra, Burmah and possibly the Nicobar Islands, so will probably be eventually found in the Malay Peninsula; the largest of the known S. E. Asian forms is only 12½ mm. long.

2nd Order, SCOLOPENDROMORPHA. 21 or 23 pairs of legs.

Eyes, either absent or consist of 4 ocelli on each side of the head.

Antennæ, 17 to 29 segments.

Divided into several families.

The usual centipedes met with in Malaya and Siam all come into the family *Scolopendridæ*, which have 21 pairs of legs, 4 eyes on each side of head, and reach nearly a foot (305 mm.) in length.

3rd Order, GEOPHILOMORPHA. 39 to 161 (or possibly more) pairs of legs.

Eyes, absent.

Antennæ, 14 segments.

This order consists of long, thin, worm-like centipedes; some species are at times luminous; they are divided into several families, and individuals reach 130 mm. in length.

Order *Scolopendromorpha*.

Family *Scolopendridæ*.

4. *Scolopendra subspinipes*, Leach. Common Centipede of S. E. Asia.

Localities. Of this species I got several specimens in Penang both from near sea-level (Sepoy Lines) and from the hill ("Crag"), one in Singapore, one in Johore Bahru, one in Bangkok, and one received from Sourabaya, Java: it also occurs in Sumatra and Flores, and is found (possibly introduced) in tropical Africa and in the West Indies.

Colour. Most individuals I have seen were bright reddish brown, but the Johore specimen (mentioned above) and one from Penang Hill were purplish-black above, pale reddish-brown below and had reddish antennæ and legs.

Size. The red and the black individuals seem to attain equal dimensions, the largest I have measured was in length (exclusive of antennæ and hind-legs) 166 mm. or $6\frac{1}{2}$ in.

5. *Scolopendra de haanii*, Brandt. De Haan's Centipede.

This may be only a variety of *S. subspinipes* from which it differs in the absence of spines from the under surface of the anal femora.

Localities. I got several specimens from the hills of Penang, at about 2300 feet elevation; one from Batu Gajah, Perak; four from Kulim, Kedah; and about thirty from the following places in Siam—Bangkok, Ko-si-chang, Chantaboon, Kabin and Muok Sek, in the Dong Phay Phai: it also occurs in the Mergui Archipelago, Java and Sumatra.

Colour (from life.) Above rich reddish-brown, antennæ paler reddish-brown: legs pale yellow, distally dark reddish-

brown, claws black; hind-legs reddish brown, getting darker distally, last segments nearly black; underneath of head reddish brown, last joint of poison-fangs black; lower surface of body brownish yellow.

A young specimen from Kabin was black with orange-red legs and a broad orange-red band behind the head.

A centipede 53 mm. (say 2 inches) in length (excluding antennæ or hindlegs), which Pocock considers to be probably the young of this species, had the upper parts reddish-brown, but the posterior part of each segment very dark, nearly black: the antennæ, head and first two segments of body olive green; legs on remaining segments pale red; and the under surface pale reddish-brown.

Size. The finest De Haan's Centipede I have measured was caught in our compound in Bangkok, 19th December, 1897.

Its dimensions were:—

Total length, from tip of antennæ to claw of hind foot	281 mm.
Length, without antennæ or hind legs	...210
„ antennæ	... 38
„ hind-leg	... 35
Width, 2nd segment	... 16
„ 15th „	... 17
„ 21st „	... 15
„ 22nd (last)	... 11

These two species, supposing them to be distinct, seem similar in habits; they are for the most part nocturnal, but I have met them roaming abroad in the day time; they are to be found in houses and gardens as well as in the jungle, and even on board ship. They run very swiftly, and try to bite fiercely when interfered with; what the effect of their bite on a man could be I do not know, I only once saw one bitten—Surgeon-Captain Smith at Penang in 1895. He felt no ill effects from the bite, but the centipede had previously been biting at some cord, in a loop of which we were trying to secure it, so had probably exhausted its supply of poison. It is said that their claws are poisonous, and I have even been told in Singapore that a centipede ran over a man's face and left a line of bad sores where its feet touched his skin. I cannot believe this—for I have seen Malays allowing a big centipede (with poison fangs extracted) to run about their

bare shoulders and neck without recieving any harm, and I have myself had them crawling over my hands as an experiment but without being able to see, or feel, the smallest wound. Nothing seems to be known about their breeding habits. In Penang I have seen a dead centipede hung from the front axle-tree of a gharry; why this is done I have no idea; perhaps other members of the Society have noticed this?

6. *Scolopendra Morsitans* (Linn.) The Biting Centipede.

I caught specimens of this species at Gunang Pulai in Johore, and at Kabin in Siam, received one from near Raheng, Siam. The Kabin specimen was purplish-green in colour, and measured in length (without hind legs) 71 mm. (with hind legs) 82⅓ mm. Dr. Max Weber obtained this species in Celebes, Saleyer and Flores. It is also found in central Africa and other tropical countries.

7. *Otostigmus scaber*, Porat. The Rough Centipede.

"Takhāp-fai" (fine-centipede) of the Siamese.

Localities. I found this species numerous in Bangkok under flower pots in the garden of the Wang Na, and also got specimens on Gunong Pulai, Johore.

Colour (Bangkok specimens). Above reddish-brown, redder on the margins, browner in the vertebral line; the anterior portion of the head sometimes black; lower surface of body pale reddish-yellow; eyes black; antennæ light-red or else basal portion reddish-brown, turning darker distally till the tips are almost black; legs, basal segment and greater portion of next segment buff, remainder rich dark blue, or in some specimens the legs are grey, basally bright blue, distally buff, the hindmost pair of legs are blue banded with pale buff or white at the joints.

Size (Bangkok specimens). The largest I noted measured 48 mm. in length, without including the hind-legs.

Another was:—

length,	without antennæ or hind legs,	31½ mm.
,,	antennæ	9 ,,
,,	hindlegs	12½ ,,

I also collected specimens of *Otostigmus* on Penang Hill, in the Larut Hills of Perak, in Johore, at Chantaboon (purplish-blue in colour) and at Paknam-Menam, which are difficult to determine specifically, as there are many species of this genus described from Ceylon, Japan, China, Mergui Archipelago, Sumatra, Java, Borneo, Celebes, Flores, etc.

8. *Rhysida longipes* (Newport).

I got two specimens at Tanglin, Singapore, one found under a flower-pot, one running about in my bathroom at night, and several from Siam, from near Raheng and from the island of Ko-si-chang. This centipede usually has its back coloured dark reddish or purplish-brown, the legs may be lighter; it is of small size reaching a length of 68 mm. (2.68 inches). It is distributed in many parts of tropical Asia and America.

9. *Rhysida immarginata* (Porat).

Of this small species I got six specimens near Alor Star, Kedah; one in Taipeng, Perak; a friend found it climbing up his leg inside his trowsers; and two in Singapore, one in the Officers' Mess, Tanglin, and one in a bathroom of Raffles Hotel. In these centipedes the antennæ, when not in use, are carried curled up very elegantly. Dr. Max Weber obtained this species in Sumatra, Java and Saleyer.

10. *Rhysida corinulata* (Haase.)

In January 1896 Mr. Ridley and I found one of these rare centipedes on Bukit Timah, Singapore; it was a female lying curled up round its eggs, hidden under a rock in the jungle. The species was previously known from Celebes.

11. *Rhysida rugulosa*, Pocock.

This species is described and figured (nat-size) by Pocock in Max Weber's Zool. Ergebnisse III, p. 314, Pl. xix, Fig. 6. The type specimen is from Sumatra. In November 1896 I caught one in the garden of "the Crag," Penang Hill, 2200 feet elevation; its colours were:—back purplish black; antennæ

and legs bottle green; underneath pale olive green. Length (excluding antennæ and hind feet) 85 mm. (3.33 inches.)

I also got specimens of *Rhysida* from Blakan Mati, Singapore, and from Chantaboon, that apparently do not fall into any of the above species.

Order *Geophilomorpha*.
Family *Geophilidæ*.

12. *Orphnæus brevilabiatus* (Newport). The Luminous Centipede. Malay *Klamayer*.

I have caught this long, thin red centipede at Tahkamen, Siam, in March 1897, in Government House, Singapore, October 1897, and in Bakar Bata House, Kedah, in May 1898; always in roofs or upper stories of houses. On more than one occasion, I have seen them at night on my mosquito curtains. Each time I tested their luminosity; when disturbed they give out a bright but lurid green "phosphorescent" light, and as the centipede moves it leaves a trail of light behind it on the surface it is crawling over; this trail glimmers for a moment or so, and then goes out.

Besides Siam and the Malay Peninsula this species occurs in other parts of the Oriental Region (Mergui Archipelago, Java, Celebes, Flores, etc.) and also in tropical America.

Family *Dicellophilidæ*.

13. *Mecistocephalus punctifrons*, Newport.

Of this long, thin centipede I got four specimens in the earth at Chantaboon in January 1898 (no luminosity observed), and also found a single individual under a piece of wood on the top of Western Hill, Penang, elevation 2725 feet. This latter measured :—

length (excluding antennæ and hind legs) 52 mm.
,, (including ,, ,, ,, ,,) 63 mm.

This species is also recorded from the Mergui Archipelago, Sumatra, Java, Flores and Mauritius.

Family *Eucratonychidæ*.

Species of *Eucratonyx* may eventully be found in Malaya as they occur in Burmese territory on the one side, and in islands at the Eastern end of the Malay Archipelago on the other.

VI. Class Gigantostraca.

Order *Xiphosura.*
Family *Limulidæ.*

The King Crabs, or Horse-shoe Crabs.
"*Mengdahn-nām*" of the Siamese.
"*Belangkas*" of the Malays.

1. *Limulus moluccanus.*

I have got live specimens in the Singapore Market on the 5th April, in the Bangkok Market 18th June, and in Brunei, Borneo, on the 2nd October.

I was told in Siam that the King-Crabs usually frequent deep water, but in June, July and August resort to the shallows at the head of the Gulf for breeding purposes; they are then caught in large numbers for the markets. They will live for a few days in a tub of fresh water.

In life the carapace is a beautiful, rich, dark, shining, olive colour.

The largest specimen I measured (at Bangkok) was:—

Total length,	19.7 inches.	= 500	mm.
Length of carapace,	10.2 „	= 259	„
„ „ tail,	9.5 „	= 241	„
Width, „ carapace,	10.2 „	= 259	„

2. *Limulus rotundicauda.*

Easily distinguished from *L. moluccanus* by the round shaped tail.

To be seen for sale in the Bangkok Market with the above.

The largest specimen I measured (at Bangkok) was:—

Total length,	15.25 inches	= 387	mm.
Length of carapace,	8 „	= 203	„
„ „ tail,	7.25 „	= 184	„
Width „ carapace,	7.75 „	= 197	„

3. *Limulus tridentatus*, Leach.

Also known as *Limulus longispinis.* Mr. A. C. Cluneis Ross gave me a large pair caught at Kudat, Brit. North Borneo: the female was the largest and measured:—total length 35.25 inches =894 mm., width of carapace 15 inches = 381 mm.

VII. Class Arachnida.

In this class are included the Spiders, Scorpions, Mites, Ticks and their relatives.

These animals have no distinct head, the head and thorax being fused together, and the result of this union (called the "cephalothorax") and the abdomen may or may not be segmented.

Breathing is carried on by air-tubes, lung-books or both.

The sexes are distinct individuals.

There are no antennæ, such as exist in the insects, centipedes and millipedes.

The cephalothorax bears six pairs of limbs;—

1st pair (the mandibles) composed of 2 or 3 segments, acting as seizing or biting organs.

2nd pair (the chelæ, or palpi) composed of 5 or 6 segments; of which the basal segments (the maxillæ) are used for crushing food, and the remainder variously modified as seizing, feeling or sexual organs.

3rd pair, composed of 6 or more segments, used for feeling (as in the Pedipalpi), or for walking.

4th, 5th, and 6th, composed of 6 to 9 segments, used for walking.

The abdomen bears no true limbs.

The class may be divided into 8 orders, one of these contains the Mites, Ticks and a varied host of small forms, some very degenerate, in some various limbs are lost, in some there are apparently no organs of respiration, and in the "Water Bears," or *Tardigrada*, the sexes are not distinct but are united in each individual.

The following table may be of use to the collector in determining to which Order an Arachnoid beast, he may happen to have caught, belongs.

A. 2nd pair of limbs modified into great seizing organs (chelæ).

A. no "waist" between caphalothorax and abdomen.

3rd, 4th, 5th and 6th pairs of limbs of similar construction and used for walking.

a. posterior segments of abdomen narrowed, forming a distinct jointed tail, ending in a poison-sting.

breathing by means of 4 pairs of lung books.
abdominal combs present.
no silk-secreting glands.
some species attain a length of 8 inches.

(Scorpions). Order *Scorpiones.*

b. no tail.
breathing by means of air-tubes.
no abdominal combs.
silk-secreting glands present.
some species attain a length of ¼ inch.

(False Scorpions). Order *Pseudoscorpiones.*

B. a "waist" between cephalothorax and abdomen.
3rd pair of limbs modified into feelers, the last segment being clawless and divided into a number of secondary segments.
4th, 5th and 6th pairs of similar construction and used for walking.

c. no tail, or a thread like one.
breathing by means of 2 pairs of lung books.
no abdominal combs.
no silk-secreting glands.
some species attain a length of 2 inches.

(Whip Scorpions) Order *Pedipalpi.*

B. 2nd pair of limbs not modified into chelæ.

C. cephalothorax segmented.
mandibles form large pincers.
abdomen with ten segments.
palpi leg-like.

d. a long jointed tail.
size minute; only one species known, from South Europe.

Order *Palpigradi.*

e. no tail.
reach nearly 2 inches in length; many genera and species known from South Europe, Africa, Asia and America.

(False Spiders). Order *Solifugæ*.

D. cephalothorax not segmented.
f. a "waist" between cephalothorax and abdomen.
mandibles form a poison fang.
abdomen not segmented (except in sub-order Mesothelœ).
breathing by means of 2 pair of lung books, or else 1 pair lung books and 1 pair of air-tubes.
spinning glands present.

(Spiders). Order *Araneæ*.

g. no "waist" between cephalothorax and abdomen.
a.' abdomen composed of 3 to 8 segments.
mandibles pincer-like.
basal segment of 3rd pair of limbs always adapted for mastication.
breathing by means of air-tubes.
no spinning glands.

(Harvest Spiders). Order *Opiliones*.

b.' abdomen not segmented.
mandibles pincer-like, or simply pointed.
basal segment of 3rd pair of limbs never adapted for mastication.
breathing by means of air-tubes, or without distinct organs.
spinning glands sometimes present.
size usually minute.

(Mites, Ticks etc.) Order *Acari*.

Order *Scorpiones*.

The True Scorpions.

Malay "*Kalajinking*."

Siamese "*Malaang-pon*," or more commonly "*Meng-pon*."
Pantang Kapur "*Simpai*," and "*P'nipet*," (Lake—Kelsall, J. S. B. R. A. S. No. 26, 1894, p. 41.)

The true Scorpions have four pairs of legs, of similar construction, each composed of seven segments, and used for loco-

motion, and two modified anterior pairs of limbs, one (the chelæ) forming great pincers and composed of six segments, and one (the mandibles) forming small pincers and composed of only three segments.

The abdomen is distinctly segmented, and the last six segments are narrower than the rest, forming a distinct tail; the last segment of all (the telson) ends in a sharply pointed poison-sting.

On the lower surface of the second segment of the abdomen are a pair of comb-like organs (the pectines); the exact use of which does not seem to be known, but I have noticed scorpions are continually moving them about as if they were organs of touch.

Scorpions are divided into several families; two of which occur in our region and may be thus distinguished:—

1st. *Buthidæ*. Sternum of the cephalothorax small and triangularly pointed in front.

Two spurs on the articular membrane of the tarsus.

2nd. *Scorpionidæ*. Sternum of the cephalothorax broad and pentagonal.

One spur on the articular membrane of the tarsus.

Family *Buthidæ*.

1. *Archisometrus mucronatus* (Fabr.) The Sharp Scorpion.

"*Mengpon tahkepp*" of the Siamese.

This small yellowish scorpion is widely distributed in the East, being recorded from Burma, Siam, Cambodia, Cochin China, China, Japan, Philippines, Sumatra, Java, Flores, Saleyer, and it is said from New Zealand and Madagascar. Pocock has given an excellent coloured figure of this species, natural size in Max Weber's Zool. Ergebnisse III, Pl. vi, fig. 1, (published at Leyden, 1893.)

Scorpions of this species are to be found inside and outside houses, both downstairs and upstairs, as well as in gardens and in the jungle; they spend the day hidden in crevices, or under stones, rocks, etc., and at night roam about for food; they run about the walls of houses with ease, but I doubt their being able to cross ceilings, as the house-lizards of the family *Geckonidæ* do.

In Bangkok I found this species very common, and also caught specimens at Ayuthia, in the Dong Phya Phai, at Kabin, at Chantaboon and on the island of Ko-si-chang.

When suddenly found under a stone they seem to seek safety rather in remaining perfectly motionless than in taking instant flight.

I have noticed them eating crickets and moths, possibly they will eat any insects they can catch and overpower, but I have watched them encounter and leave unmolested, though hungry, a beetle (*Carabidæ*) and a small green bug. On several occasions I have placed these scorpions with whip-scorpions (*Thelyphonus schimkevitchii*) and with large spiders (*Heterapoda reuatorea*) to see if they would try to tackle other Arachnida, but I found the three sorts all left one another alone. I have not observed them even attempt to feed on insects they have not killed themselves, nor to pay any attention to fruit. I do not know if they ever drink, I find an entry in my diary for the 26th December, 1897 :—"*A. mucronatus* caught on the 15th of this month is still alive and well. It has had no water all the time." Unfortunately I find no note as to the further career of this scorpion, or how long it lived in captivity. When walking this species ofter has the combs extended and pointed forward. It seems quite blind (at any rate in a full light), it runs swiftly with both chelæ extended, but if an upright thing, such as a stick which the chelæ pass on each side of without touching, is met with, the scorpion runs right into it and is pulled up short; just as a man feeling for the door in the dark with outstretched arms may, if the door be standing open, suddenly find himself hit in the face by it; but on the other hand I have seen a scorpion pursue a fluttering insect, but this may have been by sound (or smell ?).

The following extract from my diary of the 15th December 1897 will give some idea of how these animals feed.

A. mucronatus; in the evening I watched it sitting quite still, body very flat on the ground, chelæ extended, tail curved over back with the point of the sting carefully protected in the usual manner; a small moth settled near it, the scorpion immediately seized the moth in both chelæ and quick as lightning brought its tail over its head, stung the moth and recovered

its tail to the 'rest' position, it then placed the moth's head to its jaws and ate it off, holding the moth in its chelæ and tugging off pieces with its mandibles; aftera few bites the scorpion ran off holding the moth in one chelæ; on the way another small moth came just by it, the scorpion promptly seized it in the disengaged chelæ, and again quick as a thought its tail was thrown forward and again withdrawn; it then ran on with a moth in either hand, when it met a third moth the scorpion transferred the first moth to its mandibles and with the chelæ thus disengaged it attempted to seize the live moth but it fluttered on; the scorpion, pursuing with one moth in its jaws, one moth in one hand and the other hand grabbing at the third moth, was decidedly comical; it failed to catch the third moth, and after running a little way settled down to eat its captives; the first moth was eaten wings and all, only one lower wing and four legs being left, which may have been dropped accidentally, it then began eating the second moth but after a time (whether anything frightened it or not I do not know) the scorpion dropped the moth and ran off; after some minutes another live moth came in its way which it seized and commenced eating; while doing so it caught another, and again ran off carrying one moth in its jaws and one in its hand."

Effect of Sting.

Two cases of scorpion sting have come under my notice; each time the scorpion was caught and identified as *Archisometrus mucronatus.*

1st. 27th Nov. 1897. Basdeoh, a native of India, accidentally put his hand on a scorpion which stung him in the finger; he said he had very great pain all up the hand and arm as far as the shoulder; he applied a small native poultice which somewhat relieved the pain. This happened at 6 a.m. At 7.30 a.m. the finger was very swollen, but not appreciably discoloured, he said there was then no pain above the elbow but it was very bad in the forearm and hand; we got him to put the injured finger in a strong solution of permanganate of potash and keep it there for half an hour, first opening the wound by squeezing it; by 8.30 a. m. he was all right again.

2nd. 26th December 1897. Maa Deng, Siamese woman, stung in her foot in the evening; the effect was at once a rather

swollen foot and much pain: we were able to bathe the foot almost immediately in a very strong solution of permanganate of potash and the pain subsided in a quarter of an hour.

Colour.

Yellow mottled with brown, the four pairs of breathing orifices on the abdomen being very conspicuous as lemon yellow spots. A small specimen (36 mm. in length) was coloured pinkish underneath.

Young.

I have not been able to make out at what times of year these scorpions breed. On the 9th May in Bangkok I caught a young one (10 mm. in length) by itself, and on the 3rd August also in Bangkok found one (11 mm. in length) being carried about on its mother's back.

Sexes.

Mr. R. J. Pocock, in answer to enquiries, writes to me: "In *A. mucronatus* the male has the tail stouter and the claws longer with sinuate fingers, as compared with the female."

Size.

Length from front of mandibles to tip of sting of 38 adult Siamese specimens which I have examined:—

average $44\frac{1}{2}$ mm.	smallest, 36 mm.
largest, 55 mm.	(roughly $2\frac{1}{4}$ inch.)

Pectinal Teeth.

Usually about 21 on each comb, occassionally there is one more tooth on one side than on the other, and once I found a specimen with two more teeth on one side than the other i. e. 19 and 21.

The fewest I have counted were in a Bangkok specimen, i. e. 18 and 18: the most I have counted were in a Dong Phya Phai specimen, i. e. 24 and 24.

2. *Archisometrus scutilus*, C. K.

This is is a small yellowish-brown scorpion with very long attenuated claws and tail; I caught one specimen under the back of a fallen tree in the Experimental Gardens, Penang Hill, about 1900 feet elevation, and one in the verandah of "the Crag," Penang Hill, 2260 feet elevation, both in March 1898. This species is also recorded from Tenasserin, Selangor, Singapore, Sumatra and Java.

3. *Isometrus maculatus* (De Geer).

This is another small yellowish brown scorpion; it has been found in Spain, Africa, India, Ceylon, Malay Peninsula, Siam, Hongkong, Java, Timor, Mauritius, Madagascar, Sandwich Islands, West Indies and South America. I caught two specimens in the Officer's Mess, Sepoy Lines, Penang; one in the Officer's Mess, Tanglin, Singapore; one in Raffles Hotel, Singapore; and two in Bakar Bata House, Kedah. I was given two specimens in Bangkok said to have been caught there, but I never myself came across it alive in that city. This species, when suddenly found, will often lie still as if feigning to be dead, till touched, when it tries to run away.

Sexes.

"In *I. maculatus* the tail and pincers of the male are very long and thin as compared with the female." Pocock.

Family *Scorpionidæ*.

4. *Chærilus agilis*, Pocock. The Agile Scorpion.

This species was discovered by Mr. H. N. Ridley at the Batu Caves, Selangor, and described by Mr. R. J. Pocock (Annals + Mag. Nat. Hist. Series vii, vol. iii, No. 17, May 1899, p. 416). The general colour is dark reddish brown, not distinctly variegated. Pectinal teeth 4. Length 56 mm.

5. *Chærilus rectimanus*, Pocock. The Straight-handed Scorpion.

Mr. H. N. Ridley discovered this species in Singapore, and it has been described by Pocock (loc. cit. supra, p. 418).

The general colour is ferruginous, variegated with black.

Pectinal teeth 3 (?). Length 24 mm.

Other species of this genus will probably be eventually found in the Malay Peninsula.

6. *Palamnæus oatesii*, Pocock. Oates' Scorpion.

This large species, known as "Kala" by the Kedah Malays, is often identified as *Palamnæus spinifer* (Hempr. + Ehrenberg). L. Wray, jun., J. S. B. R. A. S. No. 21, 1890, p. 148, mentions "a large dark metallic green scorpion (*Buthus spiniger*)" in Batang Padang, Perak; he probably refers to this species.

I obtained one specimen from near Jenan, Kedah; four from Kulim, Kedah; two from Penang Hill (one at 2500 feet

elevation, given me by Mr. L. Brown); three from Johore Bahru, and two from the foothills of Gunong Pulai, Johore.

Colour (in life): very rich dark olive green. The poison-vesicles in the Gunong Pulai specimens were white.

Size.

♂. from front of mandibles to tip of sting, 102 mm. Pectinal teeth, 16+17.

♀. from front of mandibles to end of penultimate segment, 107 mm. Pectinal teeth, 17+17.

District.

Burma, Malay Peninsula, Sumatra (?).

7. *Palamnæus silenus*, Simon.

Siamese, "*Mengpon chang*," = Elephant Scorpion.

Of this fine species I obtained four specimens from Bangkok, three from Tahkamen, one from near Kabin, one from near Raheng, and thirty one from Chantaboon. It seems to be strictly nocturnal; at night roaming about for food, and lying hid by day: at Chantaboon I found most by digging in the soil 4 or 6 inches deep, under fallen logs, to find their burrows, which the scorpions often tried to escape along, but we followed them (digging up the soil) and eventually secured them. In one spot (in Jan. 1898) we found about ten individuals, all of about the same size, huddled up close together in a hole in the ground.

Colour (in life.) shining rich dark green.

Size. A good specimen had the following dimensions:—

Length, from front of mandible to point of sting—135 mm. (about $5\frac{1}{3}$ inches).

Length, of cephalothorax (in median line)	18 mm.
Width of cephalothorax	19 mm.
Length of tail	66 —
„ „ humerus	16 —
„ „ brachium	16 —
„ „ pincer (to end of fixed digit)	35 —
„ „ moveable digit	22 —
Width of hand	16 —

Pectinal Teeth vary in number from about 15 to about 18 on each side.

The usual numbers seem to be 16+16, or 16+17.

Sexes. "In *Palamnæus silenus* and *Hormurus* the male has the two halves of the genital operculum separated so that this can be pulled apart, while in the female, though the suture remains, the two are inseparable. The combs are also larger in the male." Pocock.

District. Siam, and Cochin China.

8. *Hormurus australasiæ* (Fabr.)

Siamese "*Mengpon-ton*" = Tree Scorpion.

This is a small dark brown scorpion with large pincers, a comparatively short, slender tail and a very small sting, commonly to be found under the bark of trees, but I have also obtained it among a pile of logs, and under dead leaves on the ground. Pocock says "this species is found in S. East Asia and all over the Islands of the Indo-Malayan, Austro-Malayan and Australian Region," and mentions it being recorded from the Himalayas, Corea, Sumatra, Java, Flores, Saleyer, New Britain, Solomon, Loyalty and Fiji Islands.

Personally I have caught seven specimens on Penang Hill, at elevations of 1800 to 2300 feet; three in Bangkok; one at Chantaboon; and two on the island of Kosichang. I also received one from near Raheng, Siam.

A *Hormurus*, probably of this species, is found on Maxwell's Hill, Perak; I found the remains of one inside a frog (*Rana macrodon*) caught at 3,300 feet elevation in April 1898.

The largest specimen I have measured was from the front of the mandibles to the tip of the sting, 43 mm.

The pectinal teeth in four Siamese specimens examined were:—6+7, 6+7, 7+7 and 7+7.

Order *Pseudoscorpiones.*

The False Scorpions.

These are the minute and harmless animals sometimes called "Book Scorpions." At Chantaboon I found a species of the genus *Chelifer*; and also in Bangkok under the bark of trees, under flag-stones and in packing cases.

Order *Pedipalpi*.

(see Pocock, Royal Natural History, Vol. vi, p. 217).

Sub-order *Uropygi* (Tailed Pedipalps).

Section *Oxopœi*.

Family *Thelyphonidæ*. (Whip Scorpions).

1. *Thelyphonus skimkewitchii*, Tarnoni.

Siamese "*Mengpon-menn*," i. e. Stinking Scorpion.

Localities. I met this species in Bangkok, Chantaboon and Kosichang. Pocock records it from "Lacan, via Raheng, in Siam" (A.+M. N. H. Ser. 7, Vol. v, March 1900, p. 298).

Description of body from a Bangkok specimen:—

Cephalothorax slightly convex, considerably narrowed anteriorly. The anterior eyes are black, they are separated by a prominent elongated smooth tubercle which extends to the anterior edge of the cephalothorax, which consists of a sharp ridge which curves back on each side as far as the lateral eye where it disappears; the three lateral eyes are pale yellow, the dorsal pair being very conspicuous in the live animal. The whole surface of the cephalothorax is roughly granulated, on the whole more coarsely anteriorly; the cephalic and thoracic grooves are well marked. Abdomen moderately depressed, elongately oval, at its widest part 1/7 wider than the widest part of the cephalothorax; upper surface granular, with the posterior edge of each segment "crenulated"; "the muscular points" are round and well marked on the second to eighth segments.

Colour (in life); drawn up from several dozen Bangkok specimens.

Adults:—Upper surfaces of chelœ, cephalothorax, abdomen, two joints of legs nearest body and lower surface of abdomen very dark brown, almost black, but sometimes the greater part of the lower surface of the abdomen is reddish-brown. Along either side of the abdomen there is a broad pale yellow longitudinal line. The tail, limbs (where not dark brown), lower surface of cephalothorax, and the first two segments on the underneath of the abdomen are a rich red-brown.

Young :—Specimens of about 8 mm. in length have the cephalothorax and abdomen of the usual dark brown colour, but have pale yellowish red chelœ.

Size, of three typical Bangkok specimens, in millimetres :—

Total length of cephalothorax and abdomen.	28	29	28
Length of cephalothorax,	11	11½	11
,, ,, abdomen, including terminal joints,	17	17½	17
,, ,, the narrow tail,	20	23	26
,, ,, five terminal joints of chelœ, in articulation.	13		
,, ,, first leg, excluding the coxal joint,	35	37	33
,, ,, second leg,		19½	18
Width of cephalothorax,		6½	6

Habits. Strictly nocturnal; hiding by day under logs, stones, etc. and at night roaming about for food. They are chiefly to be seen during the rainy season from April to August. In January and December I have sometimes noticed a very faint and peculiar smell given off by these creatures, but have not been able to detect it at other times of year.

To collect—when found they can easily be picked up by a pair of forceps, the points placed on either side of the hard cephalothorax, and they quickly die in a cyanide of potassium "insect killing bottle." When placed on their back on a sheet of glass or other flat surface these *Thelyphoni* seem very helpless and unable to right themselves.

Food. In captivity they feed readily on dead insects: they first carefully and slowly examine the object, then take it up in their chelœ, and in the case of a moth almost completely devour it, or if a dragon fly eat all but the wings: very rarely I have seen a *Thelyphonus* catch a live insect in its chelœ and eat it: they do not attempt to interfere with beetles or grasshoppers larger than themselves. Besides insects they will eat very small bits of over-ripe bananas.

One that I caught with a broken tail lived 24 days, during this time there was no sign of a reproduced tail growing.

Effects of Sting. These animals are usually supposed to be harmless to man, but in Bangkok on the 30th April 1897 I had a curious experience with one. Seeing a *Thelyphonus*, of this species, running on the ground I picked it up by the cephalothorax between the first finger and thumb of my left hand; it

at once bent its thread-shaped tail over its back (as a scorpion does) and also scratched about my fingers with its legs, but the pincers did not touch me; I thought nothing of its tail, etc., till I felt a sharp pain and found the animal *had* somehow stung me. I went straight into my house, and already the first joint of my finger was very swollen and inflamed, there being a rapidly growing white lump, and the rest was red; at one spot was a fresh puncture as if a needle had been driven in, in a horizontal direction, and gone some little way under the skin. After cutting and squeezing the wound, I put my finger into a strong solution of permanganate of potash, which at once relieved the pain and stopped the swelling, but the little wound continued to smart for some hours. Since then I have been careful never to let a *Thelyphonus* touch me.

Sexes. "You can tell the male of this species at once by the presence of a shallow circular pit upon the fourth ventral plate of the abdomen, by the different shape and size of the first plate, and by the simple structure of the small segments of the tarsus of the first pair of legs, that is to say of the antenniform legs; the tarsal segments of the adult female being peculiarly modified." (R. I. Pocock).

2. *Thelyphonus Johorensis.* Oates.

"Toong-gee" of the Malays of Johore.

I have caught this species in Johore Bahru, and up to about 500 feet elevation on Gunong Pulai. One specimen, out of three caught Sept. '97, smelt slightly. Two *Thelyphoni*, probably of this species, caught in the Botanical Gardens in March '98 also smelt slightly but perceptibly. A specimen obtained at about 3400 feet elevation in the Larut Hills, Perak, in April '98, is referred doubtfully to this species.

3. *Thelyphonus wayi*, Pocock (A. & M. N. H. Ser. 7, Vol. v, March 1900, p. 295).

Found by Mr. Herbert W. L. Way in Battambang, Siam.

4. *Typopettis dalyi*, Pocock. (loc. cit. supra. p. 297).

Found by Mr. Mahon Daly at "Lacan, Via Raheng, Siam."

5. *Hypoctonus formosus* (Butler).

This species found in Burma and on Owen's Island, Mergui, (Pocock, Linn. Soc. Jour. Zoology, Vol. xxxvi, p. 316); is probably the same as that recorded from Penang as *Thelyphonus angustus*, Lucas by Stoliczka, J. A. S. B. Vol. xlii, Part 2, 1873, p. 134.

Sub-order *Amblypygi* (Tailless Pedipalps).

Family *Tarantulidæ*.

6. *Tarantula phipsoni* (Pocock) Phipson's Tarantula.

This species is named after the able Honorary Secretary of the Bombay Natural History Society. The genus *Tarantula* has also been called *Phrynus* and *Phrynichus*.

At Chantaboon in January 1898 I found fifteen individuals of this species on one small hill, by turning over some piles of logs: they can run very swiftly, and rapidly efface themselves from view by going into crevices; but usually, like scorpions, they seem to seek concealment by squatting quite still among their natural surroundings. Daylight seems to confuse them, and when caught they move their pincers wildly about in a most aimless manner.

Dimensions of a Chantaboon specimen:—

Length, from front of mandible (folded at rest) to end of abdomen,	40	millimeters.
Width of cephalothorax,	19	,,
,, ,, ,, abdomen,	17½	,,
Total length of chela limb,	110	,,
,, ,, ,, antenniform limb,	128	,,
,, ,, ,, 1st walking leg,	55	,,
,, ,, ,, 2nd ,, ,,	60	,,
,, ,, ,, 3rd ,, ,,	58	,,

Span from tip to tip of outstretched chela, 220 mm.

An animal allied to Phipson's Tarantula inhabits the Batu Caves, Selangor; I saw one specimens far into the caves in June 1898 but failed to catch it.

Order *Araneæ*.

The True or *Web-Spiders*

Malay "*Laba-laba*"

Siamese "*Meng-moung*"

Jakun "*T'wowoh*" (Lake+Kelsall, J.S.B.R.A.S. No. 26, 1894, p. 56.)

The true Spiders have four pairs of legs, of similar construction, each composed of seven segments, and used for locomotion, and two modified anterior pairs of limbs, one (the palpi) leg-like and composed of six segments, including the basal segment or maxilla, and one (the mandibles) composed of only two segments and containing a poison-gland which opens at the tip of the second segment which forms the poison-fang. The spinning mamillæ, upon which open the silk glands, are situated on the lower surface of the abdomen, and are a characteristic feature of the true Spiders.

The sexes of spiders may be distinguished by the last segment of the palp which is modified into an intromittent organ in the male, while the female, in most families, has a horny plate (vulva) on the forepart of the lower surface of the abdomen.

The true Spiders are divided into two Sub-orders :—

1. *Sub-order Mesothelæ*. Abdomen segmented, its upper surface covered with eleven dorsal plates. Eight spinning mammillæ placed in the middle of the lower surface of the abdomen. This sub-order contains only one family *Liphistiidæ*, and one genus *Liphistius*, known from Burma, Sumatra, Penang and Selangor, where it has been recently discovered by Mr. H. N. Ridley.

2. *Sub-order Opisthothelæ*. Abdomen not segmented. Six, or fewer, spinning mammillæ placed near the hinder extremity of the lower surface of the abdomen. This Sub-order contains a host of forms, divided into two sections of many families; only a few of the more noticeable can be mentioned in the limits of this paper.

Section *Mygalomorphæ*.

Family *Theraphosidæ*.

These are the very large hairy spiders commonly called by the English in the Straits Settlements "Tarantulas", and called by the Siamese "Boum," what the effect of their bite on a man would be I cannot say; it is commonly supposed that the consequences would be very serious, if not fatal.

1. *Coremiocnemis cunicularius*, Simon.

These large dark brown and very hairy spiders are numerous on Penang Hill; most of my specimens were obtained near "the Crag" at an elevation of about 2200 feet. They make burrows, sometimes a couple of feet deep, in the steep banks at the side of the hill paths; the round entrance hole of these burrows is easily seen, and then the spider, if at home, may be carefully dug out. The Kling coolies I employed to help me digging were extremely afraid of these spiders, which they called (in Malay) "*Laba-laba gigi sakit*" (= the spider with the poisonous teeth). These spiders are fierce, very strong and difficult to kill without damaging them; I have found a specimen after three or four hours immersion in spirits of wine still to be so lively that it had to be handled with caution. The length of the caphalothorax and abdomen of one I measured was 46 mm. (1.8 inches), its hind-leg measuring 68 mm. (2.7 inches).

2. *Melopœus albostriatus*, Simon.

This species occurs in Siam; I was given a specimen said to have been caught at Ayuthia, but never came across it alive myself.

Family *Barychelidæ*.

3. *Encyocrypta sp. incert.*

I got this spider near the foot of Gunong Pulai, Johore, in September, 1897, but did not observe whether it had a "trap-door" home or not.

Section *Arachnomorphæ*.

Family *Pholcidæ*.

4. *Artema atlanta*, Walck.

This elegant spider, better known as *Pholcus borbonicus*, with exceedingly long and slender legs is common in disused buildings in Bangkok. It is pale reddish brown in colour, except the abdomen which is grey. They apparently make no webs; they can run very fast, but, as long as these is no crevice to dart away into, are easily caught in the hand. They may be from the tip of one extended fore-leg to the other as much as 140 mm. (or 5½ inches); though the length of the cephalothorax and abdomen is only 10 mm. (or .4 of an inch).

Family *Argiopidæ*.

5. *Argiope æmula*, Walck.

This species, which is widely distributed throughout the Oriental regien, I obtained in Bangkok.

6. *Araneus de haanii*, Dol.

Collected in a house in Bangkok in July 1898.

7. *Herennia multipuncta*, Dol.

Obtained on Penang Hill in March 1896.

8. *Nephila maculata*, Fabr.

This is the most striking in appearance of the Malay spiders I have come across, and is by no means rare. It lives on trees both in gardens and in the jungle, but occasionally wanders into buildings, as I got a specimen in the Officer's Mess at Tanglin in April 1896. Its large web, constructed of beautiful yellow silk, is usually spread between two trees, and the great black and yellow spider sitting motionless, with legs spread out in the middle of it, in bright sunshine makes a fine picture. If taken in the hand, the collector will find this spider can bite hard with its powerful nippers. Besides Singapore I have noted this species in Taiping, Perak, in Bangkok and at Muok Lek in the Dong Phya Phai, Siam: it also occurs in Borneo, Celebes, Halmahera, Ternate, Batchian, New Britain, Solomon Islands, etc.

A Bangkok specimen was coloured as follows:—

cephalothorax, shining intense black.
abdomen, various shades of brown, with black marks and two conspicuous yellow spots.
limbs, red brown, black at the joints.

This species attains a great size; in an individual I measured the length of the cephalothorax and abdomen was 36 mm. (1.4 inches).

9. *Nephila malabarensis*, Walck.

This prettily marked spider is very common, especially about houses, making large webs under the eaves of roofs, in verandahs, etc; when houses are not at hand it seems equally content with rocks. I have noticed this species in Penang (especially near "the Crag"), in Singapore, in Alor Star, Kedah, in Bangkok and in Chantaboon: it also occurs in Java, Halmahera and other places in the East Indies. Quite small spiders will nearly always be found living in the webs of this species. I have not been able to make out so far if they belong to a different species, or if they are the males of the big females which construct the webs.

Colour (in life.) Upper surface of cephalothorax dark brown or dark red; upper surface of abdomen mottled olive brown, or whitey buff with brown marks. The specimens with the brown cephalothorax usually have red or rich orange markings underneath the cephalothorax and abdomen, those with red above have bright yellow markings underneath. The legs are pale yellow, black about the joints, and the last segment in each leg is brown.

10. *Gasteracantha sp. incert.*

This curious looking spider, with hard transversely dilated six-spined abdomen, is not uncommon in the jungle on Penang Hill. I have found it at elevation of from 2000 to 2400 feet during March 1898. It makes a very large, strong, geometrically arranged web of white silk between the stems or branches of trees; this web it keeps very tidy. One web, which I particularly noted, was situated between branches of trees over 15 feet apart, and was about 9 feet from the ground. The transverse width of its abdomen from point to point may exceed one inch (one fine specimen measured 28½ mm.)

Family *Psechridæ*.

11. *Psechrus singaporensis*, Thor.

In the Batu Caves, Selangor, in June 1898, in caverns remote from daylight, Mr. A. L. Butler and myself found certain spiders numerous, which make strong, untidy webs in crevices of the rocks. Specimens of the spiders were sent to Mr. Pocock who considers they probably belong to this species.

Family *Ctenidæ*.

12. *Ctenus fungifer*, Thor.

Known from Penang. (F.O.P. Cambridge, A. + M. N. H. [vi] xx, 1897, p. 334).

13. *Ctenus floweri*, Cambridge (loc. cit. supra, p. 348).
The types of this species I got on Penang Hill in March 1896.

Family *Heteropodidæ*.

14. *Heteropoda venatorea* (L.) The Hunting Spider.

Nearly every resident in the East Indies must know this fine spider which runs about houses, in the evening, catching its insect prey; it makes no web, but the female spins a whitish silk cocoon in which she carries about her eggs, which she looks after with great care and vigorously defends from enemies. What the effect of the bite of this spider on a human being would be I do not know, but it is certainly not prone to bite and I have never heard of its doing so, while as it is known to be very useful to mankind in destroying superabundant insects, it certainly ought to be encouraged and native servants should not be allowed to carelessly or wantonly kill them. It feeds on moths, crickets, etc., especially the big red cockroaches, which are such a nuisance in some places in the Straits Settlements. In a house individual spiders will often take up particular beats, which they occupy regularly night after night; in Bangkok one lived for many months behind my dressing table. Every evening when I placed a lamp on the table the spider came out from its retreat and took up his position by the light; at first we rather mistrusted each other—I being afraid the spider might some day bite me, and he carefully avoiding my coming too close to him, but as the

weeks went by such mutual confidence sprung up that even when I touched him the spider would hardly shift his position.

I have noted this species in Singapore, Johore, Georgetown (Penang), Kedah, Bangkok, Ayuthia, Tahkamen, Chantaboon and also on board local coasting steamers.

It is also recorded from Java, Borneo, Celebes, Halmahera, Ternate, Batchian, New Britain, Solomon Islands, tropical Africa, etc., etc.

A specimen I kept for a time in captivity in a large glass jar together with a small scorpion *Archisometrus mucronatus*, and a *Thelyphonus* did not interfere with them in any way or they with it. Whenever the spider rested on the glass sides of the vessel it put its spinnarets in rapid motion and formed a small anchor of white silk and then let down one fine silk thread as if to help support itself: in a few days it had to some extent obscured the whole surface of the glass by the number of these anchors it had made and abandoned.

15. *Heteropoda thoracica* (C. Koch).

I caught specimens of this very handsome spider in the inner, deepest caves, far from daylight, over an hour's walk from the entrance in the hill side, Gunong Gajah, Kedah, in June 1898. They ran with great agility over the rough walls of rock, and also when we tried to catch them sprang away from the rocks into the air; the Malays were very frightened of them. Although living in darkness the spiders did not seem at all confused by the light of the lamp and torches. On the two occassions I have collected in these caves, in April 1895 and June 1898, we only met these spiders in one part of the caves, the deepest part.

Colour, yellow ochre, marked with rich dark brown.

Size, Cephalothorax,	length,	16	mm.
,,	width	12.5	,,
Abdomen,	length	17	,,
,,	width	8	,,
Palp,	length	27	,,
1st leg,	,,	83	,,
2nd ,,	,,	91	,,

3rd leg length 73 mm.
4th „ „ 82 „
Total span (across 2nd pair of legs from tip to tip)
194 mm. (= 7⅝ inches).

This species has been recorded from Sumatra, Java, Amboina, etc.

16. *Thelcticopis modesta*, Thorell.

I obtained this species in Penang in 1896.

Order *Opiliones*.

The Harvest Spiders.

Animals superficially resembling the true Spiders; like them they have four pairs of legs, of similar construction, and two modified anterior pairs of limbs; one (the palpi) not pincer-like, but sometimes capable of folding back on themselves, sometimes armed with spines, and composed of six segments, including the basal segment or maxilla, except in the *Ricinulei* which have five segments; and one (the mandibles) pincer-like and composed of three segments, except in the *Ricinulei* which have but two.

The abdomen is segmented, composed of from 3 to 8 segments. In the true spiders the breathing apparatus consists sometimes of four pairs of lung-sacs, but generally the hinder pair are replaced by tracheal tubes; in the harvest spiders the breathing apparatus consists of tracheal tubes, opening by one pair of orifices situated on the sternal plate of the abdomen.

There are no spinning glands.

Family *Oncopodidæ*.

1. *Gnomulus rostratus*, Thorell. (Ann. Mus. Genov. xxx, p. 378, 1890); found in Penang.

2. *Oncopus feæ*, Thorell. (Ann. Mus. Genov. xxx, p. 375, [1890]); found in Penang.

3. *Oncopus truncatus*, Thorell. (Ann. Mus. Genov. xxx, p. 764, [1890]); found in Singapore.

"The British Museum has from time to time received a number of specimens from Mr. H. N. Ridley" (A. + M. N. H.

Ser. 6, xix, p. 288). I obtained one individual of this species in the jungle at the foot of Gunong Pulai, Johore, in September, 1897.

4. *Oncopus alticeps*, Pocock (A. + M. N. H. Ser. 6, vol. xix, 1897, p. 287).

The type specimen I found on Penang Hill, about 2200 feet elevation; 29th November, 1896.

Family *Phalangidæ*.

5. *Gagrella sp. incert.*

I obtained specimens of these very long legged beasts in Bangkok and at Bortong Kabin; at the latter place in March 1897 there were countless thousands of them collected in certain spots, a wonderful sight.

Notes of a Tour through the Siamese States on the West Coast of the Malay Peninsula, 1900.

By C. W. S. Kynnersley.

Having assumed charge of the Consulate in April this year and wishing to become acquainted with some of the Western Siamese States which have not been visited since 1894, I left Penang in the colonial launch *Seabird* at 10 P. M. on

Tuesday 11th December, taking with me Mr. Peel, District Officer, Bukit Mertajam. I elected to go in December as the weather at this season is settled with a N. E. wind blowing from the land. It was a fine moonlight night and we reached the mouth of the Kedah river before daybreak.

Wednesday 12th December.—The Sultan's Secretary came on board at the entrance to the river and we reached the landing place at *Alorstar* about 6.0 A. M. Here I was received by some of the leading officials and a guard of honour and we drove in a carriage and pair to the Sultan's country house at *Anak bukit*. H. H. the Raja Muda accompanied us. I arranged to be at the Consulate at 9.0, previous notice having been given of my intended visit some time before. After breakfast we drove to the Consulate which has been lately repaired. Every assistance was given to me by the Kedah Officials. I enquired into several cases of minor importance and a considerable number of British subjects presented themselves for registration. Having despatched the business in hand and arranged to attend the next day, we drove back to *Anak bukit* where I discussed various questions with the Raja Muda. At 3.0 P.M. I paid an official visit to H. H. the Sultan who is in very feeble health and at times hardly equal to transact public business. Having taken leave of the Sultan we proceeded with the Raja Muda to inspect the Public Offices. The buildings are excellently adapted for the purpose and present quite an imposing appearance, though

the style of architecture may not be of the highest order. They were completed about four years ago and reflect great credit on the designer who carried out the work—MAHOMED LEBBY TAMBI, formerly employed under me in the Police Court, Penang. He is now building a fine new house for the RAJA MUDA.

The offices are admirably arranged—Treasury, Land and Survey, Courts of Law, and lastly an office for the Auditor General. The various officials, including the Judge, were introduced. We were shewn a survey map of the town with all the various lots marked on it. The offices are open from 10.0 to 4.0, Malays being exclusively employed, and in outward appearance at all events our colonial system is followed. So far as we could ascertain the office of Auditor-General is somewhat of a sinecure. He is said to query and examine accounts but there were no papers or books in his office. A census has lately been taken and we were shewn the figures which, however, are still incomplete for some of the up-country *Mukims*. I have on former occasions inspected the gaol, but did not do so on this visit. I noticed that the outside wall was beautifully white but the interior arrangements are I fancy what they have always been and are hardly up to date. Prisoners in chains are employed on outside labour in the town. A Kling *dobi* prisoner sent me a petition complaining that he was kept in gaol beyond the term of his sentence, but his warrant of commitment, which was produced, proved that his statement was incorrect. The RAJA MUDA, his younger brother, a son of TUNGKU DIA UDIN, the Auditor-General and two others dined at *Anak bukit*. We were the guests of the RAJA MUDA.

Thursday 13th December.—The RAJA MUDA came at 7.30 A. M. and we went down the river to the Consulate in a house boat, the RAJA MUDA pointing out the place where Lieut. THURBURM, R. N., of H. M. S. *Hyacinth*, was drowned when crossing the river at night after snipe shooting in October, 1891. The current here is strong and the boat must have struck a snag and capsized. The body was recovered opposite the Consulate 1½ miles down the river. The grave in the consular grounds, which has a stone cross over it, is kept in good order. Enquired into a number of cases including a complaint by a Penang China-

man as to the decision of the Kedah Government with regard to a grant of land at Kulim. TUAN BULAT, Collector of Land Revenue, produced the plans and the documents and after a full explanation of the case I came to the conclusion that the Kedah authorities were justified in their action. A certificate had been granted to a Malay man in Penang who claimed to have been born in Province Wellesley, alleging that his father moved to Kedah when he was 6 years old. Good evidence being produced that he was born in Kedah territory I cancelled the certificate. A large number of British subjects were registered. The consular business being concluded we drove back to *Anak bukit*. At 4.0 we went by invitation to tea at the RAJA MUDA'S and found a garden party assembled, all the leading officials having been invited. Having partaken of coffee, ices, etc., in the garden we adjourned to the billiard room. Returning to *Anak bukit* for dinner we left at 10.0, going on board the *Seabird*. The RAJA MUDA and others saw us off and we dropped down stream slowly, anchoring about midnight inside the bar. I have visited Kedah at intervals since 1873 when I spent some weeks there learning Malay and I have always met with the utmost hospitality and kindness on the part of the reigning family and officials.

Friday, 14th December.—Having crossed the bar at high tide about 4.0 A.M. we had a calm voyage with a light cool breeze from the shore. We passed numerous limestone islets and rocks of quaint shapes. At times it came on to blow fresh from the N. E. and the spray from the white waves broke over our bows. Passing Cone Island near which the S. S. *Perse* recently struck an uncharted rock and went down, "Cut Islands" and the twin rocks called in the chart "Darby and Joan" we made for the entrance of the Trang River which for half an hour was hidden from us by a heavy rain squall which came on from the N. E. The Trang River is like the majority of those along this coast, broad and fringed with mangroves, with many channels. Having taken a pilot from Penang we were successful in reaching our destination without grounding on the mud banks. The seat of Government is by no means imposing. There is no town. At the landing place we were met by Mr. KHAW JU KEAT—the Governor's nephew—two pony-traps being sent

down to convey us to the Governor's house which is situated about a quarter of a mile from the jetty. There is a Custom House and a few Chinese shops. We were not expected so early. Mr. KHAW SIM BEE, whose Siamese title is Phya Rasdanupradit, etc., the Governor, received us most cordially and after giving us tea drove us along a new road which he has made round a wooded hill on which his house stands. On the way he pointed out the new Government Offices consisting of Treasury, Court and Land Office which have been commenced opposite the gaol. The prisoners, Chinese and Siamese, are employed in making bricks and on road work. Mr. KHAW SIM BEE belongs to a wealthy Penang family and is an admirable administrator. Being intimately connected with Penang he can do much in the way of extending the trade of that Settlement with Trang and the neighbouring Siamese States. He owns a Steamer which runs regularly between Trang, Pung-a, Penang and Deli.

The old town and mines, where some hundreds of Cantonese and Khehs are employed, are situated some miles up the river and the tin is brought down to the river on elephants four miles by a bad road. We had not time to visit them. Mr. KHAW SIM BEE described how he had effectually suppressed the Secret Societies some years ago, since when there have been no signs of their revival. He also informed me that the Siamese Government had decided to abolish the Gambling Farms and this was gradually being done. There is only one Sikh in the place, who is employed as a detective to see that no Government employée attends the Gambling Farm.

Pepper thrives well in Trang, 25,000 pikuls being produced in a year valued at $28 a pikul. The soil is said to be excellent. Mr. KHAW SIM BEE pointed out a new elephant-road to Nakon on the East coast 70 miles distant. It is dignified by the name of a road but at present hardly deserves the title. About 15 years ago orders were given from Bangkok to connect these Western States by telegraph. Poles were prepared for the connection between Trang and Ghirbi and the wire has been lying at Trang ever since. Many reforms are being introduced by the Siamese Government in these States. The officials of the old school have been removed and are replaced by young men from Bangkok who have had some training in their duties. The

latest innovation is the introduction of the Burma village system of headmen under which police and paid officials are dispensed with up country. Ten houses elect a headman. A group of ten villages has a representative headman. All occurrences such as births, deaths, fires, disturbances, crimes, etc., are reported and no one can move from one village to another without the fact being reported and some one found responsible for him. Mr. KHAW SIM BEE says that since the introduction of this system crime has practically disappeared. The Siamese he says as a rule are well behaved but when they are bad they are desperately bad. The Treasury accounts are kept in the English fashion. The law is framed on European models and everything is up to date. The Opium Farm is run on the same lines as in Penang, the retail prices being the same. Living is apparently very cheap and prices are very much lower than in the Colony. Fowls are 25 cents, buffaloes $30 to $35. A certain amount of timber is exported besides tin and pepper. Giam (used for boat building and other purposes) is exported to Penang and Calcutta. Peacocks and teal are plentiful within easy reach of the Governor's place, also green pigeon, and *pergam*. The revenue is paid as in the other Western States through the Siamese Consul-General in Penang, 60% going to Bangkok. This is a considerable drain on the resources of the States and may help to explain why so many useful public works, which are projected, are not carried out.

There are few British subjects in the place and their interests may safely be entrusted to Mr. KHAW SIM BEE who is himself a British subject.

The Governors of Tongkah and Ghirbi, who were leaving for Bangkok to take part in cremation ceremonies, dined with Mr. KHAW SIM BEE that night as well as two other officials. The Governor of Ghirbi speaks English. I explained to him that I had intended to visit Ghirbi on my return journey but would postpone my visit as he would be absent. Ghibri produces an inferior quality of coal or rather lignite of no commercial value though it is used with other fuel by small steamers.

Mr. KHAW SIM BEE entertained us most hospitably and we slept at his house that night.

Saturday, 15th December.—Mr. KHAW SIM BEE when in Penang had kindly placed at my disposal the small steamer *Damrong Rat*, so I left orders for the *Seabird* to meet us off Telibon Island on our return from Tongkah. Mr. KHAW SIM BEE also very kindly sent his nephew Mr. KHAW JU KEAT, who speaks English and Siamese, with us and he proved of the greatest assistance. A Marine Police Guard (Siamese) was drawn up at the jetty when we drove down and we took leave of the governor about 7.0 A. M., the *Damrong Rat* flying the consular flag. Outside the mouth of the Trang River we found the S. S. *Artsadong*, the small steamer that runs between Penang and Pung-a owned by Mr. KHAW SIM BEE, high and dry on a sand bank. She had left Trang for Pung-a at night and not being able to make out the narrow channel marked by stakes had got on the bank about 2.0 A. M. on the 14th. After passing round Telibon Island the sea got rougher with a strong breeze from the land. The long island of Pulau Lontar sheltered us part of the way. After passing Pulau Lontar the sea got rougher as we got further from the land. Then after rounding a small island we altered our course for Tongkah with a following sea. The anchorage at Puket resembles that of Malacca during the S. W. monsoon. The harbour is very shallow and is exposed to the N. E. The Siamese gunboat *Ran Ruk* and S. S. *Petrel* were lying a mile or so from the shore. Captain RING of the *Ran Ruk* kindly sent a boat off at once, and owing to the heavy sea running we had some difficulty in getting off. However we got ashore in safety about 6.0 P.M. Captain RING met us at the jetty, took us to his house, which is near, and introduced us to his wife, the daughter of Captain WEBER of Tongkah. The Chief Commissioner of the Western Siamese States had sent his carriage for us and we were met by the Acting Superintendent of Police (Siamese) who talks English well, having been formerly employed in the Penang Land Office. We were received by the Chief Commissioner who introduced us to his wife in a large reception room furnished in European style. He hospitably placed rooms at our disposal and asked us to make ourselves at home. His Excellency did not understand English but with the help of the Superintendent of Police and Mr. JU KEAT we got on very-well

during dinner. His wife knew a few words of English learnt in Penang where their son is being educated at the Brothers' School. The Commissioner is a person of great importance being over the local governors and corresponding with Bangkok frequently.

Sunday, 16th December.—We had arranged to go early with Mr. ROSS CLUNIES, Superintendent of Mines, to see a new road, but we found carriages ready and the Commissioner prepared to show us round himself. We were driven about a mile along a grass covered road till we were brought to a stop by an unbridged stream. This afforded a good example of what we found very common in these Siamese places. Roads, bridges, and improvements generally are talked of but not made. Everything bad is attributed to the late Governor. All sorts of wonderful schemes are going to be carried out by the present man. The old Governor for instance allowed Chinese to bury where they liked. The hills were allowed to be cleared of jungle for hill padi. Anyone could dig for tin anywhere, etc. The old Governor is said to be responsible for the tumble down building which serves as the Post Office and so on.

The explanation for allowing this stream to be unbridged was that all the timber obtained from Penang and Singapore which was lying ready was burnt one night owing to a lamp falling. We were told there was no stone available though I saw plenty within a quarter of a mile. We passed the house of the Superintendent of Police, Mr. HARTNELL, lent from the Burma Police, who is at present on leave in England. Mr. CLUNIES was also to have a house there and we climbed a small hill chosen as the site for a house for the King of Siam. It is nice open grass country interspersed with scrub. The plans are said to be all ready but it is very doubtful if the house will be built or the road ever completed as there is a newer scheme for moving the town about two miles further away to the bay near the Light-house island which is sheltered and is said to have deep water. If this scheme is ever carried out the site of the present town will be given up to mining as it is known to be rich in tin. We then drove to the Central Police Station which was prepared for me to hold a Consular Court and I arranged to be there at 11.30. From there we drove to

the mines. These are interesting from the fact that they are in the former bed of the sea, an embankment being carried a quarter of a mile or so out to sea so as to enclose the mine. Two or three thousand Chinese miners, all Hokkiens, are employed here and there must be quite as many pigs as Chinese. These pigs are exported to Penang. Within the embankment which keeps the sea out the sand and clay have been excavated to a depth of some 50 or 60 feet below sea level. It is an enormous work which may or may not be rewarded by success. I was told that there was a loss of $50,000 during the present year but this may not be true. We saw some tin sand being washed in the usual way. At present the average yield is 12 pikuls a day but it is hoped soon to reach a richer stratum. The particles of tin are very small whereas in the mines near the hills large *biji* are said to be found. After inspecting the mines we drove to the Government Offices and were introduced to the Treasurer and a youthful looking Chief Justice aged between 30 and 35. I wanted to post a letter but we were not taken to see the Post Office, which being a relic of the old Governor's régime is not one of the show places. The Chief Commissioner has a good Office. Here we saw several typewriters in Siamese character at work. On the walls were some recent Siamese maps. During the day we received typewritten formal invitations to dine with our host. After breakfast at 10.0 we drove to the Central Police Station where I was presented with two petitions from Klings. One was about the division of some property of a deceased Kling man. It appeared that he traded in cattle and several persons were indebted to him. Before his death he called his friends and told them to bury him decently and have a feast, collect what was due to him and keep the money for his widow in India. They appear to have carried out part of the trust and the recollection of the goats and fowls slaughtered in honour of deceased was still in their minds. So far as I could ascertain there remained a sum of about $2.50 for the relatives, deposited with a Siamese official. The other petition related to a matter which is still *sub judice*. Two Kling British subjects had a difference about some accounts and one was alleged to have assaulted the other. The case came before the judge and one was mulcted

in damages and ordered to pay $30 or some such amount. Against this decision he had appealed to the Council-General at Bangkok and an answer was expected in a few weeks. Klings cannot exist without litigation and I should think that the Siamese judicial system is well calculated to satisfy them. It must be a great luxury to be able to appeal to Bangkok in any trivial matter even if there are no results. While waiting I noticed a Sikh orderly being measured against the wall for his descriptive roll as a British subject. He was wearing a specially high turban and I asked what his height for the Register was. I was told 5 feet 8 inches, but having removed his turban and boots he only reached 5 feet 4 inches. A large number of Sikhs were formerly employed at Tongkah but they were found troublesome and have been replaced by Siamese, only a few orderlies being retained. When the consular business was finished we inspected the Club where we saw some new Penang papers brought by the *Petrel*. We then paid a surreptitious visit to the office of "the Royal Siamese Posts and Telegraphs." I asked for stamps but was informed that they were not kept and letters must be forwarded on board. We did not ask to telegraph anywhere as we had been told that the telegraph posts and wires which run along the new road lead nowhere. In the afternoon Mr. CLUNIES came and fetched us with a buggy and dogcart. He drove me while Mr. PEEL followed in his pony cart. We drove through the principal streets of the town. We passed over one new plank bridge but all the rest were rotten and there were great pits in the road. Bridges are said to be repaired only on the occasion of a wedding. We drove some distance along the projected new road to the town of the future on raised turfy land through brushwood. Everywhere were excavations for tin. Chinese graves, some newly dug—in spite of the new régime—were also plentiful in the brushwood. We then walked half a mile till we came to a mangrove swamp —then back along a cart track with the deepest ruts I ever saw till we struck the main road to the up-country mines. This road might easily be put in good order but nothing is done to it and there are deep holes in it. Up the valley is a wonderful aqueduct built of scaffold poles by Chinese some years ago which is said to be seven miles long and 100 feet high. We were

shewn a photograph of this and I should have liked to have seen it. Having driven through the town we called on Captain RING and found a gale blowing. The weather looked very bad and it was suggested that we had better delay our departure till next morning. There was a dinner party in our honour that night. Captain RING and two Danish officers of the *Ran Ruk*, the Chief Justice, Treasurer, Mr. CLUNIES and others, about 14 in all. A Siamese band played during dinner, Siamese and Chinese tunes, flutes aud fiddles. I took the Commissioner's wife down and she was the only lady. The Commissioner after "the King" proposed our health and I replied. We left about 9.30 and went on board the *Damrong Rat* in Captain RING'S boat. Happily the wind had gone down. It was pretty rough outside with a head wind and the boat pitched and rolled, the sea coming over the bows. We got into smooth water under Pulau Panjang about 3.0 or 4.0 A. M. and anchored in the Pung-a River.

Monday, 17th December.—A lovely cool morning and the view beautiful beyond description with numberless limestone islets and rocks some rising to the height of four or five hundred feet with precipitous sides clothed with verdure. Mr. JU KEAT had started at 5.30 up the river to convey a letter from the Commissioner to the Governor. We were told that he could not be back for an hour or so and we therefore went in a boat— a very leaky one—to explore the river, taking the camera and Mr. CURTIS'S orchid and plant collector. The Pung-a River forms part of a network of broad channels among mangroves out of which rise at intervals great isolated limestone crags and precipitous rocks, some rising to 800 or 1,000 feet in height. Our men climbing up the steep rocks got a miscellaneous collection of plants and orchids which half filled our small boat. We also took several photographs of picturesque rocks and caves. Then we returned to breakfast on the launch. Mr. JU KEAT having returned we went in a boat about two miles up the river, taking a rifle in case there were any crocodiles on the mud banks. We did not see one though the tide was low. The stream or rather mangrove creek got very narrow and at length we reached the landing stage where a Police guard was drawn up, and we were met by

the Governor's Secretary with a pony carriage. The Secretary did not speak English but we learnt through Mr. JU KEAT that this was a new road to take the place of the former Governor's road, which (of course) was bad. Like all the other roads we saw except that at Trang it was in an unfinished state completely grassed over with big holes in it, but further on it was much better. The scenery was very pretty. The road runs through an avenue of ansenas which at this season up north shed all their leaves. The road being covered with dead leaves reminded one of an English lane in autumn. There was nothing tropical about it but an occasional palm in the distance. On either side were broad stretches of fine turf with clumps of brushwood. Through the valley which is about two miles wide meanders the Pung-a River in a sandy bed. The valley is entirely hemmed in by precipitous limestone cliffs some 1,500 feet high. On the left going to Pung-a is a huge block shaped like an elephant. After passing several houses and the gaol enclosed by a palisade, we reached the Governor's place. The Governor received us most warmly and offered us tea and cigarettes in his verandah. He is a most genial man but unfortunately he upset our gravity by his first remark which was translated to us by Mr. JU KEAT with a smile: "This is a poor house to receive you in. It was built by the late Governor. I have plans all ready for a new house". The cigarettes made in Siamese fashion were excellent and the Governor told me they were made of Pung-a tobacco. The soil he says is very rich and will grow anything—100 pikuls of tobacco a year are produced, value $5,000. I asked him to send some tobacco, cigarettes, etc., to the Agricultural Show. He is very anxious to make known the resources of his district and said he was preparing a report which he promised to send to me. He said there was great difficulty in procuring labour for planting. The Chinese all go to the mines. 5,000 pikuls of tin are got—brought in by elephants which only carry 4 or 5 slabs. He is very anxious to get some natives of India for planting. In one island he said there were 500 deer which he hunts with a pack of dogs. Peacocks he said were very plentiful. It is certainly a lovely place—very cool at this time of year and, I should say, extremely healthy. The lunch was so excellent that I asked if

he had a French cook. He said his cook was a Chinaman whom he brought from Bangkok. The Governor has a daughter being educated in the Penang Convent. He had been to Perak where Mr. RODGER had been very good to him he said. Just as we finished lunch three elephants arrived and the Governor asked if we would ride round and see the town, Rest House, etc. I mounted the leading one with the Governor and Mr. PEEL and Mr. JU KEAT followed. My elephant was valued at $1,200. A good number are sold to Burma. We first went along the road, the Governor who knows a few words of English pointing out the present very unpretending Government Offices and saying "no good house—next year estimate." The elephants, as is their wont, left the road wherever a bridge appeared and made a detour. There is only one narrow street in the "town." I noticed a pillar box close to the Post and Telegraph Office. The people are half Siamese and half Chinese and a good many of the houses are dilapidated. After passing through the "town" we struck the river bed and went down some distance. It has a broad sandy bed. In the rainy season it becomes a swollen torrent which at times floods the town. Passing round by the Governor's house we went some distance above the road leading to the river and came to a hill on which a Rest House has been built—a lovely site commanding a view of the valley. The Rest House is commodious but unfurnished. The Governor said that even at that season there were frequent showers which keep the place cool. There was a shower while we were there. The high cliffs clad with jungle no doubt attract the clouds. We were quite sorry to leave and I expressed my regret that as there were no British subjects I could not repeat my visit as Consul. The Governor saw us off at the landing place and as we passed I noticed two men mending some of the worst holes on the road. We found the *Damrong Rat* had left her anchorage and gone to the mouth of the river to take in firewood. This entailed an extra two miles pull for the men. We lay that night off the Custom House and slept on the deck peacefully.

Tuesday, 18th December.—A pilot came off early and we left at 6.0 to visit the Kesum cave. This is some miles up a river similar to the Pung-a River with limestone rocks rising out of

the mangrove. Following one branch the river narrows and passes through a great limestone rock—forming a natural arch fringed with stalactites. It was so beautiful with the sun shining on the water seen through the arch that we took several photographs. Having passed under the rock and admired the scene we returned to the mouth of the river leaving for Trang about 9.0 A.M. It was blowing fresh and the sea was pretty rough—a glorious morning with a cool breeze from the land. Passing numberless limestone rocky islands we got under the lee of Pulau Lontar and before dark sighted Telibon Island. Off the Custom House we found the *Seabird* lying together with the *Artsadong* which had only just floated off the bank on which we found her when we first arrived at Trang. We slept on deck and had a cool peaceful night.

Wednesday, 19th December.—At daylight we started in a house boat to see some caves up a river which were said by Mr. KHAW SIM BEE to surpass those of Kedah. The caves are very disappointing and as we had no torches we could not explore them except by match light. It took us three hours to go and return and we regretted the delay as we could not reach the Langkawis before dark. Having taken leave of Mr. JU KEAT who had proved most invaluable to us we made for Pulu Terutau and anchored about 5.0 P. M. under the shelter of a small rocky island separated from the shore, where there were a few native huts, by a narrow channel. We were glad to get into smooth water for the night. We landed and searched for orchids till it got dark but the rock proved barren and unclimbable. Noticing after dinner that we were dragging our anchor and drifting into rough water I got the Captain to let out two fathoms more of cable.

Thursday, 20th December.—Made an early start for Kuah where we had arranged to meet His Highness the RAJA MUDA. It was still blowing fresh from the land. We reached Kuah about 9.0 and found the RAJA MUDA who had expected us the night before had gone on to Dayang Bunting so we followed. His small steamer was at anchor. He came on board and we went through an inland sea of wooded islands till we came to a small bay where we anchored and went ashore in boats to a long temporary jetty put up years ago for the King of Siam. We

then followed a good jungle path through a plantation of durian and other fruit trees planted by the late WAN MAT. Having mounted to the top of a low ridge we descended to the shore of the lake Dayang Bunting where a long Malay house has been built on piles on the edge of the lake. Here elaborate preparations were made for a feast, tables, chairs and everything being brought by the numerous Malays who accompanied us. Mr. PEEL ventured on the lake in a small canoe. We then sent a man out to take soundings with the *Seabird's* lead. In the two places selected it was found to be 9 fathoms deep.

The lake is surrounded by jungle-clad limestone cliffs some 500 to 1,000 feet high which enclose the lake except at the lower end where a low rocky ridge separates it from the sea. The lake (fresh water) is about 500 yards long. We took a sample of the water which I brought to Penang for analysis. After an excellent meal we went round by boat to what once must have formed the inlet to the present lake from the sea. Masses of limestone rock have blocked the entrance so that there is now no connection between lake and sea. After climbing some rocks about 40 feet high we looked right down on the lake the surface of which, so far as we could judge, appeared to be some 10 feet above the sea level. This is a mere conjecture. From Dayang Bunting we should have gone to *Telaga tujoh* but the RAJA MUDA wanted to show us the Goa Cherita (Legend Cave) which they said could be reached in an hour. As a matter of fact it took us 2½ hours to get there. The scenery of this Archipelago is lovely as you wind about among the wooded hills. The highest hill is Gunong Raya which is over 3,000 feet high. A striking feature in the distance is the serrated range known as Gunong Chinchang. Once more we were destined to be disappointed in the matter of caves. The cave is a very ordinary limestone cave and the only interest that attaches to it is an inscription in Arabic character high on the limestone cliff at the entrance. Certain Arabic words and names can be made out but whether it is ancient as the Malays like to believe or only some hundred years old it is impossible to say. Below Malays and English visitors have inscribed their initials with charcoal and we were told to do the same. It was nearly dark when we started to return to Kuah. Fortunately we had a pilot who was

able to direct our course through the winding channels sometimes very narrow and between high rocks. It was intricate navigation in the dark but we got safely back to Kuah about 8.0. We then landed and had dinner in a house built by WAN MAT after which we left with a Kedah pilot kindly lent by the RAJA MUDA.

Friday, 21st December.—Reached Penang about 7.0 A. M.

General Remarks.

The best season to visit these States is undoubtedly December-January when delightful weather may be counted on. It is the dry season and a cool breeze blows continuously off the land. The *Seabird* is not fit for such a trip. The *Damrang Rat* though not much bigger is a better sea boat. When I describe the sea as "rough" I mean for a launch. In the *Sea Belle* the trip at this time of year would be a delightful one, Pung-a especially being worth a visit for its lovely scenery.

One thing that struck us was that during all the while we were at sea—always in sight of land—we hardly saw a junk, boat or sign of population. In Trang and to the Northward the Malays or Samsams resemble the Siamese. They do not speak Malay but are said to be Mohamedans. Mr. MAXWELL'S remark in 1889 that the Siamese Government neither makes nor maintains roads is true now. Neither has the telegraph made any progress since that time. Mr. MAXWELL remarks further that these States all suffer from being regarded in Bangkok not as provinces to be developed but as mere sources of revenue to be spent at the capital. Sixty per cent. of the revenue still goes to Bangkok. There is evidently now a desire on the part of the Government at Bangkok to improve the local administration of these Western provinces and no doubt many reforms have been carried out in the last few years. At Trang there were many signs of progress visible. This I attribute to Mr. KHAW SIM BEE'S energy and good administration.

Tongkah is a land of promise. A large number of schemes are going to be carried out but these promises evoke a smile from those who have been used to the administration of the palace. The country is evidently full of tin but the Government does nothing to improve the roads or open up the place. The

harbour has silted up and a vessel of any size has to anchor a long way out. I cannot say whether the new harbour will be adopted and the town moved as is talked of.

Puket, by the way, is the name ot the town, *Tongkah* being the name of the island or what is really a peninsula as the narrow strait (Pa Prak) is only half a mile across and fordable by elephants at low tide.

The Strait is between *Salang* and *Takuatong* on the mainland hence the Malay name for Tongkah *Ujong Salang* corrupted to Junk Ceylon. No one can visit these places without seeing how dependent they are on Penang. Under a Government such as that of the Federated Malay States they could soon be changed into rich provinces and trade would expand in a wonderful manner. With mineral wealth and a fertile soil the population would increase and Chinese would be attracted to invest capital there. Under the present régime in spite of many reforms in the selection of officers, the administration of justice, etc., it may be doubted whether any substantial progress will be made toward opening up the country, at all events unless the revenue is spent on public works and improvements. Formerly when the mines were more prosperous 60 Sikhs were employed under Captain WEBER but these have been dispensed with and the only British subjects beyond a few Penang-born Chinese appear to be Klings who trade in cattle with Penang. Capital punishment is not inflicted in these States—those convicted of capital offences being sent to Bangkok.

From the islands in this archipelago which are scarcely inhabited are procured edible birds' nests and guano.

Captain RING of the Royal Siamese Navy showed us a collection of small clay figures of Buddha said to have been found by the collectors of guano buried in caves. Whether these are ancient as supposed or modern I am unable to say. Mr. KHAW JU KEAT promised to send me some which I will forward to the Curator of the Raffles Museum.

The long wooded island of Pulau Lontar (said to be coveted by the Germans) lying to the North Trang fringed on the west by a sandy shore appears to be scarcely inhabited except by a few fishermen. The Langkawi group of islands are sparsely inhabited by Malays and there are said to be about 100 Chinese. Achinese

are planting pepper in one place. Pulau Adang, one of the Butong group lying to the North of the Langkawis and further out to sea, is visible on a clear day from Penang Hill. This lies near the track of the British India boats on the way to Rangoon and would be worth a visit.

I enquired into the health of the place we touched at. In Kedah there is a Eurasian doctor (BOYER) who told me that there was little sickness. The drinking water is derived from the Kedah river which passes the Consulate and *Anak bukit*. The water is somewhat brackish and must be much polluted. Trang was said to be very healthy. In the early part of the year a few cases of plague occurred among the miners in Tongkah but this appears to have died out soon and the health of the place is now said to be good. The Siamese Government on the representation of our Government decided to appoint a Medical Officer to reside there. No one has yet been appointed and the Commissioner consulted me as to whether a Dr. AMNER who has been residing there for some time was fitted for the place. I could only say that I believed he had the necessary qualifications but could not be sure. The Governor of Pung-a assured me that his place was extremely healthy and that there was no sickness.

I had not visited Kedah, with which I was formerly well acquainted, for many years. It is a fine country—a vast tract of padi land interspersed with low hills. The revenue has increased very considerably of late. The Sultan spends the revenue as he likes, sending the "Bunga mas" to the King of Siam as Suzerain. A Penang Chinaman advances money to the Malay cultivators and mills the rice purchased from them. Another Chinaman has opened up a sugar estate on the banks of the river below *Alor star*. The Sinkep Tin Mining Company are working with success near the base of Kedah Peak while there are large tapioca plantations near the Muda. Kulim at the back of Bukit Mertajam is a thriving place with Chinese tin mines and plantations. It would be an advantage if the railway were extended from Bukit Mertajam to Kulim as has long been proposed but the Sultan of Kedah is at present in such a feeble state of health that he hesitates to take any action in the matter though he says he will not object to the railway.

It is interesting to see how a purely Malay Government without European interference or guidance has endeavoured to model the administration on our colonial lines even to the appointment of an Auditor General. Only Malays are employed in the public offices most of them being men of good position. Here there is a real Post and Telegraph Office, the Telegraph Department being superintended by a son of the Government Munshi at Singapore.

I cannot conclude without referring to the hospitable and kind way in which we were everywhere received, the authorities doing everything that could be done to make our visit agreeable and assisting me in my consular work.

The Relations between Southern India and the Straits Settlements.

By W. A. O'Sullivan.

A few years ago, a very able paper was read by Mr. C. O. Blagden before the Straits Philosophical Society, on the subject of "Arabian Influences in the Far East," and evoked a warm discussion. I thought with others at the time that Mr. Blagden claimed too great an influence for the Arabs, both as a converting and civilizing agency in the Far East. I have since so far modified that opinion, from wider reading, that I am now fully convinced that it was the Arab traders, or rather the Arab bandits whom they brought in their train, who effected the conversion to Islam of the vast majority of the people inhabiting the Malay Peninsula and the Indonesian Archipelago. To this belief I have been induced, not so much by the discovery of any additional historical data beyond what the essayist put forward, as by the living testimony afforded by language, a proof more to be relied on than a thousand traditions. Almost every word in Malay connected with religious worship is pure Arabic, only modified by the difficulty the converts experienced in pronouncing the language of their teachers. The same is the case with the Achinese, Sundanese, Javanese—in a word, with all the languages of the Archipelago whose speakers have embraced Islam; the Malays, it may be added, have also adopted the Arabic character.

It is not, then, to India that we have to look as having imparted to Malaya the present religion of its inhabitants, or such elements of its civilization as are bound up with their creed. But civilization and social development, much as they may owe to religion, are not coincident with it, and I think still that Mr. Blagden went too far in claiming for the Arabs the lion's share of influence on the social life of the Malays. Right throughout the Indian Archipelago (which I take for convenience sake to include this Peninsula) there co-exists with *hukum*, or religious law, a great unwritten code of native custom, known as *adat*. This

not only flourishes side by side with the *hukum*, but often overrides it when the two come into conflict. Of this *adat*, part is immemorial usage, with its roots so deep in the past that they may not be uncovered. Part, however, is of more modern growth, and under this I should class all that these peoples have derived from foreign influence. We have no historical data full enough to enable us to separate these with accuracy; yet to presume that the present civilization of Malays, over and above what is included in their religion, was wholly indigenous and pristine, is to reject such data as we do possess, to scorn the testimony of language, and to assume that the Malayan races possessed an ancient civilization of their own, of which there is not a particle of evidence.

The Arabs came to the Far East purely as traders accompanied, no doubt, by a few pandits or religious teachers, to whose proselytizing agency was due the establishment of the Mohammedan religion in the Archipelago. Some few would seem to have settled down, but, beyond the teaching which found such ready listeners, they appear to have had little influence on native social life, and especially on the *adat*. Indeed as good Moslems, they would feel bound to uphold the *hukum* in opposition to the latter. Whence, then, did the Malays get the balance of their civilization, from the simpler arts which separate them from the rudest of savages to the code of native custom which, just as much as the Arab creed, gives them a right to be regarded as a civilized race? I unhesitatingly reply, from India, and probably, by virtue of its proximity, from Southern India.

There are abundant traces, both in Sumatra and Java, but especially in the latter, of the existence, long anterior to Mohammedanism, of a very complete Hindu civilization. How this came about, whether by conquest or pacific conversion, it is now impossible to say. Nor have we any historical records to show us what Hindu nation it was that exercised the first civilizing influence. In Java, indeed, a great Hindu empire continued right down to the year 1475 A. D., when the conversion to Mohammedanism took place, and numerous ruined shrines testify how widespread was the earlier faith. But the conquering or proselytizing Hindu stranger has entirely disappeared, for al-

though the kings of Manjapahit claimed to be descended from princes of Hindustan, the purely Javan appearance of their descendants somewhat belies this tradition. The visible traces of such a civilization in Sumatra and the Malay Peninsula are much more feeble than in Java; they are, indeed, confined to a few ruins and inscriptions on stones and rocks, the former of doubtful import and the latter practically undecipherable, though the character is either Sanskrit or Pali.

In the absence of such visible tokens, we turn again to that infallible guide, the language of the people. As I have said above, the influence of the Arabs on the Malay language is almost confined to religion and religious law, but does not otherwise enter into the social life of the people. Far otherwise is it with the influence of the Hindus. Marsden (Asiatic Researches, vol. iv, pp. 223-7) writes as follows:—"The language (i.e. Malay), it is true, abounds at present with Arabic words, which their writers affect to introduce, because this display of literary skill is at the same time a proof of their religious knowledge; but they are generally legal or metaphysical terms borrowed from the Koran or its commentaries, are never expressive of simple ideas, have not been incorporated into the language (a few excepted), and are rarely made use of in conversation. The Hindu words, on the contrary, are such as the progress of civilization must soon have rendered necessary, being frequently expressive of the feelings of the mind, or denoting those ordinary modes of thought which result from the social habits of mankind, or from the wills that tend to interrupt them."

Of a truth Malay abounds in Sanskrit words, the significance of which is ably traced in the preface to Maxwell's Malay Manual. To go no further, the fact that the common Malay words for "religion" (agama), "a plough" (tenggala), "time" (kali, masa), with many others of the same kind, are derived from Sanskrit, points to Hindu influence as having first raised the Malay from barbarism, taught him some of the very crudest arts of civilization, and supplied him with a religion. Now, the Sanskrit element in Malay can only have come from India, and it fully justifies us, taking also into consideration the existence of a complete Hindu civilization proved by historical data to have subsisted in Java, in concluding that there must have been in

earlier ages a domination of intellect, if not of conquest, by some Hindu power of Hindustan over the whole of Malaya.

The defect of the language-test is that it does not aid us, except inferentially, in fixing the date of the commencement of this domination or in determining the length of its existence: but it may help us to decide from what part of Hindustan the civilizing influence proceeded. As to the former, all we know for certain is that the Hindu influence was antecedent to that of Islam; while as to the latter, in addition to the very slender evidence of history and tradition, and comparison with the relations of India with neighbouring countries, we can take as our guide the various Indian elements which have found their way into the Malayan tongue.

Sanskrit—that is, the pure Sanskrit of the Vedas—ceased to exist as a living language about 300 B.C. Various dialects, however, more or less debased from Sanskrit, but having a vocabulary largely identical with the parent tongue, continued to subsist as spoken languages. It is not inconceivable that the Hindu influence on Malaya may have begun when Sanskrit was yet a living language. As regards Java however, the Dutch scholars have fixed the introduction of Hinduism at the beginning of the 6th century A.D., and it would seem probable that its extension to Malaya took place about the same epoch or even later. Be this as it may, it is most unlikely that this early civilization of the Malays, which coloured their language so strongly with Sanskrit words, proceeded from any other than a genuine Aryan race, of Hindustan, speaking Sanskrit or a dialect closely akin to it. But within historic times the South of India has been inhabited by Tamulic or Dravidian races; and had their first civilization been imparted to the Malaya by Hindus of this stock, the Sanskrit words would have been filtered through a Dravidian medium, and appeared in Malay in a quite different form from that which they have actually assumed. It must be taken for granted, than, that this earliest influence proceeded from a genuine Hindu race inhabiting central or northern India, and perhaps commanding a part of its seaboard in the South by virtue of conquest or commerce, and who made this the starting-point for their pioneering work in the Far East.

I think we may entirely reject Crawfurds' theory that these first civilizers were Telegus. Had it been so, they must have left traces of their own vernacular on the Malayan speech, for it is inconceivable that the priests, as Crawfurd thinks, could have introduced into Malay elements of a dead language, used only for sacred purposes, as part of the common speech, while not a word of their own colloquial crept in to testity to the identity of the dominating race. For I think I am right in saying that there are few or no Telugu words in Malay, or, at all events, not one which might not equally well have come from Tamil.

None the less is it true a Dravidian race has had a very important influence on the language and social life of the Malays, and this in spite of Marsden's statement that "from the Telinga or the Tamool the Malayan has not received any portion of its improvement." This influence was probably brought to bear on Malaya a good deal later than the Sanskrit, and was, without doubt, the direct result of trade. Commercial intercourse was maintained from a very early date between the South of India and the trading towns which formed the emporia of the spice islands, notably Johor, Singapore, and Malacca. When the Portuguese, at the commencement of the 16th century, first visited these places, they were amazed at the concourse of foreign vessels assembled there. When this intercourse began it is impossible to say, but it was probably much earlier than the above. Snouck-Hurgronje, writing of Acheh, says that the settlement of Klings from Southern India in that country is of great antiquity: and that the Tamils were the leaders in this commercial enterprise in Malaya is clearly shown by the pure Tamil words—chiefly connected with commerce, though not altogether so—which have found their way into Malay.

These words are not numerous, but they are names of familiar objects, and we must remember that, as a test of the social influence of one race on another, the presence of one common word for some necessary thing is of more significance than a thousand technical or scientific terms, which are really only a part of the language of books, and do not enter into daily life. The Malay for "ship," *Kapal*, is pure Tamil, so are *Kedei*, "a shop," and *gedong*, "a storehouse." *Peti*, "a box,"

though it has a Sanskrit equivalent has also probably come through Tamil, for in Sanskrit it means "bag" or "basket," while in Tamil it has exactly the same meaning as in Malay. What can be clearer evidence of commercial intercourse—nay, of the Tamils having actually introduced the Malays to trade in bulk? They also imported and brought into use certain articles of commerce and animals with which the Malays were previously unacquainted, as is shown by the wards *cherutu*, "a cigar;" *badam*, "an almond;" *kalde*, "an ass;" the fruit *belimbing*; *beludu* "velvet;" *bedi*, "a gun" (from the Tamil word "vedi," an explosion or report). All the above are pure Tamil. The derivation of *kuda*, "a horse," from *kuthirai* is not certain; but the pure Tamil *padagu*, "boat," may reasonably be taken to be the parent of the Malay *prahu*. If this be so, it would seem as if the Tamils first introduced the Malays to even the most elementary navigation, and, as they also gave them *kapal*, taught them to "go down to the sea in ships." A large number of words derived from the Sanskrit are common to both Tamil and Malay, the greater number of which were acquired independently by the two languages. The following are examples:—Mal. *Kali*, Tam. *kalam*; Mal. *denda*, Tam. *thendam*; Mal. *bahaya*, Tam. *bayam*; Mal. *muka*, Tam. *mugam*, &c. In nearly all these the terminal "m" is characteristic of Tamil; and where we find words derived from the Sanskrit which have this termination in Malay as well as in Tamil, we may fairly conclude that they come through the latter language and not direct from Sanskrit: e. g. *kolam*, "a pond" Tam. *kulam*, Sans. *kola*; and *manigam*, "a ruby," Tam. *mânikkam* and Sanskrit *manikya*. *Mampelam*, "a mango," is said by Maxwell to be derived from the Sans. mahâ pala= "great fruit," through Telegu; but the Tamil for mango is also *mâmpalam*, and I can see no reason for assuming it to be derived from the Telegu. Some other words derived from various languages, such as Persian, Hindustani, and Arabic, would seem to have also come through the Tamil, whose influence on Malay was undoubtedly antecedent to that of Arabic. As examples I may quote *mêja*, "a table" (Pers.), Tam. *mêsai* or *mêsa*; *baki*, "balance" or "remainder" (Ar.), Tamil *bakki*; *kapi* (Beng.), "a pulley," Tamil *kappi*; *topi* (Beng.), "a hat," Tamil *toppi*; *apam*, "a cake" (given by Marsden as

from Hindustani), Tam. *appam*. To the above list may be added the curious Malay word for "a bridegroom," *mempelai*, which is derived from the pure Tamil *mâpillai*, "a bridegroom." This, again, is indicative of a very early Dravidian influence on the Malays. Their previous Hindu civilization had given them the ceremony of marriage, but it was left for the Tamils to super add a special title for the man on the eve of marriage, to whose position as such the Dravidians attach an unusual amount of dignity and importance.

I think I have said enough to show the fallacy into which Marsden fell in refusing to ascribe to the Dravidians of Southern India any influence on the language of the Malays, and to make it plain that the influence of the former people over the speech and social life of the latter began at a very early date, though not so early so that of the unknown race of Hindus who reclaimed Malaya from its pristine barbarism. The Southern Indians came as traders pure and simple, bartering for the wealth of the rich tropic forests the products of civilization. They do not seem to have settled down or intermarried with the Malays to any great extent—not, certainly, so much as in Acheh, where considerable colonies of Tamils took up their permanent abode. Their object being merely commerce, they went as they came, returning year by year as the monsoon favoured. In the earlier stages of this intercourse the Malays were probably Hindus like themselves, and would thus have admitted their visitors to a greater degree of familiarity and fellowship than is now the case. Then came the Arab conversion, favoured, no doubt, by such Tamils as had already embraced Islam; but from that time forth the Hindus became *kafirs* to the Malays, and the closeness of their intercourse declined. The commerce, however, continued as before, and the relations which the Portuguese found existing in the beginning of the 16th century were practically those which subsisted until the influx of European trade imported a new factor into the question, and the establishment of British settlements on the shores of Malaya crystallized the connection between Southern India and the Straits into what it is at the present day.

Had it not been for the successful introduction of Islam into the Far East by the proselytizing Arabs, we may suppose that

the Tamil influence would have grown in strength, and perhaps eventually have led to a considerable fusion of the races, especially along the coasts. Some such fusion has in later times produced the mixed race known as Jawi Pekan; but in this the Bengali element is quite as strong as the Tamil, owing to the large number of north Indians who came to the Straits, either as voluntary immigrants or against their will as convicts, in the days when the Straits Settlements still formed an appanage of the East India Company.

The Evolution of Malay Spelling.

By Rev. W. G. Shellabear.

Much has been written in the last hundred years on the theory of Malay spelling. Europeans, both Dutch and English, have worked out elaborate systems of orthography, and have laid down what they considered the proper rules to be followed, but the Malays have continued to spell as they please in spite of the efforts of the foreign scholars.

There is, however, at the present time so much diversity and inconsistency among the Malays themselves in regard to the spelling of even the commonest words, that it is very widely felt that a recognized system of orthography is most desirable; but Europeans have hitherto made the mistake of trying to bend the Malays to an elaborate, scientific system of foreign manufacture, the beauties of which the Malays are unable to appreciate.

A more practicable plan would seem to be to make a thorough historical investigation of the evolution of the art of spelling among the Malays, with a view to determining what is the natural trend of the changes which have taken place in the past. It seems not unreasonable to expect that such an investigation may provide a clue to the possibilities of such spelling reform as will not be distasteful to the Malays themselves, and may therefore eventually commend itself to them for universal adoption.

The materials available in Singapore are not by any means adequate for a complete and exhaustive investigation of the history of Malay spelling, but it is hoped that the following contribution to the study of this subject will at least establish some important principles of spelling reform, and will if necessary stimulate others to further search.

It is generally agreed that the Arabs gained their religious ascendancy over the Malays during the 13th century, and that it was from them that the Malays received their present written character. The earliest Malay manuscripts now extant, however, do not date back more than half of that period. In No. 31 of this

Journal I have already described some of the most interesting of these MSS., and particular care was taken to reproduce as exactly as possible the spelling of the originals. On page 107 of the paper above referred to, will be found a reference to certain MSS. belonging to the Cambridge University Library and described by Dr. van Ronkel in Part 2 of Series 6 of *Bijdragen tot de Taal-Land- en Volkenkunde van Nederlandsch-Indië*. This paper by Dr. van Ronkel provides valuable material for the present investigation, the spelling of his extracts having also been reproduced with considerable accuracy. The Cambridge MSS. were taken to Europe from the East in the first decade of the 17th century, and one of them bears the date 1604. The earliest of the Oxford MSS. bears a Mohammedan date (A. H. 1011) equivalent to the year 1602 of our era, another is almost certainly of the same date, a third is dated 1612, and a copy of the *Hikayat Sri Rama* was probably also obtained at that time, as it belonged to the same collection, and came into the Bodleian library in 1633. For information in regard to the two Leiden MSS. and the Harleian MS., which I have also made use of though they are of a somewhat later date, the reader is referred to my paper in Journal No. 31. I have also in my possession careful copies of four other manuscript letters belonging to the Leiden University, but for the purposes of this paper I will confine myself to the manuscripts mentioned above, which have already been fully described by Dr. van Ronkel and myself and are available to the reader in the Journals referred to.

As compared with the changes which have taken place in the spelling of the English language since the days of Queen Elizabeth (to whom the oldest of the Oxford MSS. was addressed) it must be said that the differences between the Malay spelling of to-day and that of three hundred years ago are very few and very insignificant indeed—an exemplification of the well-known fact that the Oriental is slow to change. Manuscripts and even printed documents of the date of Queen Elizabeth are so entirely different from modern English writings and books that they can only be read by those who have made them a special study. Our oldest Malay manuscripts, however, could be read to-day by any school boy with the greatest ease, with the exception of perhaps an unusual word or an obsolete spelling here and there.

It is remarkable that these Malay MSS., written in many different places and as far apart as Acheen and Celebes, exhibit far less divergence from one another in regard to spelling than can now be found in native letters and even in printed works from different parts of the Archipelago. In those days, no doubt, the art of writing was practised by comparatively few persons, and they may have been scribes specially instructed in the art, whereas to-day thousands of comparatively uneducated natives write letters in Malay, and even print commercial and other documents in any kind of spelling. Moreover, the old manuscripts which have survived to tell us how the Malays wrote their language in those days are mostly official documents or religious and literary productions, all of which would naturally be written by the best educated natives of the time. These considerations will in a great measure account for the greater diversity of Malay spelling which now exists, but the remarkable uniformity in the spelling of the MSS. of the 17th century can only be adequately explained by the existence of some fixed standard of spelling to which the scribes felt it necessary to conform. That fixed standard, we may presume, was the Arabic system of orthography. It was undoubtedly directly from the Arabs that the Malays received their present written character, and it is quite probable that for many years, perhaps for centuries, the art of writing may have been almost entirely confined to those Arabs who had learned the Malay language.

It should moreover be remembered that at the time of the advent of the Arabs the Malays were already scattered all over the Archipelago, from the north of Sumatra to the extreme east of Java, and even as far as Celebes and the Moluccas, and must be regarded as having been at that time merely a number of independent units divided up under the rule of a great number of petty chiefs or rajas, who were often at war with one another, and none of whom were sufficiently powerful to exercise any commanding influence over the remainder. This makes it even more remarkable that there should be such striking uniformity in the spelling of the Malay language throughout the Archipelago at the period with which we are dealing. If the Arabs had attempted to make an adaptation of their own system of spelling to suit the peculiarities of the Malay language, the result would

undoubtedly have been that in different parts of the Archipelago there would have been different modifications of the Arabic spelling, and a variety of Malay spellings would have been unavoidable. The uniformity in the spelling of the earliest manuscripts would therefore lead us to expect that the system of orthography according to which the Arabs originally began to write the Malay language and which they subsequently taught to the Malays, was precisely the same as they themselves used in writing their own language. Whether this was so or not is the first point which we will examine.

It should first be stated, that Arabic can be written either with or without vowel points, and books are printed at the present time in both styles. The plain or unvowelled style is the more common, but as the entire omission of vowel points would frequently cause ambiguity, the Arabs find it necessary in certain words to use one or more vowel points. This description of the way in which modern Arabic is printed applies exactly to the way in which Malay was written 300 years ago. Several vowelled Malay MSS. are extant. One of the old Cambridge MSS. contains twelve pages of Malay fully vowelled, and in the other MSS. mentioned above, vowels are used in isolated words. In committing an unknown language to writing, it is pretty certain that the Arabs would at first use all the vowel points, if only for the purpose of recording for their own use the sounds of the new language, and in all probability Malay would continue to be written with vowels for many years, until the scribes had become thoroughly familiar with the forms of all the common words, after which they would begin to drop the vowels from such words, retaining them only in the case of unusual words or peculiar derivatives. This is precisely the way in which we find that Malay was actually written at the beginning of the 17th century.

We will now proceed to show (I) that at the time when our MSS. were written the spelling *as a general rule* conformed exactly to the rules of Arabic orthography; after which it will be shown (II) that words which at that time were sometimes written otherwise than in strict accordance with Arabic orthography were being gradually introduced with the deliberate intention of doing away with the necessity for the use of vowel points and orthographical signs, and for the purpose of making

such words more legible; and lastly we will consider (III) what alterations could be made in modern Malay spelling which would produce uniformity without destroying the Malay ideal of obtaining legibility without the use of vowels, that is to say without a retrograde movement in the direction of Arabic orthography such as has hitherto been advocated by European scholars.

I. **With few exceptions the spelling of manuscripts 300 years old conforms exactly to the rules of Arabic orthography.**

(1) One of the first peculiarities which would be noticed by a person only acquainted with modern Malay spelling is that final *wau* and *ya* are only used in these MSS. for the purpose of forming the diphthongs *au* and *ai*. Thus we find the following words, which I have taken from all the different MSS. spelt without final *wau* or *ya* as the case may be:—

aku bagi batu berhenti bertemu bersuchi biji besi bumi bunyi chuchu

چوچ بونِ بوم بس بيچ برسوچ برتم برهنت بات بكَ اكُ

dhulu dato deri diri diri-mu di-turuni erti hari hati ini isi

ايس اين هات هار ارت دترون دِرِمُ دبر در دَاتُ دَهُولُ

itu jadi kali kami kamu kayu keji kembali lagi laki lalu

لال لاك لاكُ كيال كچ گايُ كام كَامِ كال جَادِ اِبْتُ

mandi mati mau mimpi memli menchabuli memri mengampu

مڠمڤ ممر مَخَبُوْلِ ممّل مِمْڤِ مَاوُ مات مند

menjadi negri oleh-mu pergi praku puji ratu sa-kali seperti seri

سر سڤرت: سكال رات ڤوج ڤراه ڤركُ اولهم نكر منجاد

sa-ribu suatu suchi suka tahu terlalu Ternati tinggi tetapi

تتاڤ تڠكُ ترنات نرلال تاه سكُ سوچ سوات سريب

But the following words ending in a diphthong are spelt with final *wau* and *ya* in every case in which they occur in these MSS:—

aykau atau bagai berchrai birau hai harau hijau jikalau kalau

كالو جكلو هيجو هارو هي بيرو برچري باكي انو اغكو

kerbau limau prisai rambai rantai rantau sungai tajau

تاجو سوغي رنتو رنتي رمبي ڤريسي ليمو كربو

We find however that the scribe who wrote MS. G. had a strong prejudice in favour of final *wau* and *ya*, even in words which do not end in a diphthong, for he writes:—

bri brani budi chuchu hari kasturi lembu mentri mudeli nafiri

نفري مدلي منتري لمبو كستوري هاري چچو بودي براني بري

negri pri putri sakti sendiri sri bahru

بهرو سري سنديري سقتي ڤتري ڤري نكري

But he also spells *hari* without the *ya*, and all other words of this kind are spelt without the *ya* as *aku*, *hati*, *lalu*, *kembali*, *mengampu*, *tetapi*, etc.

The Leiden MSS. E. and D., which were written at the end of the 17th century, contain five of such words written with final *wau* or *ya*, and F., which is also of a later date, contains three. In all the other MSS. the only instances are *kati*, which is found once, and *negri*, which is sometimes spelt with the *ya* and sometimes without, and a few names of places in MS. C. which being unvowelled would hardly be recognized without the final weak letters.

It should be remarked that some of the words given above are spelt in a way which would be quite inexplicable on any other supposition than that they were originally vowelled, and these peculiar spellings are just the ones which never vary in any of the MSS. and are still in use at the present day, as for instance:

itu	*ini*	*jikalau*	*seperti*	*suatu*
ايت	اين	جكلو	سڤرت	سواتو

But though their spelling appears at first sight so peculiar, it must be remembered that according to the rules of Arabic orthography these words could not be spelt in any other way, except that perhaps جكلو might be spelt جكالو but it will be noticed later on that only one weak letter appears to have been used in any word, and that therefore, the *wau* being required to form the final diphthong *au*, the *alif* which would otherwise be inserted to mark the stress has been omitted.

It is interesting to note that the Dutchman van Elbinck, who with his own hand copied portions of the Cambridge MSS., adhered rigidly to the Arabic orthography of the originals from which he was copying, but when left to his own unaided genius in writing out a list of Malay words with their meanings in Dutch, he followed the more natural method of spelling to which the Malays have now attained, as will be seen from the following examples taken from his vocabulary, dated 1st June, 1604:—

anak	*dara*	*paha*	*susu*	*hati*	*jari*	*bahu*	*gigi*	*bulu*	*api*
انق	دارا	قها	سوسو	هاتي	جاري	باهو	كيكي	بولو	اڤي

At the present time the use of final *wau* and *ya* has become almost universal, and many Malays would be quite unable to read the words given above if they were spelt thus.

2. In modern Malay, for the sake of legibility, a final *alif* is usually written in such words as *bawa*, *ara*, etc. In the Arabic system of orthography, the sound of the short final *a* as it is pronounced in most Malay words is represented merely by the vowel *fathah* placed over the preceding consonant; the addition of *alif* would indicate a lengthening of the vowel. The number of Malay words, however, which have the long *a* sound in the last syllable is very small, the following being a few of them:—

bla	*tra*	*sela*	*kra*	*depa*
بلا	ترا	سلا	كرا	دڤا

These and a few Arabic words such as

dunia ulama hukama

حكما علما دنيا

are the only ones which by the rules of Arabic orthography will allow a final *alif*. In modern Malay, however, the following forms are common :—

ara antara bawa bichara bila buta bahwa dua jala

جالا دوا بهوا بوتا بيلا بچارا باوا انتارا ارا

jawa jua kala kota kuda lada mulia pala perkara pinta roda

رودا ڤنتا ڤركارا ڤالا مليا لادا كودا كوتا كالا جوا جاوا

sabda sahya sedia sigra setia tara tanda tua

توا تندا تارا ستيا سكرا سديا سهيا سبدا

This spelling will not be found in these ancient MSS. It is therefore very evident that in this respect the Malay has a tendency to depart from the strict Arabic spelling of former times. Such words as the following, on the other hand, continue to be spelt without the final *alif*:—

ada anyaya apa apabila bapa biasa binasa daya dia hamba ia

اد انياي اڤ اڤبيل باڤ بياس بناس داي دي همب اي

jika kacha kata kaya kerja kuasa lama mata masa manusia mula

جك كاچ كات كاي كرج كواس لام مات ماس مانسي مول

nama pada puasa pula raja rasa rupa serta suara suka sayala tanya

نام ڤد ڤواس ڤول راج راس روڤ سرة سوار سوك سكل نان

(3) In the old Malay MSS. the weak letters *alif*, *wau* and *ya* are not used in the middle of a closed syllable to lengthen the vowel sound, except in words of Arabic origin, such as :—

fikir huruf islam jawab kitab maidan miskin

مسكين ميدان كتاب جواب اسلام حروف فقير

These words are pronounced by the Arabs with the stress on the last syllable, but the Malays, though retaining this spelling, put the stress on the penultimate, where it is found in the great majority of Malay roots. There are quite a number of words in the Malay language which have the stress upon the final syllable, and in many cases this final syllable which bears the stress is a closed syllable, but the long vowel sound which the Arab gives to the words quoted above is never heard in a Malay word, it is therefore not to be expected that the Arabs would teach the Malays to write the quiescent weak letter in such words as *sebot*, *renong*, *prang*, *dras*, *kring*, etc. As a matter of fact we never find the weak letter in such words in the old MSS.* though in modern Malay these words are frequently written

سبوت رنوغ ڤراڠ دراس كريڠ

and we now even find such forms as the following, where the stress is distinctly on the penultimate:—

êkor habis menangis sakit sayur tanjong tulus tikus

تيكوس تولوس تنجوغ سايور ساكيت مناڠيس هابيس ايكور

The nearest approach to the long vowel sound in a closed syllable in Malay, is to be found in the two mono-syllables *pun* and *dan*, and it is a remarkable thing that these two words are invariably written with the weak letters *wau* and *alif* respectively in all of our old MSS. and are so written up to the present time. Robinson in his "Malayan Orthography" rejects this method of spelling *pun* and *dan*, which he considers ought to be spelt ڤُن and دَن: the evidence of the old MSS. is,

* The spelling ترسبوة on p. 116, line 12, R. A. S. Journal Str. Br. No. 31 will be found on reference to the photographic reproduction of MS. A. to be a misprint.

however, strongly in favour of the received method of spelling these words.

(4) Another remarkable difference between the spelling of our MSS. and modern Malay spelling is in the use of the orthographical sign *tashdid*, which means "strengthening," and indicates that the letter over which it is placed is to be doubled or sounded twice. This sign is now hardly ever used by Malays, except in Arabic proper names, such as Allah الله and Muhammad محمّد but in our MSS. it is used with great frequency.

(*a*) It is used over the weak letters *wau* and *ya* whenever the preceding consonant bears the corresponding vowel sound, thereby showing that the said weak letter answers the double purpose of vowel and consonant. Thus the word *dia* is considered as consisting of the two syllables *di-ya*, and is written not دِيَ but دِيٌّ and *buat* is considered as consisting of the two syllables *bu-wat* and is written not بُوَوَتْ but بُوَّتْ This use of *tashdid* appears to be precisely the same as is found in the Arabic words *iyak* اِيَّاكَ *niyat* نِيَّة and in the termination يَّة This appears to be sufficient to account for this method of spelling, which is found in the following words in the old MSS.,

buat	*dia*	*diam*	*dua*	*ia*	*jua*	*luar*	*muat*
بُوَّتْ	دِيَ	دِيَمْ	دُوَ	اِيَّ	جُوَ	لُوَرْ	مُوَتْ

This double use of the weak letter, first as vowel and then as consonant, finds its counterpart in the Dutch language, where one meets such words as *huwen*, *vrouwen*, etc., and it is therefore not unnatural that the Dutch have adopted this peculiar spelling of Malay, even in the roman character, thus:—*diya*, *buwat*, *diyam*, *duwa*, *iya*, *juwa*, *luwar*, *muwat*, etc., though one or two of the Dutch scholars have protested against the use of the *w* and *y* as being redundant. For instance Dr. Gerth v. Wijk writes in his grammar, p. 21: "Although in the Javanese, for instance,

"owing to the nature of its spelling, in such words as "*boewang*, *tijang*, the *w* and *j* are written, and must be used in "tranliterating them in our character, if one wishes to reproduce "the original spelling exactly, these letters are quite superfluous "in Malay transliteration. The union of *oe* and *i* with the follow- "ing *a*, *i*, *oe*, takes place of itself in the pronunciation; we do not "write *bowa*, *kniejen*, but simply *boa*, *knieen*; and even less is *w* "or *j* necessary in *boeang*, *tiang*, etc. If the Malay wrote the "*tashdid*, it would be reasonable to represent it in the transliter- "ation. Being opposed to superfluous letters, I write *ia*, *tiap*, "*loear*, etc., which seem to me quite sufficient, as this method of "spelling represents the pronunciation as clearly as one can de- "sire."

The Malays appear to prefer to divide the syllables as follows:—*bu-at*, *du-a*, *di-am*, *ju-a*, *mu-at*, etc., for the modern Malay spelling of such words is

buat	*dua*	*buah*	*jua*	*muat*	*luar*	*sia-sia*
بوات	دوا	بواه	جوا	موات	لوار	سيا٢

(*b*) Another frequent use of *tashdid* in the old MSS. is for the purpose of doubling the consonant which follows the short vowel, called by the Javanese *pepet*, the sound of which may be described as equivalent to the short *a* in the English words "baloon," "machine," etc.

Among our old MSS. we find that Ii. 6. 45 of the Cambridge MSS. is the most consistent in this use of the *tashdid*, the following words which contain short vowels being thus spelt in the brief extract given by v. Ronkel.

bahwa	*besar*	*benar*	*dengan*	*kekal*	*kras*	*lebeh*	*telah*	*tengah*
بهو	بسر	بنّر	دغّن	ككّل	كرّس	لبّه	تلّه	تغّه

A portion of another Cambridge MS., Gg. 6. 40, in the handwriting of the Dutchman v. Elbinck, has the following words

bahwa	*besar*	*belah*	*gumetar*	*kechil*	*sru*	*sudah*	*telah*	*tetap*
بهو	بسر	بلّه	كمتر	كچل	سرو	سدّهله	تله	تتّف

and Dd. 5. 37 of the Cambridge collection, which is in the same hand-writing, has *sa-blas tebus*

تبس سبلس

but also *bahwa dengan lebeh telah* without the *tashdid*.

تله لبه دغن بهو

The only other Cambridge MS. in which I have found the *tashdid* used in this way is Ll. 6. 5, which has دغّن once, and ترسدّر

In the Oxford MSS. marked A. B. and C. in my paper in No. 31 of this Journal, we find the following words:

bri blum Chelang Deli dengar dengan glar kapal kapitan

كفتن كفّل كلّر دغّن دغّر دلّي چلّغ بلم برّي

kati kekang keji megat memegang memeli meli negri netiasa

نتياس نكري مّل ممّل ممكّغ مكّت كجّ ككّغ كتي

pesan petrana Rekan suka suka-chita Samudara sudah seni telok

تلق سني سدّهله سمّدرَ سكجّت سكّ ركّن ڤترّان ڤسّن

But these MSS. have also some of these very words, and several others of the same kind, spelt without the *tashdid*. *Dengan* has the *tashdid* only once, in B. *Bahwa*, which almost always has *tashdid* in the Cambridge MSS., never has it in the Oxford MSS. *Dengar* is spelt without *tashdid* in A.

The Oxford MS. of "*Hikayat Sri Rama*" has the following

blas besar betul genap kechil selang sa-telah sudah

بلس بسّر بتّل كنّف كچّل سلّغ ستله سدّه

but one or two of these are also found without the *tashdid*, as well as some which have it in the other MSS., as.

bahwa	*bri*	*dengan*	*menengar*	*tengah*
بهو	بري	دغن	منغر	تغه

It is a remarkable fact that the early Dutch translators of the Bible made a wide use of the *tashdid*, and even when spelling such words in the roman character they were in the habit of placing a stroke over a letter in place of the *tashdid*. Thus we find: "*suddah, kenna*," etc., and even the following words, which are not found in our MSS. viz.,

"*makka, padda, derri, sagalla, adda, appa, baggi.*"

Curiously enough the use of *tashdid* with the short vowel, after having completely gone out of use, was introduced once more in the middle of last century by the lexicographer van de Wall. This writer, however, does not use the *tashdid* indiscriminately with all words containing the short vowel, as appears to have been done in the old MSS., but confines its use to those words which have the accent on the short vowel. Such words for instance, as,

kras	*kekal*	*betul*	*blum*	*peyang*	*bli*	*keji*	*glar*	*blah*
كرس	ككل	بتل	بلم	ڤكڠ	بلي	كج	كلر	باه

which carry the *tashdid* in the old MSS., are written by van de Wall without it, and we find him using this sign only in such words as:—

"*dĕngngan rĕdda kênna pĕtjtjah*"

ڤچه	كَنَّ	رَدَّ	دَڠَّن

In regard to this use of *tashdid* he himself says in his introduction to the first volume of his uncompleted dictionary, p. xvi: "As in the case of the vowel points and other signs, the "Malays in their ordinary writing disregard the *tashdid*, 'sign of "strengthening,' which when placed over a letter shows that that "letter must be doubled; but that is no indication of its non-exis-

"tence or of its being unnecessary. The Malay who has learnt "to read the Koran, not only knows what the *tashdid* is, but also "feels the advantage of it in Malay, for if one gets him into a cor- "ner he will at last say: *buboh-lah tashdid*, 'just put a tashdid "over it.'

"The non-use of the *tashdid* leads the Malay sometimes to "the most peculiar spelling. For instance he is conscious that in the "word *rĕdda*, 'to abate' (as a storm or sickness) the accent lies "on the first syllable and ought to be expressed, which it is not by "رد or ردا ; therefore he lengthens the vowel of the ر (ĕ) and "writes راد, without troubling himself about the fact that it is "absurd to lengthen the ĕ. Some words, which are written with "the same letters and vowel points, could not be distinguished "from each other without the *tashdid*, as لتق *lètak* (accent on the "2nd syllable) interj. for a certain clinking sound, and لتّق *lĕttak* "to place. I therefore use the *tashdid* everywhere in my diction- "ary, where the pronunciation demands it, and write رَدّ *rĕdda*, "دغْن *dĕngngan*, مَتّ *mètta* 'raging.' And do we not ourselves "write for instance *kud-de*, *kun-ne*, indifferent as to the reason "for doing so. It should be noted that in Malay words the "double consonants only appear after the ĕ."

From this it is evident that the Malay writers of the beginning of the 17th century used the *tashdid* in a different way to that advocated by Werndly, Robinson and van der Wall, and moreover none of these methods of using this sign can be regarded as being directly based upon the Arabic system of orthography. The methods invented and used by Werndly, Robinson and van der Wall were purely arbitrary, and soon fell into disuse, and there seems to be every reason to believe that the use of *tashdid* as found in our MSS. was also purely local and arbitrary, for it is a remarkable fact that all the MSS. in which this use of *tashdid* is found almost certainly came from Acheen, and I have not been able to find the *tashdid* used with the short vowel

in any of the MSS. which we know to have been written elsewhere. The Oxford MSS. A. B. C. have already been proved to have come from Acheen; of the Cambridge MSS. Gg. 6. 40 contains a vocabulary written by Pieter Willemsz. van Elbinck, and dated Acheen, 1st June, 1604; Dd. 5. 37, and the 2nd part of Gg. 6. 40, which contains the writing in question, are both written by the same hand as the vocabulary, and the former closes thus (in Dutch) "end of the Story of Joseph, written the 1st October, 1604, by Pieter Willems." The only MS. therefore about which there remains any uncertainty as to whether or not it was written at Acheen, is Ll. 6. 5. of the Cambridge MSS. but there seems, from what Dr. v. Ronkel says, to be no reasonable doubt that this MS. came into the hands of Erpenius with those bearing the name of the same Pieter Willems, whom he believes to have brought all these MSS. from the East, with the exception of Dd. 9. 55., which never belonged to Erpenius.

It should not be forgotten that, at the time when these MSS. were written, Acheen was one of the most powerful Malay States. In his letter to King James (Oxford MS. C.) the King of Acheen claims sovereignty over all the rajas in Sumatra as well as Perak and Pahang on the Peninsula, and from the accounts of Lancaster's voyages he seems to have been able to enforce his authority at least as far south as Priaman (near Padang). In this connection I was interested to find the statement made by van de Wall, in his introduction mentioned above, that the original Malay spelling is known as "Achinese spelling." Where van der Wall obtained his information in regard to the name *heja Acheh* I have not been able to discover, but if it is a fact that this method of spelling, found in all its purity in our Acheen MSS. of 300 years ago, is still known by tradition among the Malays as "Achinese spelling," this would seem to point to Acheen as having been the chief centre of learning and literature at that time, and perhaps even earlier. This would entirely agree with the accounts of Lancaster's first voyages, which state that the educated Malays at Acheen spoke Arabic fluently, and Lancaster himself held intercourse with the Malays at that place in the Arabic language, having as his interpreter a Jew who spoke Arabic.

My contention therefore is, that the use of *tashdid* to indicate the short vowel sound was merely a local custom at Acheen, which the influence of even such a comparatively powerful State did not avail to bring into general use in the Archipelago. If this usage had been in accord with the Arabic orthography, it would undoubtedly have been universally adopted in the same way as the *tashdid* over *wau* and *ya* mentioned in the last paragraph (4. a.).

(5) We next come to the use of the weak letters *alif*, *wau*, and *ya* in open syllables. Their use at the end of a word has already been considered in (1) and (2). We will now inquire when and for what purpose these weak letters were used in the old MSS. in the middle of (*a*) root words, (*b*) derivatives.

(*a*) In root words, the weak letters are found in the open syllable upon which the accent falls, except in the case of the short vowel. The accent being usually on the penultimate, that is the syllable in which the weak letter is usually found.

In accordance with the rules of Arabic orthography, a weak letter when thus placed in an open syllable after a corresponding vowel is "quiescent and then serves only to lengthen the vowel which precedes it." * Thus in the word فاد "sufficient," the vowel of the penultimate is lengthened by the *alif*. The preposition فد is, however, never spelt with an *alif*; not that there is any very appreciable difference in the pronunciation of these two words, but rather perhaps on account of the fact that in conversation less stress will naturally fall upon a preposition than upon a noun, adjective or verb. This seems to be the only possible way to account for the absence of the *alif*, *wau* and *ya* in such words as

sudah *maka* *pada* *deri* *sayala*

سكل در فد مك سده

which in our MSS., as far as I have noticed, are the only words which do not have the lengthening weak letters in the accented syllable, with the exception of the foreign word *saudagar* which

* Faris' Arabic Grammar.

is spelt سودکر in every case, the *alif* being perhaps omitted in the penultimate on account of there being already a weak letter in the first syllable to form the diphthong *au*.

The following are words of two or more syllables having the weak letter in the penultimate,

beniaya chilaka guru hanya itu jalan kliling plihara suatu

سَوَاتُ ڤلهار کلبلغ جَالَنْ اِيْتُ هَانَ کُورُو چِلاَکَ بنياک

Kerna is invariably spelt کَارَنَ which would indicate that this word was at that time a three syllable word with the accent upon the first syllable; now it is sometimes pronounced as if it were a two syllable word.

(*b*) In derivative words formed by the juxtaposition of two roots, the lengthening weak letter is almost invariably found only in the penultimate, being entirely omitted in the first of the two words forming the compound, as:

apabila hulubalang suka-chita

اڤيل هلبالغ سکچيت

The same is the case in reduplications wherever the *angka dua* is not used, as,

dagang-dagang, mudah-mudahan, raja-raja

دکغداکغ مُدَهمُدَاهَنْ رجراج

The omission of the weak letter in the first word in such cases is undoubtedly phonetic, the stress being strong on the penultimate of the compound.

When, however, we come to the case of derivative words formed by the addition of suffixes, we immediately meet with a difficulty which, as far as my reading has gone, has never yet been explained by any European writer, namely that when the suffix, pronoun or other particle is added to the root, the position of the lengthening weak letter is changed, and is found in the penultimate of the derivative word thus formed. For instance:

كود by the addition of the preposition ن becomes in the old MSS. كدان although the pronunciation is not *kudá-nya*, but *kúda-nya;* and جَادِ becomes جديكن although the word is pronounced *jádikan* and not *jadikan.*

The first of the Dutch scholars to point out this discrepancy between the spelling of derived Malay words and their actual pronunciation appears to have been van de Wall, who in the year 1859 wrote as follows in the *Tydschrift voor Indische Taal-, Land- en Volkenkunde*:—"But the change of position of the lengthening letter to, or its appearance in the penultimate of root words, has in most words no influence upon the accent, or at least very little; that is to say, the accent is in such cases not inherent in the long vowel. In general, the Malay retains in such cases the original accent, and says: *bàntu, bàntui, perbàntuan, bàntu-nya*, etc., *sèwa, sèwakan, sèwaï, persèwaän, sèwa-nya*, etc. But as the literary Malay always has an inclination to modify the pronunciation of the people according to the way a word is written, he also lays a stress to some extent on the syllable which has the long vowel, so that there come to be, as it were, two accents—a strong or commanding one, the natural accent of the root, and a weak one, the grammatical accent on the long vowel. The variations between strong and weak are very numerous, in different words and with different individuals, and there exists no fixed rule; there are even words, though very few, in which owing to the change in the position of the long vowel the natural accent of the root is entirely lost and only the grammatical accent remains; e.g. *katà-nya*, from *kàta; tambàngan* from *tàmbang;* though one also hears *tàmbangan.*"

Three years later, in Vol. XII of the same Journal, A. B. Cohen Stuart raises a somewhat half-hearted protest against van de Wall's statement in regard to the pronunciation of such words. He says (page 68): "It is not without hesitation that I venture some objections to this proposition. I feel how unfavourably I am situated as compared with Mr. van de Wall

"in regard to a subject about which he is in such an infinitely "better position to form a correct opinion. I was therefore at "first inclined silently to accept as information his observations "as to accent; after further consideration, however, I found it "preferable to come forward fearlessly with my doubts, and to "expose myself if need be to a crushing reproof, if this should "be able to bring me, and perhaps others also, to a better view "on the subject.

"I confess then that I have hitherto been under the convic- "tion that in Malay the accent in derived as well as in root "words fell as a rule upon the penultimate: that on the addi- "tion of a suffix the position of the accent changed as a rule "from that which was originally the penultimate to that which "was originally the last syllable: and that the pronunciation "which according to Mr. van de Wall is the true and natural "one, was quite peculiar to Europeans. It is so, I believe, in "Javanese. It is true that there the accent does not come out so "clearly as in Dutch, and in the Javanese grammar of T. Roorda "(§ 87) the very existence of any accent in Javanese is denied: "but what is there called 'a slower or more sleepy pronunciation "of the two last syllables of every polysyllabic word' is more cor- "rectly interpreted, as it seems to me, as being a real accent on "the penultimate, and a drawing out or longer holding on to "the last syllable. Indeed, if one pronounces *tulis*, for instance, "in the pure Dutch style with a clear accent on the penultimate, "though this may not give the exact Javanese pronunciation, it "is certainly much nearer to it than if one should say *tulis*, with "an equally plain accent on the last syllable: and similarly the "pronunciation of the same word with the affix *an*, would, I "believe, be better represented by *tulisan* or *tulisan* than by "*tulisan* or *tulisan*. If the word is again increased by the addi- "tion of another suffix, so that the original accented syllable is "separated from the new suffix by one or more syllables, then "besides the principal accent, which goes over to the last, the "original accent again makes its appearance to some extent, as "in *tulisane*, *ngaturaken*. In a word, without digressing further, "my proposition in the main is this: that in Javanese at any "rate there actually is in the pronunciation of every word of "two or more syllables a sort of stress, which can properly be

"called an accent, and is usually situated in the penultimate, "and with the addition of an affix changes its position to the "new penultimate. The fact that Europeans pronounce both "Javanese and Malay words so frequently, I might say almost "always, with the accent on the ante-penultimate, even when "this is merely a grammatical prefix, and say for instance "*túlisan*, *Pángeran*, *Kálitan*, *Páchitan*, would surely be the "strongest argument against that assertion, if that pronunciation "must be considered as having its origin in an unprejudiced con- "ception of the native pronunciation. But the Javanese and "Malay words which are most used by Europeans are generally "learned not so much by conversation with the natives as from "writings, in which owing to faulty transliteration the exact "pronunciation and particularly the accent are left quite uncer- "tain. For one European who first learns to pronounce say the "word *Pangeran* from the Javanese, there are perhaps twenty "who became acquainted with it only or in the first place "through European conversation or writings; and even if one "afterwards had the opportunity of hearing it pronounced by "natives, then one would have to pay a good deal of attention "and must have some interest in the subject in order to re- "cognize and to abandon a wrong pronunciation which one has "once appropriated; especially when it is so generally accepted "among our fellow countrymen that it would appear to be "pedantic or eccentric to deviate therefrom. If one considers "that in Dutch and kindred languages the accent, far from "having any preference for the penultimate, usually falls fur- "ther back, one will not be surprised to see this tendency in the "European pronunciation of native words. This phenomenon "therefore has in my opinion no more value in deciding the true "native pronunciation, than one would be justified in doubting "that the name Palembang should properly be pronounced "Palémbang (Javanese *pa-lém-bang*) because the majority of "Europeans, even if they have lived there for years, called it "Palĕmbàng; or that the place where I am writing this is called "Sålå, because Europeans, although they know better, never "call it anything but Solo among themselves.

"As regards Malay, no one is less able than myself, espec- "ially in opposition to Mr. v. d. Wall, to refer to my own

"observations on the native pronunciation. So let us rather "consider what others have said on the subject. In Marsden "(Elout's translation p. 202) I only find the general statement, "that the accent usually coincides with the long vowel, and "falls by preference upon the penultimate, but without further "elucidation of peculiarities. De Hollander (*Handleiding tot "de beoefening der Mal. taal- en letterkunde*, 2nd ed., Breda, "1856) says on the accent in words having only one suffix "(page 23, § 7), that they are pronounced both ways, either "with the accent on the syllable which had the accent in the "root (*mendápatkan*, *karádjaán*) or on the penultimate of the "derived word (*mendapátkan*, *karajáán*), and nothing further. By "Werndly (*Mal. Spraakkunst*, Amst. 1736) the subject is treat-"ed more fully (p. 45 *et seq.*), and in the following manner, "namely that the suffixes *kan*, *i*, *an*, *ku*, *mu*, *nya* always cause the "accent to change its position to the syllable immediately pre-"ceding them, whether that syllable be open or closed; that "the same thing takes place before *kah*, *tah*, *lah*, if a vowel, "diphthong or *h* precede them; while on the other hand, if "another consonant precedes one of these three suffixes, the "accent shifts to the preceding syllable or remains un-"changed at will (*sambót-lah* or *sámbot-lah*); and that "the change of accent results in the change from long "to short vowel and vice versa, except when the final "consonant meets the initial consonant of the suffix, as "*jâlankan*. In the new edition of Werndly's grammar by "Angelbeek (Batavia 1823, p. 38) it is only stated in general "that in words of two or more syllables, whether they be roots, "or compound or derived words, the accent falls usually upon "the penultimate, and that 'the syllable on which the accent "falls must naturally be pronounced longer than the others.' I "do not know how much reliance can be placed upon the testi-"mony of these writers on such a point as this; certainly under "the most favourable circumstances they can hardly outweigh "the dictum of Mr. van de Wall; but their rule, as regards the "cardinal point, seems to me to find such strong support, on the "one hand in the analogy of the Javanese language, and on the "other in the indications given by the spelling of Malay in the "Arabic character, that even the dictum of Mr. van de Wall,

"while it shakes my belief in their accuracy, has not been able to "destroy it; and so much the less because Mr. van de Wall's "presentation of the subject is itself not quite clear. He says "(73, 399) 'the first result of the suffixes *kan*, *i*, *an*, *nya*, *ku*, *lah*, "*tah*, *kah*, on roots which end in an open syllable is, that they leng- "then the vowel of that syllable and cause the original long "vowel of the root to drop out; . . . . . the suffixes *an* and "*i*, since they begin with a vowel, cause the same result in "words which end in a closed syllable, and in that case the final "consonant of the root becomes the initial letter of the suffix "with the corresponding vowel . . . . . while the other "suffixes leave such words unchanged . . . . . ; but the "change of position of the lengthening letter to or its appear- "ance in the penultimate of root words (read, of *derived* words? "or in the *last* syllable of root words) has in most words no in- "fluence upon the accent, or at least very little; that is to say, "the accent is in such cases not inherent in the long vowel.'

"Here first of all the question arises: is the change of posi- "tion of the lengthening letter a mere graphic phenomenon, "does it only exist in the Malayo-Arabic character and the trans- "literations thereof, or does the same change in the length of "the vowels take place in the pronunciation? If this is maintain- "ed, I must then further ask how such a rule can have arisen in "the written character, a character which so to speak does not "belong to the language, and if such were the case might be "expected to have preserved in this respect the traces of a long "obsolete condition of the language or perhaps of some kindred "dialect, but which, borrowed from an entirely foreign language "and probably first applied to the Malay in comparatively recent "times, must be reckoned as rendering the native pronunciation in "common use as accurately as the foreign characters will allow? "I could understand that the retention of the original spelling of "a root ending in a consonant when followed by a suffix beginning "with a consonant, might arise from an idea of producing legi- "bility, so as not to entirely deprive the word of vowel signs, "and that one might therefore write for instance منداقتكن "although perhaps (according to Werndly) منداقتكن might better

"represent the pronunciation; but how could anyone think of "writing قندقاتن if in this derivative, as in the root, the first *a* is "to be pronounced long and the second short, or above all things "how could this spelling come into general use? If, however, in "this respect the pronunciation agrees with the spelling, "then though allowing that the length of the vowel is some- "thing quite different from the accent, it would be difficult for me "to imagine such a change in the first syllable and in the division "of the syllables otherwise than in connection with and a result "of a corresponding change in the position of the accent. Even "if it be admitted that the first change could be imagined with- "out the last, and that it actually exists in Malay, how can one "conceive that the 'inclination to modify the pronunciation of "the people according to the way a word is written,' could lead "to the alleged tendency of literary Malays to place, in addition "to the natural accent, a second, grammatical accent on a syl- "lable which properly had no claim whatever to any accent at "all? Indeed in that case the written word is already, without "that misplaced accent, in entire agreement with the true pro- "nunciation; but then the Malay himself must comprehend too "well the difference between length and accent to confuse the "one with the other and thus to let himself be misled into such "an unnatural pronunciation.

"Moreover, that the Arabic character, by its imperfect re- "presentation of the pronunciation and especially owing to the "habit of omitting the vowel points, has really exercised some "influence upon the pronunciation, can, I believe, be properly in- "ferred from some corruptions which find therein a complete ex- "planation. I find a strong example of this in the word مرکستو "which is pronounced *margastoewa*, instead of *mrega-sattwa*, as it "should be sounded according to the Sanskrit spelling. There "would certainly be nothing astonishing about this corruption "in itself; but it is difficult to ascribe to mere chance the fact "that the corruption is just of such a kind, as is favoured by the "illegible manner of writing without vowels; to which the fact "that it is probably not an everyday word may also have con- "tributed. The same thing, though with less foundation, may

"be supposed in regard to سڤي منسي pronounced *satia*, *manusia*, "with three and four syllables, in place of *satya*, *manusya*, with two "and three syllables. Perhaps in the same way the spelling "مندافتكن might have caused the change in the pronunciation "from *mendapátkan* to *mendápatkan*; but in grammatical forms it "is more difficult to admit that much an influence upon the "pronunciation of the people could have come from a compara-"tively recent written character. And for the influence which "Mr. van de Wall ascribes to it, I can not even find a reason-"able cause."

These extracts have been translated from the Dutch, and are given here at such great length for the benefit of those to whom the Dutch Journals are not available. Before stating my own views on this question of the spelling and pronunciation of derived words, it seemed only fair to give the reader the facts and arguments which have already been used on both sides.

There can be no question but that, as stated by Cohen Stuart, the Dutch scholars up to the time of van de Wall universally held that the Malays actually pronounce such words as they are written. How they can have been led to this conclusion can perhaps be understood when it is considered that their study of the Malay language was prosecuted for the most part in Java or in places which are under strong Javanese influence. Robinson formed this opinion because he learnt the language in Batavia and Bencoolen. Marsden also studied at Bencoolen, and wrote his grammar and dictionary in England, where of course he had not the advantage of native help.*

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*The Dutch scholar H. N. van der Tuuk seems to have had no personal knowledge of the way in which the Malays of the Peninsula pronounce derived words, for he wrote in 1866 in his notes to Abdullah's *Pancha Tandaran*:—"دكتهوڤيله The writer always spells thus, and not "دكتهوڤياله and so also he spells ماتيله and not متيله and not بكايكه "and not سيافكه; بكناكه and not سيڤاكه. In the Menangkabau dialect the accent

Whether the Dutch scholars of the present generation have universally accepted van de Wall's dictum in regard to the change of accent in derived words, I am unfortunately not in a position to know, the Library here not being very well supplied with the latest Dutch works on the Malay language, but as far as I am able to discover, the grammar of Gerth v. Wijk, published in 1893, is now considered the best Dutch work on the Malay language. This author is in entire agreement with van de Wall, for on page 46, para. 96, he writes: "The original, "natural accent (of the root word) is usually retained when the "word takes a suffix, e. g., *bànding*, *bàndingan*; *kùmpol*, *kùmpolan*; "*dùpat*, *mendùpati*; *lèmpar*, *melèmparkan*. And the phenomenon here "presents itself, that if the accent is not very easily distinguishable "in the root word, it sometimes comes out clearer in the derived "word, e. g., *bĕngis*, *kabĕ̀ngisan*."

After quoting from van de Wall part of the passage which we have given above, Gerth v. Wijk adds: "The tendency "to change the position of the accent more or less is chiefly "noticeable, as it seems to me, in words which have the *a* sound "in the last syllable; such a pronunciation, however, as *kudà-* "*nya* from *kùda*, *padà-nya* from *pàda*, whereby the first syllable "of the root entirely loses its accent, which falls wholly upon "the second, as is the case with *katà-nya*,† can only be attribut- "ed to European-Javanese influence; one never hears it from "the Malay."

We shall see later on that van Wijk is probably correct in attributing to Javanese influence this mistaken idea about the change of the accent to the penultimate in all derived words. It seems necessary, however, before going into that question, to inquire first of all which are the words in the Malay language that actually do undergo a change of accent. In order to make an independent investigation of this subject I have written out a list of derived words and have caused them to

"of a word does not change its position on the addition of the particles *lah*, "*kah* and *tah*. From the spelling of Abdullah it would appear that this is "also the case in the Malay of Malacca."

† Where van de Wall and van Wijk came across this pronunciation of *katà-nya* I cannot imagine. The Malacca and Johor pronunciation certainly gives an accent identical with *kùda-nya*.

be read in my hearing by a number of Malays, with the result that I have only been able to detect an entire change of accent in the following classes of words:

(*A*) In some words derived from roots ending in *ang* by the addition of the prefix *an*, as *tímbang*, *timbángan*; *láreng*, *larángan*; *bílang*, *bilángan*; *dágang*, *dagángan*; *pándang*, *pemandángan*.

(*B*) In some derived words formed by the addition of the suffix *i*, as: *búka*, *bukâ'i*; *sérta*, *sertâ'i*; *múla*, *mulâ'i*; *túrun*, *turúni*; *táhan*, *tahâni*; *kâsehan*, *mengasehâni*.*

(*C*) In some polysyllabic derived words formed with the suffix *i*, the accent is carried forward to the suffix *i* on the addition of the possessive pronoun *nya*, as, *jálani*, *di-jalaní-nya*; *mengóbati*, *di-obati-nya-lah*. This should probably be attributed to the difficulty of pronouncing the consonant *nya* following the vowel *i*, which necessitates a pause.

In the majority of words the root most distinctly retains the original accent, as for instance *jádi*, *jádikan*; *mákan*, *mákanan*; *dégar*, *kedégaran*; *óbat*, *mengóbati*; *sálah*, *kesálahan*; *súrat*, *di-súrat-nya-lah*. It would be ridiculous to pronounce these words, *jadíkan*, *makánan*, *kedengáran*, *mengobáti*, *kesaláhan*.

There are, however, a large number of derived words, chiefly words of four or more syllables, in which the original accent almost or perhaps entirely disappears, without, however, any particular accentuation of any other syllable, the word being pronounced with an equal stress on all the syllables. Such words are: *perkata'an*, *kekaya'an*, *menjalani*.

Taking the pronunciation of the above-mentioned words into consideration, it would be easy in the case of the words in (*A*) and (*B*) to account for the position of the strengthening letters, *alif*, *wau* and *ya*; and even in the case of the words given above where the stress is equal on all the syllables, one could understand the omission of the strengthening letter from its proper place in the root, though its transference to the penultimate would be difficult to explain; but when we come to such a spelling as,

* It should be noted that in such roots as *turun* and *tahan* the stress is nearly equal on the two syllables, the change of stress in *turuni*, *tahani* is therefore very slight.

perbuatan perwakilan pekerjaan jabatan kerajaan diperbuat

دفربوات ڤروكن فكرجأن كجكن ڤروكن

it becomes simply impossible to account for it on any theory of phonetics, unless indeed one is prepared to admit the possibility of a complete change of pronunciation in the short space of 300 years, which appears to me to be out of the question.

There is, however, it seems to me, a much more feasible explanation of this peculiar discrepancy between the spelling and the pronunciation of these words, and that is to be found in the existence of a cognate language, the Javanese, in which it is admitted that the accent in derivatives actually does change its position and fall upon the penultimate. Moreover the probability that Javanese was the pattern from which this peculiar Malay spelling was copied becomes still stronger when it is pointed out that Javanese words of this kind are written in the Javanese character in a way which has quite a strong analogy to this peculiar use of the strengthening letters in the penultimate. As the Javanese characters are not obtainable in Singapore it has been necessary to resort to the arrangement given below, which represents as nearly as it is possible in Roman characters the way in which such words are spelt in the Javanese character.

èb gl. èb gl n. *gn gn* *rn k k.*
l t t tn tn

be-gal bé-gal-an gan-ti gan-ti-an ran-tak ran-tak-an

بيكَلَن بيكَلَنَن كَنتِي كَنتِيَن رنتهن رنتهين

ang ang i

a nk. n n é: p r n r ng
k

a-nak a-nak-é: pa-ring ma-ring-i

اَناكَي اَنَكَي اَنَق فَارِغْ مارِغْ

It will be seen from the above that in Javanese the addition of the suffix *an*, *a*, *ê* or *i* doubles the preceding letter. Thus, the addition of *ê* to *anak* produces not *anakê*, but *anakkê*, the accent being shown in this way to be on the penultimate. When Javanese is written with Arabic characters, the weak letter *alif*, *wau* or *ya* is substituted for one of the double letters used in the Javanese character.

The resemblance between these Javanese forms* and the spelling of Malay derivatives is so close that it amounts almost to a demonstration that the Javanese or some similar character was the medium through which the use of the strengthening letter in the penultimate came into Malay spelling, regardless of the pronunciation. The question has been raised before whether the Malays had a written character of their own, before they adopted the Arabic character. If that were so, analogy would naturally lead us to suppose that such a character would, like the Javanese, be based upon the Sanskrit, and that would make the step from the Javanese to the Malay spelling of derivatives which has been outlined above still easier. †

* These Javanese double-letter forms can still be traced in Malay in the double *k*, which has no doubt survived owing to the existence of the two letters *kaf* and *kuf*. Thus we find that the Malays invariably use this method of spelling the words given below :

كاڤكن ممايكي منايكي ڤرانكن كأيسكن

although the Dutch scholars have endeavoured for more than a century to introduce what they consider more correct forms of spelling, namely :

كيڤاكن ممايكي منايكي ڤراناكن كأيسوكن

The fact that the Malays refuse to adopt these European spellings and retain the double-letter forms, is to my mind at once a strong argument in favour of their retention and an additional evidence in favour of the theory that the spelling of Malay derivatives can only be explained as being based upon the Javanese system of spelling.

† Werndly, in the introduction to his grammar, written 170 years ago, says on page 50 : "The first language from which the Malay language has "borrowed some words is her neighbouring and kindred friend and sister the "Javanese language, *with which many persons conjecture that she for-*

We will now proceed to inquire:

II. What changes have the Malays introduced in their spelling during the last 300 years with a view to greater legibility.

It has already been pointed out in I. (1) that it is now the almost invariable custom of the Malays to write final *wau* and *ya* in words which end in the vowels *e* and *i*, *o* and *u*, as well as in those which end in *ai* and *au*. This change has been accepted by van de Wall, Pijnappel, Klinkert, v. Wijk, Wilkinson, and all other modern European authorities.

(2) The use of final *alif* for words ending in the *a* sound, has not, however, been accepted by any of the above-mentioned lexicographers, except in those words which have the stress on the final syllable, as *sela*, *lra*, etc. The extent to which the final *alif* is now used appears, however, to justify the practice, in view of the fact that it renders a large number of words far more legible, and in the absence of any counteracting disadvantage. In the new Malay Spelling Book, No. 1, now used in the vernacular schools of this Colony, the following words are found with final *alif*:

bangsa *bawa* *bisa* *benda* *buta* *china* *choba* *chita* *dada*

بڠسا باوا بيسا بندا بوتا چينا چوبا چيتا دادا

denda *depa* *gila* *kasta* *hèla* *hèja* *kena* *kuda* *lada* *lusa*

دندا دڤا كيلا هستا هيلا هيجا كنا كودا لادا لوسا

muda *nyala* *rusa* *sahya* *sisa* *semua*

مودا ڽالا روسا سهيا سيسا سموا

Whereas the following are written without final *alif*:

ada *apa* *bacha* *bapa* *bagimana* *biasa* *buka* *choba* *dia*

اد اف باچ باڤ بكيمان بياس بوك چوب دي

"*merly had one and the same written character in common*, and now still has "in common a large proportion of words, which cannot well be distinguish-"ed except by those who know how to compare them, and by some deriv-"ations which are peculiar to the one language rather than to the other."

guna hamba herga herta kata kerja kerna kita kota

كوت كيت كارن كرج كات هرت هرڬ همب كون

lama lima luka lupa mana masa mata muka nama

لام ليم لوك لوف مان ماس مات موك نام

nyata pada punya rabu raga rasa rata sana serba

سرب سان رات راس راڬ راب ڤون ڤد پات

siapa suka werna werta

ورت ورن سوك سياڤ

In the lithographed 1st editions of the *Hikayat Abdullah*, and *Pancha Tandaran*, which Munshi Abdullah wrote with his own hand, such words are in almost every instance spelt in precisely the same way as the Spelling Book, as the following will show:

bangsa bawa bichara bila blanga blanja bunga china chendana

چندانا چينا بوڠا بلنجا بلاڠا بيلا بچارا باوا بڠسا

dada depa dosa dua êja kapala kena nama nyala onta

دادا دڤا دوسا دوا ايجا كڤلا كنا نما پالا انتا

perkara pinta penglima penjara preksa subda sahya seksa

ڤركارا ڤنتا ڤڠليما ڤنجارا ڤرقسا سبدا سهيا شقسا

senjakala singa telinga

سنجاكالا سيڠا تليڠا

and without *alif*,

ada apa bacha bahasa berniaga benchana cherana derhaka

اد اڤ باچ بهاس برنياڬ بنچان چران درهك

dia juga kata kerja kerna kita kreta mana mata minta

دي جوڬ كات كرج كارن كيت كريت مان مات منت

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bangsa	*bawa*	*bisa*	*benda*	*buta*	*china*	*choba*	*chita*	*dada*
بڠسا	باوا	بيسا	بندا	بوتا	چينا	چوبا	چيتا	دادا

denda	*depa*	*gila*	*hasta*	*hêla*	*hêja*	*kena*	*kuda*	*lada*	*lusa*
دندا	دڤا	ڬيلا	هستا	هيلا	هيجا	كنا	كودا	لادا	لوسا

muda	*nyala*	*rusa*	*sahya*	*sisa*	*semoa*
مودا	ڽالا	روسا	سهيا	سيسا	سموا

Whereas the following are written without final *alif:*

ada	*apa*	*bacha*	*bapa*	*bagimana*	*biasa*	*buka*	*choba*	*dia*
اد	اڤ	باچ	باڤ	بڬيمان	بياس	بوكٔ	چوب	دي

"*merly had one and the same written character in common*, and now still has "in common a large proportion of words, which cannot well be distinguish- "ed except by those who know how to compare them, and by some deriv- "ations which are peculiar to the one language rather than to the other."

He retained, however, the old form of spelling in the words:

balek gantong habis hidop kampong panggil putch telok tinggal

نڬكل تلق ڤوته ڤڤكل كمڤڠ هيدڤ هابس كنتڠ بالق

The new Spelling Book referred to above goes even further than Abdullah, giving

angin bangan blum gantong ganting minum payong

اڠين باڠون بلوم ڬنتوڠ ڬونتيڠ مينوم ڤايوڠ

rumput sakit sedikit takot tanjong tidor tongkat tunggal

رمڤوة ساكيت سديكيت تاكوة تنجوڠ تيدور توڠكة نوڠكل

tumpah umpat

تومڤه اومڤة

But retaining the old forms

bintang habis kampong panggil tinggal

بنتڠ هابس كمڤڠ ڤڤكل تڬكل

(4) As stated above, the *tashdid* is now never used.

(5) The insertion of the lengthening letters in the penultimate of derived words appears to have become firmly fixed in the mind of the Malay, and is still very generally practised. We find the following in the new Spelling Book:

angkatan bacha'an makanan pemandangan pemblian

اڠكاتن بچأن مكانن ڤمندااڠن ڤمبلين

perkata'an tanaman tangkapan

ڤركتأن تنامن تڠكاڤن

which are absolutely in accord with the spelling of our MSS.

But we also find several words which are not written in the same way, e.g.

bagunan minuman panggilan pembunohan pencharian pendapatan
قندافتن قمبونهن قڤكلن مينومن باڠونن

penghargapan penglihatan petarohan petutoran pukolan tulisan
توليسن قوكلن قتوتران قتارهن قڤليهتن قڤهارڤن

which according to the old spelling should be

قڤهراڤن قندقاتن قمچرين قمبنوهن قڤكلن منومن بڠونن
تليسن قكولن قتتورن قتروهن قڤلهاتن

The new spelling of these words is certainly a very strong confirmation of what is stated above in regard to the position of the accent, and surely no one can deny that the new spelling is very much more legible than the old.

Abdullah writes:

apa-kah hacha'an-nya bantahan bagimana-kah di-bachakan
اڤاكه باچأنڽ بنتاهن بكيمانكه دبچاكن

di mana-kah fikiran hadapan hampiri ia pun jambatan
دمانله فيكران هادڤن همڤيري ايڤون جمباتن

khêhusan kerja-nya kedegaran kedudokan ke'êsokan
كيباسن كرجاڽ كدغرن كدودقكن كأيسقكن

kelakuan kelihatan kesalahan kesenangan kesudahan kesusahan
كلكوان كليهاتن كسلاهن كسناڠن كسداهن كسوساهن

kurongan mendatangkan pakaian peranakan perhatian permula'an
كوروڠن منداتڠكن ڤكاين ڤرانقكن ڤرهاتين ڤرملأن

He retained, however, the old form of spelling in the words:

balek gantong habis hidop kampong panggil putch telok tinggal

تغكل تلق ڤوته ڤغكل كمڤغ هيدڤ هابس كنتغ بالق

The new Spelling Book referred to above goes even further than Abdullah, giving

angin bangan blum gantong ganting minum payong

اڠين باڠون بلوم كنتوڠ كونتيڠ مينوم ڤايوڠ

rumput sakit sedikit takot tanjong tidor tongkat tinggal

رمڤوة ساكية سديكية تاكوة تجوڠ تيدور توڠكة توڠكل

tampah umpat

تومڤه اومڤة

But retaining the old forms

bintang habis kampong panggil tinggal

بنتڠ هابس كمڤڠ ڤغكل تغكل

(4) As stated above, the *tashdid* is now never used.

(5) The insertion of the lengthening letters in the penultimate of derived words appears to have become firmly fixed in the mind of the Malay, and is still very generally practised. We find the following in the new Spelling Book:

angkatan bacha'an makanan pemandangan pemblian

اڠكاتن بچأن مكانن ڤمندڠن ڤمبلين

perkata'an tanaman tangkapan

ڤركتأن تنامن تڠكاڤن

which are absolutely in accord with the spelling of our MSS.

But we also find several words which are not written in the same way, e.g.

bangunan minuman panggilan pembunohan pencharian pendapatan
قندافتن قمبونهن قڤكلن مينومن باڠونن

pengharapan penglihatan petarohan petutoran pukolan tulisan
توليسن قوكلن قتوتران قتارهن قڤليهتن قڤهارڤن

which according to the old spelling should be

قڤهراڤن قندڤاتن قمبنوهن قڤكيلن منومن بڠونن
تليسن قكولن قتتورن قتروهن قڤلهاتن

The new spelling of these words is certainly a very strong confirmation of what is stated above in regard to the position of the accent, and surely no one can deny that the new spelling is very much more legible than the old.

Abdullah writes:

apa-kah bacha'an-nya bantahan bagimana-kah di-bachakan
اڤاكه باچأنڽ بنتاهن بكيمانكه دبچاكن

di mana-kah fikiran hadapan hampiri ia pun jambatan
دمانله فيكران هادڤن همڤيري ايڤون جمباتن

khêbasan kerja-nya kedegaran kedudokan ke'êsokan
كبياسن كرجاڽ كدغرن كدودكن كأيسكن

kelakuan kelihatan kesalahan kesenangan kesudahan kesusahan
كلكوان كليهاتن كسلاهن كسناڠن كسداهن كسوساهن

kurongan mendatangkan pakaian peranakan perhatian permula'an
كوروڠن مندتڠكن ڤكاين ڤرانكن ڤرهاتين ڤرملأن

perjanan puasa-lah rupa-nya tambahan

تمباهن روفان فواسله فجانن

It will be seen that the spelling of many of these words is nearer to the spelling of the 17th century than the new Spelling Book, but the strong tendency to change the spelling in the direction of the pronunciation is very evident.

III. Is it possible to formulate rules which will fix the spelling of Malay according to the modern native ideal, i. e., legibility without vowel points?

Undoubtedly it should be accepted as an axiom that the Malays should continue to spell the common words as they have been accustomed to do for centuries; the spelling of these few words is easily learnt, and it would now be next to impossible to change them, e. g.,

ini itu jikalau kerna sagala seperti suatu deri-pada

درفد سوات سڤرٿ سكل كارن جكلو ايت اين

melainkan ketahui

كنهوي ملينكن

Also Arabic words, which have retained the original spelling although the pronunciation has changed, should not now have their spelling altered, as,

dunia jawab miskin umur

عمر مسكين جواب دنيا

The first rule (1) would be, spell with final *waw* and *ya* respectively all words which end in any of the sounds *e*, *i* and *ai* or *u*, *o* and *au*.

(2) All words ending in the *a* sound should be spelt with final *alif*, except those words in which the last consonant is ن ك ك ج ج ب and a few common words such as

ada apa apabila dia ia kerna manusia mula pada pula

ڤول ڤد مول مانسي كارن اي دي اڤيل اڤ اد

serta siapa

سياڤ سرت

Provided, however, that the final *alif* may also be omitted when the last consonant is ت س م ن or ي whenever those consonants are preceded by an *alif*, as in the following words:

bagimana biasa daya kata kaya lama mana masa mata nama

نام مات ماس مان لام كاي كات داي ياس بكيمان

nyata puasa rasa rata sama sama supaya

سڤاي سان سام رات راس ڤواس ڤات

(3) The following rules are suggested to govern the insertion of the weak letters *wau* and *ya* in closed syllables (it being understood of course that *alif* is never thus used except in the monosyllable *dan*).

(*a*) In two-syllable roots, when one syllable is open and the other closed, the weak letters *wau* and *ya* shall be inserted in the closed syllable, except when the vowel sounds of the two syllables are similar. Examples of words with similar vowels:—

bilek bodoh bohong bongsu bunoh dusun fikir mimpi sorong susun

سوسن سورغ ممڤي فيكر دوسن بونه بڠسو بوهڠ بوده بيلق

tinggi titek tolong tulus turun

تورن تولس تولغ تيتق تڠكي

Examples of words with dissimilar vowels:—

angin blum gadoh hidup ilut kasut kechil keping

كڤيڠ كچيل كاسوة ايكوة هيدوڤ كادوه بلوم اڠين

kring payong taroh tidor timpa tonda tulis

تولیس توندا تيمڤا تيدور تاروه ڤايوڠ كريڠ

(b) When both are closed syllables, the weak letter should only be inserted in the second syllable if the vowel sounds of the two syllables are similar.
Examples:—

benteng dinding ringgit tindeh tumboh tundok tunggul unjok

انجوق تڠكول تندوق تمبوه تنديه رڠكيه دندیڠ بنتيڠ

(*c*) If the sounds are dissimilar, one being the *a* sound and the other *wau* or *ya*, the *wau* or *ya* must be written in whichever syllable it occurs. Thus:

bimbang banting bintang kambing kumbang tanggong tunggang

توڠكڠ تڠكوڠ كومبڠ كمبيڠ بينتڠ بنتيڠ بيمبڠ

(*d*) If the vowel sound in one syllable corresponds to *wau*, and in the other to *ya*, then both should be written, as: كونتيڠ

It will, of course, be understood that it is quite impossible in this way to represent all the possible permutations of vowel sounds that may be formed with the same consonants. This could only be done with vowel points. The great majority of words in ordinary use will however be covered by the above rules, and something must be left to the imagination of the reader.

(*e*) In such common words as *tinggal* and *panggil*, it is doubtful whether the insertion of the *ya* would be of any use. The Malays are so accustomed to the spelling تڠكل and ڤڠكل for these words that careless readers invariably pronounce these forms *tingal* and *pangil* even when they stand for *tanggal* and *penggal*, and would certainly continue to do so even if *tinggal* and *panggil* were spelt تيڠكل ڤڠكيل and as most Malays strongly object to the insertion of the *ya* in these words, I would advocate

its omission, for the present at any rate. Similarly a few other very common words might be spelt without the weak letters, as:

minta pinta pintu jumpa chinta habis putch timbal boleh oleh

اوله بوله تمبل ڤونه هابس چنتا جمڤا ڤنتو ڤنتا منتا

ratus mulia himpon ésok lebeh

لبه ايسق همڤون مليا راتس

(4) The *alif* should be used, as explained above, in all words where in the old MSS. a *tashdid* is found over *wau*, as in

buah buat dua jua prempuan tuan luar

لوار توان ڤرمڤوان جوا دوا بواة بواه

This use of *alif* does not appear to be necessary where *tashdid* is found over *ya* in the old MSS., for the Malays never spell otherwise than

سكين كنتين ڤمبلين

(5) (*a*) In root words, the use of the weak letters to lengthen the vowel sound in open syllables requires but few remarks. In words of two syllables, these lengthening letters are almost invariably found in the first syllable, the exceptions being those words in which the accent falls on the last syllable, the first syllable having the short vowel sound, as:

bla kra sela tra

بلا كرا سلا ترا

In three-syllable roots, the lengthening letter is placed in the penultimate; but in one or two words which have final *alif* the lengthening letter is omitted from the penultimate, as

بهيا چهيا سهيا اوسها رهسيا كڤلا

(*b*) In derived words the aim should undoubtedly be to bring the spelling into agreement with the pronunciation as far as possible without making an entire revolution in the present

system of spelling. As a general rule, the spelling of the root should remain the same as it was before the addition of the prefixes and suffixes. No change of spelling is necessary when the vowel sound of the last syllable of the root is *e*, *i*, *o*, or *u*. This will be made plain by the following three sets of examples:

b^1. The final syllable open:

ganti gantikan gantian laku laku-nya lakukan

لاكوكن لاكوڽ لاكو كنتين كنتيكن كنتي

b^2. Final syllable closed and containing a weak letter:

kaseh kaseh-nya kasehi unjok unjokkan unjoki *

انجوكي انجوقكن انجوق كاسيهڽ كاسيه كاسيه

b^3. Final syllable closed but without a weak letter:

fikir fikirkan fikiran bunoh bunohkan pembunohan

ڤمبونهن بونهكن بونه فيكران فيكركن فيكر

(*c*) If the last syllable of the root has the open *a* sound, the *alif* must always be written when a suffix is added, even if the root does not require final *alif*, as,

ada ada-lah rasa rasa-nya raja rajakan

راجاكن راج راساڽ راس اداله اد

(*d*) If the last syllable of the root is closed and has the *a* sound, the addition of a suffix commencing with a consonant produces no change in the spelling of the root, as,

dapat dapatkan susah susahkan susah-nya

سوسهڽ سوسهكن سوسه داڤتكن داڤة

but if the suffix commence with a vowel sound, the *alif* is usually written in the last syllable of the root:

* *Unjoki* may also be spelt انجوقكي. See page 102, footnote.

dapat dapati kras mengrasi senang kesenangan susah kesusahan
كسوساهن سوسه كسناڠن سنڠ مڠراسي كرس داڤاتي داڤة

(*e*) When both syllables of the root have the *a* sound, and the addition of a suffix requires in the last syllable an extra *alif*, the Malays invariably omit the *alif* of the first syllable of the root, unless it follows one of the letters ر د or و : thus,

bacha bachakan di-bacha-nya bapa bapa-nya kata katakan
كتاكن كات بڤاث باڤ دبچاث بچاكن باچ

perkata'an karang karangan makan makanan nama namakan
ڤركتأن كارڠ كراڠن ماكن مكانن نام ناماكن

nama'i salah kesalahan tanam tanaman
تنامن تانم كسلاهن ساله نمأي

But with words commencing with ر د or و the spelling is,

dada-nya dagangan dalam-nya perdagakan rasa-nya wayangan
واياڠن راساث ڤردایاكن دالمث داكاڠن دادات

With roots in which *ya* is a consonant, the omission of *alif* would cause ambiguity; it should therefore be retained, as,

انياي انیایاكن اوڤاي اوڤایاث برنیاك ڤرنیاكأن بیاس بیاساث

(*f*) The suffix *an* requires *alif* when the root ends with the letters ر د or و

fikiran kedengaran kelakuan petutoran
ڤتوتران كلاكوان كدڠران فیكران

In such words, the *alif* which would otherwise be required by rule (5) (*d*) in the last syllable of the root must be omitted, as,

بایران كبسران كبنران كدڠران كسوكران

(*g*) The further addition of suffixes or particles to derived words should cause no change in spelling. Some persons write *alif* after the possessive pronoun *nya* when it is followed by the particles *lah*, *kah*, etc., but this appears to be unnecessary. Examples :

bapa-nya *bapa-nya-kah* *kasehi* *di-kasehi-nya-lah*

بڤاڽ بڤاڽكه كاسيهي دكاسيهيڽله

nama'i *di-nama'i-nya-lah*

نماءي دنماءيڽله

(6) The orthographical sign *hamza* ء, which was very seldom written in the manuscripts of the 17th century, is now in common use among the Malays, chiefly for the purpose of introducing a syllable which commences with a vowel; they never employ it however for this purpose at the beginning of a word. The *hamza* is placed over *alif*, *wau* or *ya* according to the vowel sound of the syllable in which it is used.

(*a*) Root words commencing with the vowels corresponding to *wau* and *ya* are written with an initial *alif*, but this *alif* drops out on the addition of the prefix *sa*, its place being taken by the *hamza*; with the prefix *ke* the *alif* is retained and *hamza* written over it.

sa'orang *sa'olah-olah* *sa'isi* *sa'ekor* *sa'umpama* *ke'inginan*

سورغ سولهء سيسي سيكور سومڤام كاءيغينن

In the following words the *alif* is the lengthening letter of the preceding syllable,

ia'itu *ka'il* *ra'eh* *da'irah*

داءيره رائيه كائيل يائية

(*b*) In similar derivatives formed from words commencing with the *a* sound, the *alif* is retained and the *hamza* written over it, as,

ke'ada'an *ke'ampat* *ka'atas* *sa'akan-akan*

كاءدائن كامڤة كاءتس ساءكنء

Hamza is used in the same way with the suffix *an* following an *alif*, as,

kenyata'an *perkata'an*

كڤركتأن كپتأن

(*c*) *Hamza* is also used with the suffix *i* when it follows an *alif*, but not when it follows *wau*, as,

mula'i *nama'i* *serta'i* *bharui* *ketahui* *lalui* *tunggui*

تڠكوي لالوي كنهوي بهاروي سرتأي نمأي مولأي

(*d*) *Hamza* is sometimes placed at the end of a word instead of final ق to indicate a shortening of the final syllable, as

bêngko' *dato'* *inche'* *ma'* *poko'* *têngo'*

تيغوْ ڤوكوْ ماْ انچيْ داتوْ بيڠكوْ

(*e*) It also appears in a few Arabic words:

mala'ikat *aja'ib* *mu'min*

مؤمن عجأيب ملأيكة

IV. For the sake of brevity and clearness the proposed rules for Malay spelling are now recapitulated, without the explanations which were necessary above.

PROPOSED RULES FOR MÂLAY SPELLING.

(1) Final *wau* and *ya* must be used in all words ending in the sounds *u*, *o*, *au*, and *i*, *e*, *ai*, respectively, except

اين ايت يأين يأيت سوات سڤرة

(2) Final *alif* must be used in all words ending in the *a* sound, except (*a*) when the final consonant is ب ج چ ك ڬ ن ; (*b*) when the final consonant is ت س ڤ م ن ي preceded by *alif*, or (*c*) one of the following exceptions: مول مانسي سرت اڤيل كارن ڤول ڤد دي اي اد سكل

(3) (*a*) In two-syllable roots having one syllable open and the other closed, the weak letters *wau* and *ya* are to be inserted in the closed syllable having the *e*, *i*, or *o*, *u* sound respectively, except when the sounds of the two syllables are of the same class (*o* and *u*, *o* and *o*, *u* and *u*; or *i* and *e*, *e* and *e*, *i* and *i*). (*b*) When both syllables are closed and have similar sounds, the weak letter must only be used in the second syllable; but (*c*) if the sounds are dissimilar, one being the *a* sound and the other *wau* or *ya*, the *wau* or *ya* must be written in whichever syllable it occurs; and (*d*) if the sound in one syllable is *wau* and the other *ya*, both must be written. (*e*) The following common words are exceptions to this rule, being written without the weak letters.

اوله ڤڠكل تڠكل هابس ڤونه بوله راتس مليا ايسق جمڤا ڤنتو منتا

همڤون ڤنتا چنتا

Three-syllable roots must be treated similarly.

(4) Where a syllable commencing with the *a* sound follows a syllable ending in the letter ر د or و the *alif* must always be written. Examples:

لوار مواة جوا بواه بواة دوا بواڠ

(5) (*a*) In root words, lengthening letters are used in those open syllables on which the accent falls. Several words of Arabic origin, however, are exceptions to this rule, and a few other words, such as,

ملك ڤد سه كڤلا سكل جكلو تنكل مانسي ملينكن كنهوي

(*b*) In derived words, when the vowel sound of the last syllable of the root is *e*, *i*, *o* or *u*, the spelling of the root remains unchanged. (*c*) If the root ends with the open *a* sound, an *alif* must be written in the last syllable of the root when a suffix is added. (*d*) If the last syllable of the root is closed and has the *a* sound, an *alif* is usually written in the last syllable of the root on the addition of a suffix commencing with a vowel sound, but if the suffix commence with a consonant the *alif* is not required, and the spelling of the root remains unchanged.

(*e*) When both syllables of the root have the *a* sound, and the addition of a suffix requires an extra *alif* in the last syllable, then if there is an *alif* in the first syllable of the root it should be omitted, unless it follows one of the letters ر د و or ي

(*f*) When the root ends with one of the letters ر د و an *alif* must be written before the suffix *an*, the *alif* required by rule (5 d) is then omitted. (*g*) The further addition of suffixes or particles to derived words causes no change in the spelling.

(6) (*a*) When *sa* is prefixed to a root commencing with a vowel sound corresponding to *wau* or *ya*, the *alif* drops out, and *hamza* takes its place; with the prefix *ke* the *alif* is retained and *hamza* is written over it. (*b*) When the root commences with the *a* sound, the *alif* is retained and the *hamza* written over it. *Hamza* is also employed in the same way with the suffix *an* following an *alif*. (*c*) It is used with the suffix *i* following an *alif*, but not when it follows *wau*. (*d*) At the end of a word, *hamza* sometimes takes the place of final ق . (*e*) It also appears in a few Arabic words.

In order to show the application of the principles of Malay spelling reform suggested in this paper, the first chapter of *Hikayat Abdullah*, spelt according to the above rules, is here appended, with a few notes on words which are spelt in an unusual way. A glossary of the words used in this paper as examples is also appended. The root words are arranged in the order of the Malay alphabet, and, wherever necessary, the spelling of one or more derivatives is given after the root. In order to make this list more complete, several words have been inserted in the glossary which will not be found among the examples: these include a number of words in the spelling of which the Malays are very inconsistent, so that it seemed desirable to suggest a fixed standard of spelling in such cases.

It will be seen that this method of spelling is essentially the same as is at present in use among educated Malays throughout the Malay Peninsula, which is admitted, even by the Dutch scholars, to be the home of the purest form of the Malay language.

In this paper but little more has been done than to explain the rationale of this modern Malay spelling, and to reduce it to a system which would enable those who are prepared to adopt it to spell uniformly and consistently with themselves. It has been sought to adhere as closely as possible to the spelling employed by the best educated Malays at the present time in writing their own language, in the firm belief that it is very much more feasible for the few Europeans who use the Malay character to accommodate themselves to the native way of spelling, than for them to attempt to coerce a whole nation of intelligent and self-reliant men into a return to the antiquated Arabian system of orthography illustrated in the manuscripts of the 17th century, which the Malays have been doing their best to improve for hundreds of years past.

APPENDIX A.

بهوا مك اداله كفد تنكل هجرة سنة ١٢٤٦ ناهون كفد لبا ليكور هاري بولن شعبان المكرام بأية كفد دوا ليكور هاري بولن اقتوبر تاريخ مسيحي سنة 1840 ناهون بهوا ديواس اية اداله سورغ صحابتكو بأية اورغ ڤونه يغ كوكاسيهي اكندي مك اياله ممنتا ساعة٣ كفداكو بأية هندق مغتهوي اكن اصل اوصلكو دان ڤري حكاية سكل كهيدوڤن دبريكو مك اي ممنتا كارغكن سوات كتاب دغن بهاس ملايو مك اداله سبب سكل حال دان ڤركارا يغترسبوة اية مغجادي مشغلله اكو سرت برتله راسان اغكوناكو سبب دودق برفيكركن كهندق ككاسيهكو يغدمكين كارن سكل حال احوال يغترسبوة اية سموان ڤركارا٢ يغتله لالو زمانن سباكيلاكي يغ مندانغكن دكچيتا دالم هاتيكو سبب بهوا سسغكوهن اكو اين سورغ بوده لاكي دغن كورغ بوديكو دان فهمكو دالم علمو بهاس مك برتمبه٢ ڤول ڤچق

ڤغتهوانكو دالم علمو مغارغ اداث شهدان لاكي اداله حالكو اين تمبول تڤكم
دالم ڤكرجأن جواتنكو 1 مك اوله سبب سكل ڤركارا يغترسبوة ايتله
مندانڤكن ڤرچنتأن دالم هاتيكو سباكيڤول مك كناكوتتله اكو اكن ديريكو
سبب كودغر دان كوليهة كجوالياث كباڤكن ڤول اورغيغ مڤاكو دبربث ڤد
زمان اين ڤندي دان چاكڤث ڤون برلبه٢هن سڤاي دڤرچاي اورغ اكندي
ڤندي تناڤي چاكڤ اڠين سهاج مك اڤيبل دسورهكن اورغ اكندي بربواة
بارغسوات ڤكرجأن انو كراڠن انو دربحال توليس .نوليس ارتي بهاس
نسچاي ددافاتيله اكنديأية كوسغ سبب سكل چاكڤ دان كڤنديناث اية بوكن
دغن ڤلاجران ملينكن منغر٢ سهاج سڤجغ جالن مك سبب ايتله نياد
بركنهوان هولو هيلرث دانلاكي ڤول كباڤكن اورغيغ ببل يغتياد برباتو اوجي
دناڠنث اڤيبل اي منغر چاكڤ اورغ برباكي٢ اية يا 2 بوكن اداله كلاكوانث
سڤرة اورغ مڠنتوْ دسورغكن بنتل مك للڤله سهاج اي يعني ڤرچياله اي
اكندي دغن نياد دچوباث ياكه انو تيدق سؤمڤام سبانغ بولوه 3 ترديري
مك ڤد سڤكاث اينله سبانغ كايو يغ بايك لاكي لورس نياد بيڤكغ بيڤكق
ڤستي اد برترس دالمث مك جكلو كيراث اورغ يغ ممڤوبأي بودي نسچاي
دبلهيله دهولو دليبتث دالمث نسچاي ددافاتيث كوسغ اداث تناڤي اداله سڤرة

1. The spelling of this word *jwatan* is somewhat ambiguous, and the word is sometimes pronounced *jwatan* by ignorant persons, but this spelling agrees with Rule (5) (*c*).

2. Many Malays spell the affirmative monosyllable *ya* in the same way as the two-syllable pronoun *ia*. But this spelling seems better.

3. To distinguish *baloh* from *boleh*, it is better to insert the *waw* in the last syllable of this word, through contrary to Rule (3) (*i*).

كات عارف بهواسڠ جوهاري جوكڠ يڠ مڠنل مأنيكم مك استميوا ڤول ڤد
زمان اين سمڠق سلة ٢له منجادي نكري بلالڠ نله منجادي لڠ دان ڤيجة٢ ڤون
تله منجادي كورا٢ دان چاچيڠ ڤون تله منجادي اولر ناك برمول ادڤون
اصلڠ سكل عجأيب اين تربيتڠ دري سبب هرنا دنيا اين مك جكلو هينا
دان بوده سكاليڤون اصل اد برهرنا نسچاي ايالة ڤندي دان ترمليا مك
جكلو ڤندي دان مليا تناڤي تياد برهرنا نسچاي ترهينا جوكڠ سبرمول ادالة
سكل ڤركتأن دان مثل دان اومڤأن اية سموان كواميبل عبارة باكي ديريكو
ڤرتام٢ هينا كأدأن ديريكو دان كدوا مسكين حال كهيدوڤنكو دان كنيك
كورڠ علمو دان فهمكو دان كأمڤة بوكنڠ اكو اين اهلي باكي ڤكرجأن كارڠ
مڠارڠ اية مك بهواسڠ تيادالة باكيكو قواة [4] كواس دان داي اوڤاي مليڠكن
درڤد الله ادان دان لاكي سكالي٢ تياد سوڤي ديريكو دريحال برصفة ككوراڠن
دان كلماهن ڤد تيڤ٢ ماس دان كنيك ادان كلكين ستله هابسله فيكرانكو
يڤدمكين مك تيبا٢ ترسدرله سوله٢ دكجوتكن اورڠ اكندا كو درڤد تيدوركو
سميبل بركات دمكين جكلو كيران اڠكو هينا ممنتاله ڤد يڠمليا دان جكلو
اڠكو مسكين ڤنتاله ڤد يڠ كاي دان جكلو كورڠ فهمو ڤوهنكنله كڤد
توهن يڠتله برجنجي بارڠسياڤ يڠ ممنتا اي اكن مندافة مك جكلو كيران
دمكينله كموراهنڠ توهن ايت انشأ الله تعالى اكو ممنتا تولڠ جوكڠ دڠن
سبوله٢ن كڤدان يڠ تله ممبنتڤكن لاڠية يڠ سبسر اية دڠن تياد برتوڠكة

4. I have spelt this word in the same way as *buat*.

سڤاي دڤنوهيڽ اكن كهندق ككاسيهكو اية مك جكلو اكو اين بوكنڽ اهلي باكي يغدمكين سكالي ڤون بهوا هارڤله جوك اكو كڤداڽ اكن مپرنأي اكو اتس ڤكرجأن يڠ سديكة اين اداڽ

APPENDIX B.

انور انوري انوران	ادو ڤڠادوان
اجر اجري ڤڠاجران	استان استنڽ
اد اداله كأدأن	اڠكة اڠكاتن (1)

1. From the examples given in this glossary (which was completed after the paper was already in print) it would seem possible to make Rule (5)(d) more definite as to whether or not the *alif* should be inserted in a closed final syllable having the *a* sound, on the addition of a suffix commencing with a vowel. It appears that the Malays usually insert the *alif* when the last consonant of the root is ت or ه but not otherwise, unless the stress in distinctly on that syllable. Thus :

اڠكاتن اوباني ايڠاتن ايكاتن سوكاتن مليهاني حرماني

اوڤاهن بنتاهي تكاهن تمباهن ڤرسمباهن كسوساهن ڤجاهن ڤرنتاهن

كلماهن ملوداهي كموراهن كموداهن

Roots ending in ت and ه which are exceptions to this rule are :

كڤايهن كساڠتن سورتن كاكهي

The following are examples of roots ending in other consonants, the derivatives being written without *alif* :

كأمسن بالسن تفكڤن كنڤكلن رمڤسن ڤڤهارڤن

But the following have the accent on the last syllable of the root and take *alif* :

تلاني كديامن ڤساني مڤنالي ككلاڤن مڤكناڤي كلڤاسن

كات عارف بهواسث جوهاري جوڬ يڠ مڠنل مأنيكم مك استميوا ڤول ڤد
زمان اين سمڠق سلة ٮاله منجادي نكري بلالڠ نله منجادي لڠ دان ڤمجغ٢ ڤون
ٮله منجادي كورا٢ دان چاچيڠ ڤون ٮله منجادي اولر ناك برمول ادڤون
اصلث سكل عجأيب اين تريبتث دري سبب هرنا دنيا اين مك جكلو هينا
دان بوده سكاليڤون اصل اد برهرنا نسچاي اياله ڤندي دان ترمليا مك
جكلو ڤندي دان مليا ٮنافي تياد برهرنا نسچاي ترهينا جوڬ سبرمول اداله
سكل ڤركنأن دان مثل دان اومڤأن اية سموا٢ كوامبيل عبارة باكي ديريكو
ڤرتام٢ هينا كأدأن ديريكو دان كدوا مسكين حال كهيدوڤنكو دان كنيك
كورڠ علمو دان فهمكو دان كأمڤة بوكنث اكو اين اهلي باكي ڤكرجأن كارڠ
مڠارڠ اية مك بهواسث تياداله باكيكو قواة 4 كواس دان داي اوڤاي ملينكن
درڤد الله ادا٢ دان لاكي سكالي٢ تياد سوڤي ديريكو دريحال برصفة ككوراڠن
دان كلماهن ڤد نيڤ٢ ماس دان كنيك ادا٢ كللكين ستله هابسله فيكرانكو
يڠدمكين مك تيبا٢ ترسدرله سؤله٢ دكجونكن اورڠ اكندااكو درڤد تيدوركو
سميل بركات دمكين جكلو كيرا٢ اڠكو هينا ممنتاله ڤد يڠمليا دان جكلو
اڠكو مسكين ڤنتاله ڤد يڠ كاي دان جكلو كورڠ فهمو ڤوهنكنله كڤد
توهن يڠتله برجنجي بارڠسياڤ يڠ ممنتا اي اكن مندافة مك جكلو كيرا٢
دمكينله كموراهنث توهن ايت انشأ الله تعالى اكو ممنتا تولڠ جوڬ دڠن
سبوله٢ن كڤدا٢ يڠ تله ممبنتڤكن لاڠية يڠ سبسر اية دڠن تياد برتوڠكة

4. I have spelt this word in the same way as *buat*.

سڤاي دڤنوهيڠ اكن كهندق ككاسيهكو اية مك جكلو اكو اين بوكنڠ اهلي باكي يڠدمكين سكالي ڤون بهوا هارڤله جوك اكو كڤداڠ اكن مپرتأي اكو انس ڤكرجأن يڠ سديكة اين اداڠ

APPENDIX B.

انور انوري اتوران	ادو ڤڠادوان
اجر اجري ڤڠاجران	استان استناڠ
اد اداله كأدأن	اڠكة اڠكاتن (1)

1. From the examples given in this glossary (which was completed after the paper was already in print) it would seem possible to make Rule (5)(d) more definite as to whether or not the *alif* should be inserted in a closed final syllable having the *a* sound, on the addition of a suffix commencing with a vowel. It appears that the Malays usually insert the *alif* when the last consonant of the root is ت or ه but not otherwise, unless the stress in distinctly on that syllable. Thus :

اڠكاتن اوباني ايڤاتن ايكاتن سوكاتن مليهاني حرماني

اوڤاهن بنتاهي تكاهن تماهن ڤرسماهن كسوساهن ڤجاهن ڤرنتاهن

كلماهن ملوداهي كمۏراهن كموداهن

Roots ending in ت and ه which are exceptions to this rule are :

كڤايهن كساڠتن سورتن كاكهي

The following are examples of roots ending in other consonants, the derivatives being written without *alif* :

كأمسن بالسن تڠكڤن كنتڠكلن رمڤسن ڤڤهارڤن

But the following have the accent on the last syllable of the root and take *alif* :

تلاني كديامن ڤساني مڠنالي ككلاڤن مڠكناڤي كلڤاسن

اڠكوتا	اودارا
اڠين	اوسڠ اوسڠن
اڤ افاكه	اوسها
اڤيل	اوڤاي اوڤاياڽ
اڤية	اوڤه اوڤاهن
آكام آكماڽ	اوكر اوكران
اميل	اوله ڤراولهن
امس كأمسن	اومڤام ڤراومڤأن سۏمڤام
امڤة كأمڤة	اومڤة
انتارا	اونتا
انتوڠ	اوندڠ
انجوق انجوقكي (2)	اي اياله
انچي	ايت ايتله
انق ڤرانقكن	ايريڠ (3)
انياي انياياكن	ايسق كأيسقكن
اوبة اوباتي	ايڠة ايڠاتن
اوتس اوتسن	ايڠين كأيڠينن

2. See footnote p. 102.

3. Three words in this list are almost invariably spelt with the weak letter *ya* in both syllables, contrary to Rule (3)(a):

ايريڠ ايڠين كيريم

ايكة ايكاتن	بتينا
ايكوة	بجارا بجاراكن
ايكور سيكور	برة ممبراني
ايلوق كايلوقكن	براف برافكه
ايمام	برس
ايمان	برنياك قرنياكان
اين اينله	بدن
باتوق	بسر كبسران
باج بجاكن بجان	بقسا
باغون باغونن	بقسو
باف بقان بقاپكه	بكيتو
بالس بالسن	بكيمان بكيمانكه
باليك باليقكن	بلا
باو	بلاغا
باوا	بلنجا
بابر بابران	بلوم
بايك ممبايقكي	بلي قمبلين
بابق كبابقكن	بناس بنساله
بتول ممبتولي	بنته بنتاهي قربنتاهن

تواغ تواغي	تبمغ تبماغن
توان	تبمب
توتر ڤتوتران	تبمڤا
توتف توتڤن	تبمور
تورن توروني كتورنن (7)	جادي كجادين
توڠكة	جاك جكاله
توڠكغ	جالا
توڠكل	جالن جلاني ڤرجلانن
توكر توكران	جاوه
تولغ ڤرتولغن	جاهة كجهاتن
تولس	جكلو
توليس	جمڤا
تومڤه	جوا
توندا	جواب
تيتق	جوال
تيدور	جوك
تيغوء تيغقله	جيك (8)

7. This spelling of *turani* does not follow Rule (3)(a), but تورني is not easily read, and as the accent is *turáni* it seems better to insert the *waw*.

8. This word is often spelt جنك

چاري فنجارين	خواطر
چلاک چلاکان (9)	داتغ مندا تغي کداتغن (10)
چسنا	داتو
چتيک	دادا
چندان	دافة ددافاني کدافاتن
چوب دچوبان چوبأي	داکغ داکاغن
چوچو	داون
چوما	داي داباث
چنتا	دائره
چينا	درس
حال	درقد درقدان
حرمة حرماني	درهاک درهکاله
حکم حکمن	دربحال
حکيم	دستا
حيران	دسيتو
خبر خبران	دغر کدغران
خلاصي	دفا

9. The form چلکان which would be in accordance with Rule (5) (e), is unusual and not easily read.

10. See Note (6).

دكچيتا	راج راجاكن كراجأن
دمكين	راس راسأي
دندا	راكٓ راكاث
دنديغ	رأيه
دنهاري	ربان
دنيا	رغكية
دوا	رمڤس رمڤسن
دوري دورين	رمڤوة
دودق كدودقكن مندودقكي	رنتوه
دوسا	رندو
دوسن	روسا
دوكٓ دكچيتا	روسق كروسقكن
دهاكٓ دهكاث	روڤا
دي دياله	ساڠة كساڠتن (11)
دم كديامن منديامي	سأكن٢
ديواس	ساكية
راب	ساله كسلاهن
رات راتاكن	سام سماث
راتڤ مراتڤي	سان دسانله

11. See Note (1).

سأوه	سكارغ
ساوه	سكچيتا
ساهوة	سكلين
سبدا	سكرا
سبوة	سكل
سرب	سلغ كسلاغن
سرت سرنأي بسرت	سلوار
سده كسداهن سدهكن	سلا
مپودهكن (12)	سليسه ڤرسليسهن
سديا	سمبليه ڤرسمبليهن
سديكة	سمبه ڤرسمباهن
سڤاج سڤجان	سمبيل
سڤكور	سمڤرنا
سڤكوه	سموا
سڤاروه	سنتوسا
سڤاي	سنجات سنجتان
سڤرة سڤرتين	سنجاكالا
سڤسا	سنغ كسناغن

12. The spelling of the root is irregular, and wherever possible the derivatives are spelt in the same way as the root.

سوات	سياف سيافكه
سوارا	سيسا
سواف	سيغ
سورة سورتن (13)	سيڠا
سورغ	سيمڤن
سُورغ	شڬ
سوروة	شكور
سوره سورهن	عجأيب
سودارا	عمر
سوداكر	فيكر فيكران
سوسن	ڤاكي ڤكاين
سوسه كسوساهن	ڤابوغ
سوك كسوكأن سكچيتا	ڤايه كڤايهن (14)
سوكة سوكاتن	ڤچه ڤچاهن
سوكر كسوكران	ڤراهو
سُوله٢	ڤرچاي كڤرچيأن
سومڤه	ڤرغ ڤڤراڠن ممراڠي
سهيا	ڤركارا

13. This is the usual spelling.
14. See Note (1).

ڤرقسا	ڤوتر ڤوتران
ڤرلاهن۲	ڤوتس كڤوتسن
ڤرمڤوان	ڤونه
ڤرنته ڤرنتاهن	ڤوكل ڤوكلن
ڤد ڤدان	ڤوكو
ڤديه	ڤول
ڤسن ڤساني	ڤوله
ڤڤكل ڤڤكيلن	ڤون ممڤوبأي
ڤڤسا	ڤها
ڤكڠ ڤكاڠن	ڤيله ڤيلهن
ڤليتا	ڤواة ككواتن
ڤليهارا ڤليهاراكن	ڤوم
ڤنة	كات كتاكن ڤركتأن
ڤنتا	كأتس
ڤنتو	كارڠ كراڠن
ڤندڠ ڤمنداڠن	كارن
ڤنوه ڤنوهي	كاسوة
ڤواس ڤواساله	كالا
ڤواس ڤواسله	كأمڤة

كاون كاونث	كلكين
كاي ككيأن (15)	كلوار
كأية	كلورك كلوركاث
كأبل	كمبيغ
كتاب	كمدين
كجيل	كمثوغ
كرا	كنا مغنأي
كرج فكرجأن	كنل مغنالي
كرس مغراسي	كواس كواساث
كرنيا	كوالا
كريتا	كوتا
كريس	كوتر
كريغ	كورغ ككوراغن
كستا	كودا
كفل	كولية
كفلا	كومبغ
كفيغ	كيت كيتاله
كلاف	كية

15. By Rule (5)(c) this should be ككايأن but the word is always spelt as it is here given.

كيريم كيرءن	لاير ڤلابران
كادوه	لأين مليڠكن
كاكه كاكهي (16)	لاين لاياني
كلر كلران	لبه كلبيهن
كلف كڠلاڤن	لڤس كلڤاسن
كمر كڠمران	لڤسا
كنتوڠ	له كلماهن
كنتي كنتين	لنتيق
كنف مڤكناڤي	لوار
كونا	لواس
كونتيڠ	لوده ملوداهي
كيلا	لوسا
لارڠ لاراڠن	لوك لوكان
لادا	لوڤا
لاكو كلاكوان	ليما
لاڤر كلاڤران	ليمڤر مليمڤري
لام لمان	ليهة مليهاتي
لاوة لاوتن	مأ
لاون لاوانن	مات متان

16. See Note (1).

ماتي كماتين	منتا
ماس مسان	مواة
ماسوق ماسوقكي	مورہ كموراهن
ماسيغ	مودہ كموداهن
ماكن مكانن	موك موكاث
مان مانله	مول مولاث
مانسي	مومن
مانيكم	مينوم
مأين قرمأينن	نام نماث
منهاري	نايك نايقكي
مريك	نجيس
مريكيت	وايغ واياغن
مسكين	ورنا
مڤاڤ مڤاڤكه	ورنا
مك	وقتو
ملأيكة	هابس ڤڤهابسن
مليا	هارڤ ڤڤهارڤن
ملينكن	هادڤ هدافن
ممڤي	هاث هپاله

هرنا	هيدوغ
هستا	هيدوف
هيڠك	هيلا
همب همبان	هيلغ كهيلاغن
همڤون فرهمڤونن	هينا
همڤير همڤيري	يا
همچور	يأبت
هندق كهندقكي	بات پتان
هيجا	بالا
هرڬ هرڬان	باموق

Short Notes.

On the Occurrence of Mus. surifer, G. S. Miller, in Perak.

In the Proceedings of the Biological Society of Washington, vol. xiii, April 21, 1900, Mr. Gerrit S. Miller, of the U. S. National Museum, describes no less than seven new species of Rats collected in 1899 by Dr. W. L. Abbott in the mountains of Trong, a small Siamese State on the west side of the Peninsula, about 500 miles north of Singapore.

This paper should not be overlooked by students of the smaller Malayan mammals, and Mr. Miller would probably kindly supply any one interested in the subject with a copy on application. The new rats described are *Mus vociferans*, *M. ferreocanus*, *M. validus*, *M. cremoriventer*, *M. asper*, *M. pellax*, and *M. surifer*. I am able to record the last of these new species from the Larut Hills, Perak, and it is probable that at least some of the others follow the main range down the Peninsula. *Mus. surifer* was obtained by Dr. Abbott in February 1899. I first met with it in February 1898, catching a single example in a steel trap near the Hut, Maxwell's Hill. Unfortunately the hinder portion of the specimen had been eaten by some small carnivorous creature, and, after noting its appearance I threw it away. Last year on revisiting the hills I remembered this rat and succeeded in trapping a specimen alive. It was a charmingly pretty and fearless little creature, quite tame from the time of capture, and I was overruled by feminine influence into keeping it alive, with the result that it escaped eventually in Kwala Lumpur! At the same time I got a very damaged specimen from same coolies, and sent it in spirit to Mr. Oldfield Thomas, who identified it as the newly described *M. surifer*.

Mr. Miller's paper above referred to is a good example of the exceedingly thorough and careful work of the new school of American mammalogists.

A. L. Butler, F. Z. S.

4th July, 1901 Khartoum, Soudan.

Rambong Beetle.

From two localities in Selangor specimens of a common longicorn beetle *Batocera octomaculata* and its grub have been sent, as serious pests destroying the India-rubber tree, Rambong, *Ficus elastica*. The grub over two inches long bores up the stem of the tree, while the beetle itself gnaws the bark, bites off the buds and then proeeeds to demolish the leaves, eating them quite voraciously. The grub is when full grown about two inches and a half long and a quarter of an inch wide, flattened soft and white except for its hard brown chitinous head and the upper surface of the first two segments. Like all longicorn grubs it has no feet. It makes the usual tunnels elliptic in section through the length of the larger boughs and trunk of the tree, and also attacks in the same way *Ficus indica* and the Waringin, *F. Benjamina*, and probably others of our wild figs. It pupates in the tube it has made, and eventually hatches out into a handsome large beetle, one and a half to two inches long, without the antennae. The head is brown, with large eyes and powerful jaws. The antennae, fairly stout, longer than the body, dark brown, and rough with short processes in the lower surface. The thorax, short and broad with a conic thorn on each side, is dark brown with two red crescents in the centre. The elytra three quarters to an inch and a quarter long, oblong, blunt, broadest at the shoulder, dark brown with black shining raised dots in the upper part near the shoulder, smooth below. There are four pair of white spots on the elytra, the uppermost pair small and round, the next larger and more or less oblong sometimes with an extra white spot near the upper edge, the next pair nearly as large, the lowest pair much smaller. The form and size of the spots vary, but appear to be always eight. The scutellum is also white. The under surface of the body is light brown and a broad white stripe runs on each side, from behind the eye to the tail. The legs are powerful, over an inch long, and brown. The beetle feeds during the day, and also moves about at night. It is attracted by light and often flies into the house after dark. Like most longicorn beetles it squeaks loudly when caught and it can also bite severely. The amount of injury a beetle of this kind could

do in a plantation of large sized trees would be very great. Fortunately it is easily caught and very conspicuous, and by abolishing all unnecessary fig trees from the neighbourhood of a plantation and carefully attending to the young plants, the pest out to be easily kept in check.

H. N. R.

In Memoriam

ALLAN MACLEAN SKINNER, C. M. G.

The death of Mr. Skinner will be deeply regretted by all who knew him, and as one of the original members of the Society it is fitting that some special notice of the loss the Society has sustained by his death should appear in the Journal. At the preliminary meeting held on 4th November 1877, it was Mr. Skinner who proposed that the gentlemen present should form themselves into a Society to promote the collection and record of information relating to the Straits Settlements and neighbouring countries. Of those present at the first meeting the majority have died and the Bishop of Singapore and Sarawak, the first President, is the only one still resident in the East.

At a meeting held in February 1878, was exhibited a skeleton map of the Malay Peninsula showing how little was then known of the Native States. Under the personal direction of Mr. Skinner the blank spaces were partially filled in and the first map of the Peninsula was published by the Society.

In the first number of the Journal is a valuable paper by Mr. Skinner on the Geography of the Peninsula, with maps.

In 1883 Mr. Skinner was Vice President and in the Journal published in December 1882, appeared his 'Outline History of the British Connection with Malaya,' a most useful compilation which is reproduced in the Singapore and Straits Directory.

Among his other contributions may be mentioned papers on 'The Java System' and 'Straits Meteorology'. In 1885 Mr. Skinner was elected President. He received the cordial thanks

of the Government for the valuable results of the action of the Society with regard to the publication of 'Eastern Geography,' which he edited.

In 1888 he was again elected President, but from the time of his transfer to Penang in the following year as Resident Councillor, he ceased to take an active part in the work of the Society. Since his retirement in 1897 Mr. Skinner was engaged in writing a History of the Straits Settlements.

C. W. S. K.

Singapore, 17th August, 1901.

Hugh Fort

STRAITS BRANCH
ROYAL ASIATIC SOCIETY

[No. 37]

JOURNAL

January, 1902

Agents of the Society:

London and America ... ... Trübner & Co
Paris ... ... Ernest Leroux & Co.
Germany ... ... Otto Harrassowitz, Leipzig

[No. 37]

JOURNAL

of the

Straits Branch

of the

Royal Asiatic Society

JANUARY 1902

Agencies of the Societies.

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1902.

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List of Members for 1902.

ANTHONISZ, J. O.	Singapore.
BAMPFYLDE, Hon'ble C. A.	Kuching, Sarawak.
BANKS, J. E.	U. S. A. Life Member.
BARKER, Dr. A. J. G.	Sarawak.
BARNARD, B. H. F.	Selangor.
BARNES, W. D.	Penang.
BICKNELL, W. A.	Penang.
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BIRCH, Hon. J. K.	Penang.
BISHOP, J. E.	Pekan, Pahang.
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BLAND, Hon. R. N.	Malacca.
BOURKE, H. WALTER.	Puket, Siam. Life Member.
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BROCKMAN, E. L.	Singapore.
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BRYANT, A. T.	Penang.
BUCKLEY, C. B.	Singapore.
BURGESS, P. J.	Singapore.
BUTLER, A. L.	Kartoum, Egypt.
CAMUS, M. de	Singapore.
CERRUTI, G. B.	Tapah, Perak.
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DICKSON, E. A.	Kwala Langat, Selangor.
DRIVER, JAMES	Kwala Lumpor, Selangor.
DUNKERLEY, Rev. W. H. C., M.A.	Singapore.
EDGAR, Dr. P. G.	Ipoh, Perak.
EDMONDS, R. C.	Jugra, Selangor.
EGERTON, WALTER, C.M.G.	Penang.
ELCUM, J. B.	Singapore.
ESCHKE, H. H.	Singapore.
EVERETT, H. H.	Santubong, Sarawak.
FLEMING, T. C.	Pekan, Pahang.
FLOWER, S. S.	Cairo, Egypt. Life Member.
FORT, HUGH	Singapore.
FREER, Dr. G. D.	Penang.
GERINI, Lt. Col. G. E.	Siam. Life Member.
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GRAHAM, JAMES	Scotland.
HAFFENDEN, JOHN	Singapore.
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HANITSCH, Dr. R.	Singapore.
HELLIER, MAURICE	Singapore.
HERVEY, D. F. A., C.M.G.	Aldeburgh. Life Member.
HILL, Hon. E. C.	Singapore.
HOSE, Rt. Rev. BISHOP G. F., M.A., D.D.	S'pore. Hon. Member.
HOSE, Dr. CHARLES	Baram, Sarawak.
HOSE, E. S.	Taiping, Perak.
HOYNCK van PAPENDRECHT, P.C.	Rotterdam, Holland.
HULLETT, R. W., M.A., F.L.S.	Singapore.
JOAQUIM, J. P., F.R.G.S.	Singapore.
JOHNSTON, L. A. M.	Butterworth, P. W.

KEHDING, Dr. Germany.
KER, J. CAMPBELL Johore Bahru.
KLOSS, C. BODEN Singapore.
KNIGHT, ARTHUR Singapore.
KNOCKER, FRED. W. Ulu Beranang, Negri Sembilan.
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LIM BOON KENG, Hon. Dr. Singapore.
LUERING, Rev. Dr. H. L. E. Ipoh, Perak.
LYONS, Rev. ERNEST Singapore.

MACHADO, A. D. Batu Pahat, Johore.
MACLAREN, J. W. B. Singapore.
MARRIOTT, H. Singapore.
MASON, J. S. Raub, Pahang.
MCCAUSLAND, C. F. Kwala Lumpor, Selangor.
MELDRUM, Dato JAMES. Johore.
MEREWETHER, E. M. Malta.

NANSON, W., B.A., F.S.A. Singapore.
NAPIER, Hon. W. J., D.C.L. Singapore.
NORMAN, HENRY Kwala Lipis, Pahang.

O'SULLIVAN, A. W. S. Singapore.

PEARS, FRANCIS Muar.
PERAK Government Museum Taiping, Perak.
PERHAM, The Ven'ble Archdeacon England. Hon. Member.
PUSTAU, R. von Singapore.

RANKIN, H. F. Amoy.
RIDLEY, H. N., M.A., F.L.S. Singapore.
ROBERTS, J. A., M.A. Singapore.

ROBERTS, B. G. North Raub, Pahang.
RODGER, J. P., C.M.G. Taiping, Perak.
ROSTADOS, E. Bundi, Trengganu.
ROWLAND, W. R. Negri Sembilan.

SARAWAK, H. H. The Rajah of, G.C.M.G. Sarawak. Hon. M'ber.
SARAWAK, H. H. The Ranee of Sarawak.
SATOW, Sir E. M., K.C.M.G. Peking, China. Hon. Member.
SAUNDERS, C. J. Singapore.
SEAH LIANG SEAH Singapore.
SEAH SONG SEAH Singapore.
SHELFORD, R. Sarawak.
SHELFORD, W. H. Singapore.
SHELLABEAR, Rev. W. G. Singapore.
SKEAT, W. W. London.
SMITH, Sir CECIL C., G.C.M.G. London. Hon. Member.
SOHST, THEO. Singapore.
ST. CLAIR, W. G. Singapore.
STRINGER, Hon. CHARLES Singapore.
SUGARS, J. C. Telok Anson, Perak.

TATLOCK, J. H. Ipoh, Perak.

VAN BEUNINGEN VON HELSDINGER, Dr. R.
Tandjong Pandan, Billiton.
VERMONT, Hon. J. M., C.M.G. Province Wellesley.

WALKER, Lt. Col. R.S.F., C.M.G. Kwala Lumpor, Selangor.
WALTER, W. G. C. Klang, Selangor.
WATERSTRADT, J. Ternate, Dutch East Indies.
WATKINS, A. J. W. Kwala Lumpor, Selangor.
WEST, Rev. BENJ. FRANKLIN Singapore.
WICKETT, FRED., M.I.C.E. Lahat, Perak.
WISE, D. H. Pekan, Pahang.
WOOD, C. G. Batu Gajah, Perak.

PROCEEDINGS

of the

Annual General Meeting

The Annual General Meeting of the Royal Asiatic Society was held on the 12th of February, 1902.

There were present:—Right Reverend BISHOP HOSE, Hon'ble C. W. S. KYNNERSLEY, Rev. W. H. C. DUNKERLEY, Rev. W. G. SHELLABEAR, Rev. Dr. B. F. WEST, Messrs. A. W. O'SULLIVAN, H. H. ESCHKE, LIM BOON KENG, C. J. SAUNDERS, A. KNIGHT, M. HELLIER, P. J. BURGESS.

The minutes of the last meeting were read and confirmed.

The Right Reverend BISHOP HOSE proposed that His Excellency SIR FRANK SWETTENHAM should be elected Patron of the Society. This was seconded by the Hon. C. W. S. KYNNERSLEY and carried unanimously.

The elections of members who had joined the Society during the previous year were confirmed.

The Annual Report of the Council was read and its adoption carried, on the proposition of Mr. H. Eschke seconded by Mr. Saunders.

The Treasurer's Report audited by Mr. Knight was read, and the Rev. W. H. C. Dunkerley proposed its adoption, which was seconded by Mr. A. W. O'Sullivan and carried.

Mr. Shellabear proposed that the Council be requested to take steps during the year for the promotion of the study of Malay literature and to expend a portion of the funds in hand for that purpose. This was seconded by Mr. A. W. O'Sullivan.

Mr. Eschke proposed to add as an amendment by collecting and publishing manuscripts of value. The amendment was seconded by Dr. Lim Boon Keng and carried.

The Council and Officers for the following year were then elected, viz :—

President: The Right Rev. BISHOP HOSE.

Vice President for Singapore: Hon. W. R. COLLYER.

Vice President for Penang: DR. BROWN.

Hon. Secretary: H. N. RIDLEY, ESQ.

Hon. Treasurer: DR. HANITSCH.

Councillors elected by ballot were:—H. Eschke, Esq., A. W. O'Sullivan, Esq., A. Knight, Esq., Lim Boon Keng, Esq., P. J. Burgess, Esq.

Notes of thanks were then proposed to the President, Secretary, Treasurer, and Auditor.

Annual Report for 1901.

The Council are gratified to be able to state that the financial condition of the Society continues to be very favourable.

The following new members have been elected since the last general annual meeting :—

MR. R. A. J. BIDWELL	MR. A. W. LERMIT
DR. P. GALISTAN EDGAR	REV. E. S. LYONS
Mr. J. B. ELCUM	MR. J. A. ROBERTS, M. A.
MR. M. HELLIER	MR. J. H. TATLOCK
MR. F. W. KNOCKER	MR. WATERSTRADT
MR. G. M. LAIDLAW	MR. F. WICKETT

One journal (No. 36) has been published during the year, and material for No. 37 is in the printer's hands.

A number of journals and pamphlets from various other societies have been received during the year and added to the library of the society.

It is to be greatly regretted that more material for publication is not available in spite of the large number of members of the society. This deficiency is particularly noticeable in the absence of contributions of short notes of features and occurrences of interest which must be frequent in and around the Malay Peninsula.

A statement of accounts of the Treasurer is appended.

Honorary Treasurer's Cash Account for the year ending 31st Dec., 1901.

Dr. *Cr.*

1901		$	c.	1901		$	c.
	To Balance Current Account Chartered Bank ...	59	01		By American Mission Press printing Journal No. 35.	187	61
	,, Do. Do. Mercantile Bank	895	09		,, do. No. 36.	217	85
	,, Fixed Deposit Mercantile Bank	1035	30		,, Mounting Maps... ...	46	...
	,, Subscriptions for 1897 ...	5	...		,, Clerk's Salary	60	...
	,, do. ,, 1898 ...	5	...		,, Collector's Fee	10	...
	,, do. ,, 1899 ...	10	...		,, Printing, Postage, Bank ,, Discount on Foreign Notes, &c.	80	31
	,, do. ,, 1900 ...	75	...		,, Fixed Deposit, Mercantile Bank	1053	41
	,, do. ,, 1901 ...	440	...		,, Fixed Deposit, Mercantile Bank	500	...
	,, do. ,, 1902 ...	15	...		,, Balance in Chartered Bank	58	95
	,, Sale of Journals &c. ...	187	57		,, Balance Mercantile Bank	1000	77
	,, Sale of Maps	453	18		,, Cash in hand	6	...
	,, Sundry Recoveries ...	4	82			3220	90
	,, Interest on Bank Balance	35	93				
		3220	90				

M. HELLIER,

Honorary Treasurer, Straits Branch, Royal Asiatic Society.

Kelantan and my trip to Gunong Tahan.

By Mr. John Waterstradt.

Gunong Tahan, the supposed highest mountain in the Malay Peninsula had always a great attraction for me, ever since I had ascended the Kina Balu mountain in Borneo, situated in about the same latitude, as I wanted to compare the fauna of the former with that of the latter. However it was not until ten years after my first ascent of Kina Balu, that I found an opportunity of undertaking the journey to Gunong Tahan. My plans for the trip had been laid long beforehand, and I had decided to take the Kelantan route in preference to that of Pahang, as several expeditions which had tried to reach the mountain by the latter route had failed, mostly I believe owing to the difficulty of obtaining food supplies. I decided to abandon everything in the shape of comforts for this trip, taking with me only things that were absolutely necessary, and utilising all the coolies I could get for carrying provisions. Leaving Singapore towards the end of April in a small coasting steamer, I arrived in Kelantan four days later, the steamer calling at most of the ports along the coast, on the way up. The mouth of the Kelantan river is on the map given as farther south than it really is, but that entrance has long ago sanded up, and ships have now to enter by the northern entrance. Lately a fairly good light house has been erected by the Siamese, and a Siamese gunboat is always stationed there. Owing to the shallowness of the river all steamers are obliged to anchor just inside the bar, behind a sand spit that affords good shelter; and passengers and cargo are taken up to Kota Bahru in small native boats.

Kota Bahru, the capital of Kelantan, is situated about eight miles from the mouth of the river, on the right bank of the same, and contains according to the Rajah's account, about 20,000 inhabitants. The town consists really of two villages:

one of them called Taratchin, is divided from the other by a branch of the river, and is chiefly inhabited by Chinese. Formerly nearly all the business was done in this place, but the ever changing river silted up just there, and now nearly all business is transacted in the native town, a little farther up river, where there is deep water close in to the bank. The Rajah at the instigation of the Siamese is now making fairly good roads in every direction through the town. Just before I arrived, there had been a tremendous fire in the Chinese village, half of which was burned down one night, when most of the inhabitants were attending a fête given by the Rajah on account of his marriage with the Rajah of Singora's daughter; and a number of young children who were left alone in the houses were burnt to death. The Rajah used this opportunity to make a broad street right through the whole village, where there formerly had been only narrow crooked paths. During my stay in Kota Bahru, before going up stream, I was the guest of the Siamese Commissioner and was introduced by him to the Rajah, who immediately offered to provide me with boats and men for the trip up the river. The present Rajah is a young man of about thirty-five years, and owes his position to the Siamese, who on the death of the old Rajah installed him as such, in preference to the rightful heir, on the supposition that he would conform to their wishes. So far the Siamese have interfered very little in the internal affairs of Kelantan, keeping only a Commissioner there, who acts as a sort of adviser to the Rajah, and a small garrison; but signs are not wanting that they want to get a more direct control of affairs, and probably before very long Kelantan will be to all purposes, except in name, a Siamese province. The Rajah's palace is just in the middle of the town, and every forenoon from about 10 to 1 o'clock he holds his court there, afterwards going for a drive out to his villa, that he has built in a garden outside the town. I visited him there one afternoon, and found workmen everywhere building cages for wild animals, and the Rajah told me he intended to start a small Zoological Garden there.

It was the dry season when I arrived in Kota Bahru and the heat was very intense, the thermometer seldom going below 100° in the daytime and 90° at night. The Kelantan river,

which in the rainy season often overflows its banks, was now nearly dried up, so we had great difficulty in getting up stream with the three large house boats that the Rajah supplied for me and my men. The river is about 250 yards wide at Kota Bahru, and continues to be about the same width up to Sungie Lebeh, which river falls into the Kelantan river from the right, thirty to forty miles up stream. The banks of the river up to Quala Lebeh are pretty thickly populated, and are lined with coconut groves most of the way. It took us four days to reach Quala Lebeh, as we had only one gang of men to pole the boats, and consequently had to stop at night. I decided to try first to get to Gunang Tahan by the Lebeh river, as that, according to my idea, was the nearest way, and we therefore proceeded up that river for another day, when the rapids were reached, and we had to stop, as it was impossible to get our heavy boats over them.

On the way up the river we had passed a number of bamboo rafts, with small huts built on them, either moored along the banks, or drifting slowly down stream. They were inhabited by Malays from Kota Bahru, who go up stream to trade or to plant paddy, and prefer living on the river rather than ashore. When therefore a suitable place is found, these people make a raft and build a hut thereon, wherein they live until they have traded away or exchanged all their goods for jungle produce, whereon they drift down stream with their barter or their paddy.

Just below the rapids a number of these rafts were moored, forming a floating village on the river; and as I had to wait there some days before I could get smaller boats to take me up river one of these huts was given up to me, and I discharged the three large boats and sent them back to Kota Bahru, as they were of no further use to me. I had to wait a week at this place before I got smaller boats and other men, to take me further up river, and in the meantime, I and my collectors that I had brought with me from Borneo, did a little collecting; but the species found there were of little interest being the same as are found everywhere in the low land of the Peninsula. At last we got away again in three smaller boats, all heavily loaded; and for the next few days we had a very rough

job pulling the boats over the rapids, of which the river was full. We had to stop at each village we passed on the way, to get fresh boatmen, as none of these would go any farther with me than to the next village, and this continual stopping and changing men delayed us a good deal. On the third day Quala Aring was reached; and as it was my intention to go up that river, we had again to wait to procure still smaller boats, but we soon managed to get six of these and plenty of men, so were able to proceed the next day. It was at Quala Aring that the Skeat expedition stopped, while Mr. Skeat went across to Pahang and tried to get up the Tahan from that side, but failed, I believe owing to want of provisions, the same as Messrs. Ridley and Davidson before him. The river Aring is of course much smaller than the Lebeh, and is full of rapids, but it was not very difficult to get the boats over them. I counted them several times, and found that on an average we passed over about ten of them an hour the whole way up. There are very few people living on this river, there being only one village of any size, about three days up stream, so I had not to stop on the way to change men, as those from the Quala took me right up to that village. The village is called Buntie, and is the last inhabited place in Kelantan, so I had to halt there to get together coolies and to find out the best way of ascending the mountain, of which I got a good view away to the southward on clear days. The natives there called it Gunong Siam. There is plenty of game to be had round the village, as there are lots of old clearings, where deer and pigs are plentiful, and tigers are also found in numbers. On the very first day I stayed there, while out collecting butterflies close to the house, I heard a noise in the thick low jungle close by, resembling the purring of a cat, only louder, but took no notice of this until a couple of Malays came running after me telling me to come back at once, as there was a tiger quite close by. As I had then about forty Malays with me I wanted them to go into the jungle and drive the tiger out into the open, a distance of not more than twenty or thirty yards, where I could get a shot at him; but though they were all armed with spears and I offered them some of my guns also, they were afraid of doing so, and I did not get a sight of the brute though he stayed in that

thicket not 150 yards from the house the whole day. On my return from the mountain however I got him, as he had just then killed a buffalo, and came back in the afternoon to have another meal.

About a day's journey to the westward of the village at another tributary to the Lebeh river, called Sungei Aring, was situated a small encampment of Sakais and as I wanted these men to show me the way to the mountain, I got the headman of the village to send word to them to join me at once. The whole tribe of Sakais living there are considered to be the property of a Malay living half way up the Aring; and this man brought all the full grown men to me a couple of days later. There is only this one settlement of Sakais in this part of the country, whereas there are said to be thousands of them living up the Ulu Kelantan river. Those that I had with me (ten or eleven men), were all remarkably strong and healthy looking, and were not so much troubled by skin diseases as is usually the case with the Sakais. After getting all the information I could about the Gunong Tahan or Gunong Siam, I decided to follow the Aring as far as it was possible to go with the native boats, and then strike across country straight for it. We therefore loaded the provisions in eight or nine small dug-outs, and went up stream with these, most of the coolies following us along the bank. After going on in this way for a couple of days I found it impossible to get any farther with the boats, as the river was getting too small, and the boats had continually to be hauled over trees that had fallen across the river and barred the passage. We therefore stopped at a small tributary called Sungei Tamu, and while my Malays made everything ready for the march inland, I sent the Sakais in the jungle to cut a path for us along the bank of the Tamu, which I had decided to follow seeing that it seemed to come from the direction that I wanted to take. The Sakais came back in the evening of the same day and reported having found an elephant track, which they had followed up a high ridge, and they were of the opinion that by following this track we should reach the foot of the mountain. They had come up with the elephants about half way up the mountain, there being seven of them, but as there were no tuskers amongst them, they had not fired on them, and the elephants continued

their journey to the top of the ridge and then disappeared down the other side. We halted two days while the different packages were divided amongst the coolies. The rest of the provisions which we could not take with us were hoisted up in a high tree, for fear of the elephants getting at them, and well covered with mats to protect them against rain, and then we started. In the beginning we got on very well, the ground rising gently the whole time, but as we got higher up on the spur, walking became more difficult, and we had to catch hold of roots and branches to help us in getting up, and had it not been for the deep footprints made in the soil by the elephants it would have been nearly impossible for the coolies to get up with their heavy burdens. I reached the top of the ridge, which proved to be about 3500′ high, about noon, together with a few of my Borneo men and a couple of Sakais, and wanted to proceed along the comb of the ridge, which was running in the direction I wanted to take, but the Sakais insisted on our going down the slope on the other side, as they said we should find no water near the top; so I had to give in, and we went down about 1000′ till we came to a tiny stream, where I decided to camp for the night. I had not taken any tent with me, but my men soon made a shelter with some large palm leaves, some three feet broad and seven feet long, which we found growing in abundance in altitudes from 500′ up to 4500′. None of the other coolies reached our camp that night, and next morning we went farther down the slope till we reached a stream, which the Sakais declared to be the Sungei Tahan, and waited there until all the coolies had arrived. From the river bed we got a fine view of a mountain, that I judged to be about 5000′ high, standing straight up and looking very formidable and inaccessible with a magnificent waterfall near the top. The natives declared that this mountain, which was not more than 2 miles distant, was part of Gunong Tahan, the higher part of which was shut out from sight by the high ridges running parallel with the river. We followed up the river for some time, but it was very difficult climbing and when we had reached an altitude of 2500′ the coolies declared that they would not go any farther, so I had to make my camp there. Most of the coolies then returned to their villages; but I kept the Sakais and my collectors with

me, and with these I ascended to the top of the mountain that we had seen from the river. The ascent was however so difficult, that it was impossible to carry anything with us, and we had therefore to return to our old camp every night. Especially the last 500′ proved to be very difficult to negotiate, as there was a sheer wall of rock about 300′ in height, down which the Tahan river come thundering, forming the splendid waterfall that we had seen from the bottom, and which I christened the Lama Falls. After several failures we at last found a way to the top of the falls and were then confronted by two peaks, nearly inaccessible, and the river seemed to wind its way in between them. We tried to follow up the river, but soon had to stop, on account of huge boulders and deep pools, with sheer walls on each side, making it impossible for us to get through; so we had to give it up, and attempted instead to scale the least forbidding looking of the two peaks.

In this we succeeded at last, only to find however the top involved in thick mist, so that it was impossible to see anything and to ascertain whether we were really on a spur of the Tahan range or not. As it was impossible to stay up there for the night without any food or shelter, we had to return to our camp, my intention being to get up there again early the next day and have a good look at the surrounding country before the clouds commenced to gather round the mountain tops, as they always do in the afternoon. In the night however I got an attack of fever and was unable to walk for some days, so I sent my men up to try and find out the whereabouts of Gunong Tahan, and they returned with the information that the mountain that we were on was in no way connected with the Tahan, which they said they had seen a long way to the westward, but according to them it would be impossible to get up that mountain from that side, as we were separated from it by a deep chasm, which ran along for many miles, with sheer walls of rock on the other side, up which they declared it impossible for anybody to get. The Sakais stated that they had seen another river coming nearly from the top of the mountain, and this they took to be a branch of the Galas river, another tributary of the Kelantan river; and they strongly advised me to go back, and try to get up the mountain by that route. As they absolutely refused to

follow me when I wanted to try and get up from where we were, I had to give it up, though I myself believed it to be possible; and, as after events showed me, it proved to have been the easiest and nearest route to the top. However I made up my mind to return to Kota Bahru and get up another expedition up the Galas river; so I returned to the village Buntie with a few of the Sakais, leaving the rest of them together with my Malays and all our provisions on the mountain; as we had found a number of rare birds there, and I was desirous of getting some more of them. I told my men that they must try and find an easier way to Tahan, and if they succeeded in this they were to wait for me near the top of the mountain. I may as well mention here that some time after I left, my men did find a way up Gunong Tahan, and stayed there for some time waiting for me; but I never met them, as it took me a much longer time to get up the mountain by the Galas route than I expected, and so at last they returned down towards the coast by the same way as they got there. The trip back to Kota Bahru occupied ten days, and I had to wait there another month before I got new provisions and material up from Singapore for my next expedition. When these at last arrived a new start was made but this time I got rather a poor lot of boatmen, the Rajah having lent most of his best men to Messrs. Duff and Lathyen who went up stream just before me to prospect for gold. It therefore took me six days to get up to Quala Lebeh, and there I found the above gentlemen busy prospecting the river bed, having with them a great number of coolies. This time I went past Quala Lebeh, following the true Kelantan river, and in four days reached Quala Galas, where we were detained a short time, owing to the river being in flood. We passed several small tributaries on the way, most of them being uninhabited, being the Rajah's rattan preserves. Once in five to six years he farms each of these rivers out to some of the Chinese traders in Kota Bahru, who then collect all the rattans and other jungle produce, and after that nobody is allowed to touch anything for the next five to six years, thus giving the rattans a chance of growing to a fair size before they are again cut down. We then proceeded up the Galas, which a short distance from its Quala is only about 50 yards wide, and gets narrower farther up, and full of rapids. There

are a number of small villages on its banks, from which I obtained relays of boatmen, those I had with me from Kota Bahru having by this time all got fever, or were at least pretending to have. As we got farther up, the river got very shallow, and I had to leave the big boats behind, and go on in small dug-outs. We passed a few Chinamen on the way, washing gold, and they told me they could make about 75 cents a day, when working hard. At other places where the Chinamen were working farther inland, they had dammed up the river to obtain sufficient water, causing us a lot of trouble, as we had to unload the boats before we could haul them over these obstacles.

At last the village of Pulai was reached, and there I had to stop, as it was impossible to proceed any farther by boat. The village contains a couple of hundred inhabitants, nearly all Chinese, there being only a few Malay traders there, who occasionally come up from Kota Bahru and stay there a month or two, until they have have bartered all their goods away for gold. Formerly all the Chinese living there were gold miners, but now that all the gold-bearing sand in the river bed has been washed over and over again and the returns are getting less, many of them have settled down as agriculturists and have large paddy fields all round the village. Formerly there must have been a much larger Chinese population in these parts, as traces of very large alluvial workings are found up nearly all the small creeks, being now overgrown and covered with dense jungle. At present there are only a couple of Chinese Kongsis working on anything like a large scale, and I believe they are doing fairly well. Lode working has also been tried by the Malays, but though the ore obtained was of very good quality they soon gave it up, the work proving too hard for them. The formation of the country about there is mostly hard blue limestone which crops through everywhere, the hills in some places rising to a considerable height, mostly impossible to ascend owing to their steep or overhanging walls. All these limestone hills are full of caves and passages made by the water in bygone days, and in places some very curious dripstones* are formed, the best specimen of which is found in a cave close to the village, about

*Stalagmites?

100′ up in a hill, and the Chinese, on account of this bearing some resemblance to one of their deities, formerly used it as a temple, and there is still an old rotten table up there with some candlesticks full of burned joss sticks, and remains of half-burned paper. It has however not been used for a long time, and the ladders that led up to it have long since rotted away, so I had to climb the face of the rock to get up; but I should not recommend anybody to try that experiment, unless he is a good climber. My men that were with me looked at it, and decided that it was safer to stop at the bottom; so I let them remain there, while I went up with a young Malay who had been up there once before. The Chinese are rather afraid to go near these limestone hills as they say that the tigers use the caves as sleeping apartments, and this is very likely, though I never found traces of them in any of the many caves that I visited, whereas I found plenty of traces of elephants in the larger caves that were level with the ground, and the Malays told me that these animals often made them their homes for months at a time. The floors of the caves were often strewn with the remains of dead and broken snail-shells, which had fallen down from the roof in the dry season, when most of the snails die. However I also found a number of live shells hidden away in the dark and moist crevices of the rock, among them several new and rare species. Most of the snails have a great liking for limestone rocks, and the collector will find more specimens in one hour on these rocks than in the jungle for one month.

From the top of some of these cliffs I got a good view of the surrounding country, but I looked in vain for a mountain that looked anything like 10,000′ high. Towards the East were two mountain ranges which I supposed to be about 6,000′ high, the natives calling the most northern Gunong Siam, and the other Tulang Rabong. Gunong Siam appeared to be slightly higher than the other, and the Malays stated that this was the same mountain that the Malays of Pahang called Gunong Tahan. I did not believe this possible, but seeing that the people on the Aring river also called Tahan the Gunong Siam, I decided to ascend the mountain to make sure of it. I had great difficulty in obtaining any coolies to go with me owing to the rivalry

between two of the native chiefs, and had at last to be contented with eight Pahang Malays; so we were only able to carry provisions with us for ten days. The first part of the road lay through fairly flat country and we had no difficulty in cutting a path through,—going northeast by the compass, for none of the Malays had been in that part of the country before. At night we camped on the banks of a fairly large river, which proved to be the Kateh, a tributary of the Galas; and next day we followed this up till we got into the hills, passing an old deserted mining camp on the way. We only had one glimpse of the mountain on our journey, though we climbed several hills to obtain a good view, but always found other hills in front of us obstructing the view towards the mountain. That night we also camped on the banks of the river, which here reaches an altitude of 800′ above sea level, the men making a rude shelter of palm leaves, under which we slept undisturbed, though we that day had come across several tracks of tigers. Next day we started up a ridge which we thought sprung from the mountain, but when we at last reached the top of it 2500′ up, it proved to be separated from the mountain by another branch of the Kateh river, and so we had to climb down again on the other side. The descent proved to be very difficult, especially the last 300′ to 400′, and I have no idea how the coolies came down, as each man chose his own way over the face of the cliffs, where overhanging boughs and roots afforded the only support for lowering oneself. All got down without any mishap, and we all collected together in the river bed, which was only about 20′ wide, and commenced to look for a way out of the cañon or gully that we had got into, and this we found to be no easy task. It was impossible to get up on the other side of the stream, the walls of rock there being even more forbidding looking than those we had descended; and to get up by following the stream was equally impossible as there was a waterfall about 100′ in height in front of us, from which the water came rushing down with a deafening noise. There was therefore no alternative left us but to go down stream; and this we did for a short distance, scrambling over huge boulders, wading through deep pools of water, and clinging to narrow ledges of rock where the pools were too deep to wade through; but at last we

got to a place where it was impossible to pass through. the bed of the stream being only about four feet wide, and through this narrow passage the water came rushing down over boulders and falls, making it impossible for any living thing to get through. Luckily we found a place where the rocks were less precipitous and we managed to get up these, following the direction of the river till we at last got on more even ground; and as we were by this time all thoroughly done up, we decided to camp on a small level piece of ground, that was situated just where another small mountain stream joined the one we had been following. There was no doubt that this stream came right up from the mountain; so next day we followed it until we reached a ridge. This we commenced to ascend, finding it rather difficult at first to cut a path through the jungle, but when we got farther up we found a fairly good track, evidently made by wild beasts, and the ascent was rather easy after that for the next 2000 feet. We passed a number of the argus pheasants' sporting places, on the way up, and heard their shrill cries all round, but never saw any, though I often tried to get near them and have a shot; but they were very shy and cleared away before I could see them. As we got higher and higher up, the path was evidently less used by animals, and got overgrown, until it was completely lost; and we then had to cut our way through low but very dense and thorny jungle, full of a kind of thin rattans, the leaves of which with their hundreds of bent thorns proved a great hindrance to our progress, as they caught hold of our clothes everywhere, and as soon as we had got loose from one of the leaves, we were hooked on to by half a dozen others. About two o'clock in the afternoon we came out on a small plateau at a height of about 4000', and from there we had a good look at the top of the mountain which was not very far off; but as at the rate that we were travelling, it would not be possible to reach it that day, we left the plateau, and followed the slope of the ridge until we reached a dried-up water course; and finding a little water in a hollow, we decided to camp there. There were no large palm leaves to be found thereabout, and so darkness and rain came upon us before we had finished our shelter, and we passed a miserable night, wet and shivering with cold, as the rain had put our fires out. Next morning we had

a hurried breakfast, being anxious to reach the top as early as possible before the clouds commenced to gather round it. The rain had made everything nasty and slippery, and as we had to get up the steep slope, it took us some considerable time before we again got out on the ridge, and both I and the coolies had some bad falls and got a good deal bruised. After getting out on the ridge the ascent was again easier, going up very gradually, but the rattan jungle still gave us lots of trouble, and as I had to go ahead myself and clear the way I got the skin of my face and hands torn a good deal, and smeared all over with blood. At last we reached the top of the mountain, which proved to be only 5500′ high, so I was quite certain that it could not be Gunong Tahan.

We had a splendid view from there toward the north across immense stretches of low and flat land,—Gunong Siam being evidently the last peak to the northward of that range of mountains in the middle of the Peninsula, whereof Gunong Tahan forms a part. The mountains to the south and south-east were hidden from view, being enveloped in the clouds. The top of Gunong Siam is only a long and very narrow ridge, being in some places only four feet wide, and covered with thick brushwood. After the coolies had rested for an hour I sent them down another side of the mountain, which I thought would take us down to the Kateh river sooner, with orders to stop as soon as they found water and suitable camping ground. I remained on the top of the mountain together with one of the Malays, in the hope that the clouds would clear away and enable me to get a view of the other mountains. In this I was not disappointed, as the mist cleared during the afternoon, and I got a good view of the Tulang Rabong range to the south and south-east, from which we seemed to be separated by the river Kateh. This range is about the same height as Gunong Siam, and behind it, far away to the southeast, I now and then got a glimpse of a higher mountain the top of which was continually hidden by the clouds; and I felt certain that this must be Gunong Tahan, there being no other mountain in sight approaching the same height as that. I saw at once that it would be impossible to reach it by going straight from where we were, as we should have to cross ridge after ridge of Pulang Rabong to get there, and

after the experience that we had had of the Kateh ridges I thought it most probable that we should never get there that way. We could either go round to the north of Gunong Siam, and then due south till we reached the foot of the mountain (and this would certainly save us a lot of trouble as the country round that way seemed to be fairly flat), or else we could go to the southward of Tulang Rabong and then straight to Gunong Tahan. This route appeared to be the shortest from Pulai, and I selected it though I knew the country to the southwards to be very mountainous, and difficult to get through; but as I wanted to do a little collecting on the Tulang Rabang, this suited me the best. After being fully satisfied that it was really Gunong Tahan that we were looking at, we commenced our descent, a shower of rain hurrying us on, and we soon overtook the coolies, who had not yet found any suitable place for camping. It was already commencing to get dark, and we were threatened with heavy rain so we hurried on as fast as the ground would allow us to travel, and just before it got dark we found a place beside a small stream, with plenty of large palm leaves close by, so all hands were soon busy making a shelter; and just as the rain came pouring down we had got it ready, and could cook our dinner. The camp was at 4000′ so it was rather cold up there, and we had to keep a large fire burning the whole night; but still the Malays complained about the cold, and were glad when we started next morning for the valley. We expected to strike our old track from Pulai during that day, but somehow we missed it, and got into country unknown to us; so I decided to follow the Kateh down stream, until we reached the village which I knew existed close to its junction with the Galas. We reached the place late the next afternoon, and slept that night in a small Malay hut. Next day I got a couple of Malay guides, who took us back to Pulai where I arrived shortly after noon; but some of the poor coolies did not arrive till shortly before dark, being thoroughly done up, with their feet full of thorns and bleeding from innumerable leech bites.

We now remained some days in Pulai to recoup ourselves, during which time I tried hard to get some more coolies; but only succeeded in getting two more from a village down river

as none of the Chinese from Pulai would go with me into the jungle. It was now the beginning of September, and the rainy season was commencing, so we were likely to have a rather bad time of it during our journey. The night before we started on our second trip it rained very heavily, and in the morning all the jungle paths in the low land were transformed into small streams, and the rivers were all in flood. For half a day we followed a track which ran due south into Pahang, the borders of which are only one day's journey from Pulai; but coming across an old Chinese gold mine, all overgrown with jungle, we completely lost sight of the path, and after wasting some time trying to find it again I decided to cut a path myself, going in a more easterly direction as I was afraid we were getting too far south. After doing this for some time we came across another old disused path evidently leading to some other old workings, and this we followed till evening, when we camped at a small stream. Next day we reached a large limestone cliff, at least 500' high, very long but narrow, being in one place where a narrow passage ran right though it, not more than 20' wide, whereas it must have been several miles long, for I started to go round it, but after marching for one hour and seeing no sign of the end of it, I gave it up and returned. We found a small cave (Goa the Malays call them), and we camped in it for the night, the Malays however preferring to sleep outside, as a cold wind seemed to be coming down through some opening in the roof. I sent a couple of my best men out to try and scale the cliff and obtain a view of Tahan, which we had not yet seen on this journey; but they found it impossible to get up, the sides being everywhere perpendicular or overhanging, and there were no bushes or roots growing on the sides, to hold on by. The following day we struck a branch of the Kateh river, which ran in a southerly direction, and following it up we came to a deep pool full of fish; so I discharged a dynamite cartridge in the midst of them, and that night my Malays had a real feast, fresh fish being very scarce at Pulai, for there are none to be found in the Ulu Galas, where all the deep pools in the river have long since been filled up by the washings from the gold mines, leaving the fishes no place to breed or hide from their enemies. We then ascended a ridge running parallel with the

Tulang Rabong range, and reached a height of 2500′, but had to descend again on the other side, as a river had to be crossed which proved to be a branch of the Tenom, which again is a tributary of the large Pahang river. The descent was very steep and very slippery from the rain and just as we reached the river bed I slipped on a large boulder, and fell with great force against a large root, hurting my right side very much, and was unable to move for some time. I was afraid I should be unable to continue the journey, and we had to camp there that night, but next morning I felt much better and so we pushed on for another two days, when we struck another of the Pahang rivers, but whether this was another branch of the Tenom or whether it was the Kechau I was unable to determine. It rose near the top of Tulang Rabong, as I found out later by following it up very nearly to its source, about 5000′ up. We camped at the only level place that we could find, about 1500′ above sea level, but at night after a heavy rain we were nearly routed out of our camp by the river, which rose with startling suddenness and nearly flooded us out. The roar of the water rushing past us at a tremendous speed dashing against boulders and over falls was something not to be easily forgotten, and made sleep impossible that night. I decided to let most of my men remain at this place, while I went back to Pulai to obtain a fresh supply of provisions, but before doing so I ascended another range of hills that ran parallel with the river on the opposite side, and reached a hight of 4500′ from where I had a fine view of Gunong Tahan. I thought it would take us 4 to 5 days to reach the foot of it, and told my men to commence cutting a path up to it while I was away, at Pulai. I then went back, taking with me only two coolies, and walking hard for 2½ days we reached Pulai. It proved very difficult to obtain sufficient coolies at once, so I had to send 10 men off first, with provisions for my men, while the headman of Pulai sent for the Malays living farther down stream to come up and go with me. Twelve days were lost in waiting for them, and when they at last arrived there were only 15 of them instead of 25 that I wanted, but finding it useless to wait any longer I started off with these men, taking as much provisions with us as they could carry. These men came from the low land down river and

were not used to work in the mountains, so they very soon got tired, and I had continually to sit down and wait for them. We reached the camp of my Malays in four days, and it was my intention to push on the next day for the foot of Tahan; but my Pahang Malays, who had been out cutting part of the path while I had been away, had found this such hard work and such difficult climbing that they refused to go on. I argued with them a long time but it was no use, and promises or threats of punishment had equally little effect on them, and next morning they had disappeared, leaving behind them their parangs and spare clothing, which I had taken from them the previous evening, thinking thereby to prevent them from running away. When the Kelantan Malays saw this they also refused to go any farther, and the whole lot of them went back to Pulai leaving me only six men that I had with me from Kota Bahru, and a couple of Pahang men that joined me a few days later. Including myself and my Chinese boy we were nine in all, and to push on for Gunong Tahan with so few men would have been useless, as we should only have been able to carry enough provisions to take us to the foot of the mountain and back; whereas I wanted to stay some time near the top of the mountain to collect specimens. Therefore I decided to remain where we were, in the hope that the headman at Pulai would send the Kelantan Malays back to me, when he heard how I was situated; and this proved to be correct, the men returning to me at the end of twelve days. In the meantime we had done some collecting, and got a few rare birds and some orchids. My boy who had seen the Chinese at Pulai working gold amused himself by prospecting in the river bed; and one day he brought back to the camp a large piece of quartz which proved to be very rich, the gold being visible running right through it. The lode that it came from could not have been far off, as the mountain which the river sprang from was quite close, but we had no time to look for it.

It was my intention to take that piece of quartz back with me to Pulai on the return journey; but, as luck would have it, I never came back that way; and so it is still lying there waiting for somebody to come and pick it up. Having got the men back we then made another start, having first to climb the ridge

4500′ high in front of us, and this proved such hard work that the men could not walk any farther when we reached the top, and so we camped there, going down the other side next morning. There we again got into Kelantan territory, crossing a branch of the Galas river, and went up a long and high ridge forming the boundary between Pahang and Kelantan. It was right from the foot of Tulong Rabong to Gunong Tahan, and as it did not appear to be known to the Malays, we christened it Bukit Gajah on account of the number of elephants that were to be found there, the top of the ridge seeming to be their regular highway. We saw only female elephants, the males being very scarce in Kelantan, where everybody is allowed to shoot them, and before long these will be quite extinct. We kept along this ridge for four days, reaching a height of 4500′ and then commenced to descend, being then opposite to Gunong Tahan, and only separated from it by a river, which proved to be the Relai, a tributary of the Lebeh. None of the branches of the Galas come from the mountain, and it was evidently a great mistake my trying to get up from there, as the way up from the Relai or Aring rivers is much nearer and easier. The descent was difficult and would have been well nigh impossible if the elephants had not been there before us; but by following their tracks, and using the deep indents made by their huge feet, we managed to scramble down and reach the river, which is here 1200′ above sea level. Arriving there the Kelantan Malays left me and returned to their homes, and I was not sorry to lose them this time, as these men had enormous appetites and were eating up nearly all my provisions. The rest of us stayed a couple of days at the river, and then, having found a spur that seemed to go in the right direction, we commenced the ascent.

The first 1000′ were very difficult, and took us a long time to negotiate, but after that we got out on another spur and the ascent got much easier, there being a fairly good track made by wild beasts. Reaching a height of 4000′ we got into rattan jungle, which seems to grow on all the Kelantan mountains of any height; so we left the comb of the spur and went down the side until we found water, where we then camped; but could not find any level place for our shelter, and had to build it on the side of the hill, and as it came on to rain

heavily towards evening we had a rather bad time of it that night, as the water came pouring down the hillside on the ground that we slept upon I, myself, was lying on a few raised sticks and was fairly well off; but the Malays had been too lazy to cut enough of these for themselves, and so had to sleep on the ground on a few leaves, with the water runing in streams under them. Next morning on starting we soon got into rattan jungle again, and owing to the difficulty of getting through this, we only got up another 1000′ that day, camping at night by the side of a small stream. As this seemed to be a likely place for collecting purposes, I decided to make it my headquarters for the time that we stayed on the mountains. It took us two more days to cut a path to the top of the mountain, the jungle being very dense and difficult to cut through. Every afternoon it rained heavily, so that we always got drenched before we could get back to camp; and as the path we had cut was only a very poor affair, we had to go bent double half of the way on account of overhanging branches, and it was very annoying to feel the water running from my cap down my neck, finding its way down my back, and finally coming out of my shoes. In the camp it was very cheerless too, in the evening, there being only very few leaves suitable for making a roof in the neighbourhood and consequently our shelter was very small and badly made. From the top of the mountain, we saw the village on the Aring river where I had stayed on my first trip, and as that appeared to be the only place within measurable distance from which we could obtain any food, I decided to send some of my men there to get a fresh supply of provisions, as we were running short of these. I told the men to follow the Relai river, when they reached the foot of the mountain, until they were clear of the hills, and then strike across country till they reached the Aring, when they were to follow that stream till the village was reached. There they were to buy provisions and get some coolies to carry them back to us. I sent three men, and when they left we had only provisions left us for another ten days; but by giving out short rations I hoped to get them to last until the men could come back from the village. The rest of us stayed up there collecting, and I found the best collecting ground to be between 5000′ to 7000′, but we also went several times right up

to the top when the weather was fine, in the hope of finding traces of the men that I left on my first trip; but could find none where we were, which, considering the immense size of the mountain, was not at all strange, as half a dozen different parties might have been on the mountain, without seeing each other. Far away we could see a large black patch that looked as if the low jungle had been burned away; but it was too far for us to attempt to reach it, as we should not have been able to do much collecting on the way, and I wanted to get together as large a collection as possible before our provisions gave out. Later on, I found out that it really was a piece of jungle that my men had burned down to attract our attention, but they had already left the mountain two months before we reached it. The mountain seemed really to consist of three separate ranges running parallel from about east to west, connected with each other at their highest points by a number of peaks, the one in the middle being the highest. In the ravines between the different ranges the following rivers had their sources, as far as I was able to judge with the help of my Pahang Malays:—towards the Kelantan side the river Relai and two branches of the Aring: towards the Pahang side the rivers Kechau, Tahan, and perhaps also another branch of the Tembeling,—as I am not sure that the river which we struck on my first trip was not a branch of that river, and not the Tahan as the Sakais stated. I found that all the branches of these rivers which sprung from anywhere near the top of the mountain, had very discoloured water, something like the water found in stagnant swamps; whereas the streams that came from an altitude of less than 4000′ had beautifully clear water; but what might be the reason of this I did not find out. Nearly the whole of the mountain consists of white quartz. From my own experience on the Tahan or Tembeling river, and from what I saw from the top, I should say that it will be very difficult to get up from the Pahang side, as the mountain on that side is very precipitous (probably deriving its name of Tahan on that account) and provisions have to be carried a much greater distance than from the Kelantan side. I only saw one village on the Pahang side, lying beside a huge limestone cliff that somewhat resembled the shape of an elephant; but none of my men could give me any

information as to the name of the river by which it was situated. If anybody wants to try and get up from the Pahang side I would recommend him to start from that village. There was a very grand view from the top, especially very early in the morning, when the mist covered all the low-lying land, making it resemble a lake of snow; and so low did the mist keep to the ground that the top of some of the tall jungle trees could be seen, looking like masts of sunken ships, and the smaller mountains stood out dark and sombre like islands in this beautiful lake. Later on in the day the mist would gradually rise and come rolling up the mountain side, with the dark clouds gathering fast near the top, and in the afternoon and evening the rain would come down in torrents. The trees and rocks were all covered with masses of long moss in which the rain kept hanging, so that it was impossible to move about without getting wet; and we had to go about day after day in wet clothes, with wind and rain blowing in on us at night. Besides which my Malays suffered much from the cold at night, when the temperature often went down to 50°.

Altogether I stayed eighteen days near the top of the mountain, and I got a very good collection of birds and some orchids; but I was only able to take a small quantity of the latter, as transporting a large number of them to the coast would have been impossible with the few men that I had. Of mammals we only got very few, and the same was the case with insects, of which I had hoped to get a lot; but with the wet and miserable weather that we had, all the insects that we saw flew very high, and even if they had come down, it would have been nearly impossible to chase and catch them in the thick low brushwood that covered the whole of the upper part of the mountain.

For the last few days that we stayed up there we only got half rations, as I was very loath to go down, hoping that the three men would return from the village in time with the provisions; when it was my intention to remain up there for another fourteen days. But when the last grain of rice and all the tinned provisions were finished, we had to start on the way down, taking with us all my collections except the orchids, which I was forced to leave behind as we could not carry them with us. I expected to find the men with the provisions at the foot of the mountain,

but on arriving there we found no sign of them. However I had left there four tins of salmon and two pounds of biscuits when we went up the mountain, and we now made a scanty meal of half of these, reserving the other half for next day. At night we discussed what was to be done, and as all the Malays wanted to make for the nearest village to obtain food there, I gave in; though I would rather have remained at the foot of the mountain and waited for the return of the three men, living on the mountain on such game as we could shoot and snare. Early next morning we started, leaving most of my things behind in the camp, taking with us only a blanket each, and my collection of birds. My Malays wanted me to leave the latter behind to enable us to travel quicker, but I was afraid the skins would be spoiled before we could return for them, and so I made the men carry them along. Following the Relai river we soon came past the mountain, and as the three men who had gone before us had made a track for us we got on rather quickly. A couple of hours walking brought us to a shelter where these men had camped, and beyond this were two tracks, so it was evident the men had gone wrong first, and finding this out, had returned to this place and struck out in another direction. We kept on following the river, but soon got into difficult country, with spurs from the mountains running right down to the river, so that we often had to cross the same, to escape having to climb over these hills, some of which were rather high and steep. Having to cross the river so often delayed us a good deal, as the river was in flood, the water coming tearing down with great force; and great care had to be taken in crossing over. The course of the river was very crooked indeed; but we had to keep to the banks and follow all its bends and windings, as we got into the hills as soon as we attempted to cut off some of the corners; and the Malays declared they were unable to do any climbing, as they had had so little food for the last few days. So on the whole I do not think we got very far that day. After rigging up a shelter for the night we fired a couple of dynamite cartridges in some pools in the rivers, but only got a few small fishes, that would scarcely have satisfied the hunger of one man, so I got the Malays to collect some young palm shoots, and we made a meal of them; but the Malays declared that they were

no good, saying there was absolutely no strength in them, and on the following days I could not get them to collect any. The next day we kept on following the river, hoping to find some bamboos, of which we then intended to make a raft and drift down stream until we reached the Sakai settlement which I knew existed there; but to our great disappointment there were none to be found in that part of the country, so we kept trudging along, now on this, and now on that side of the river, the Malays complaining very much, and getting more disheartened the farther we went. I tried my best to cheer them up and get them to hurry on, but finding this useless, I left them and went on by myself till some time in the afternoon; when having found a suitable place for camping I sat down and waited for them. When they at last arrived I had great difficulty in getting them to collect leaves for a shelter, as none of the large kind of palm leaves were to be found in the vicinity, and the men preferred to sleep in the open, rather than to take the trouble of making a shelter of the smaller leaves found there. However I insisted on having one built, and lucky it was that I did so, as the rain came pouring down as soon as it was finished, and this lasted half the night, so we should have been in a sorry plight had we had no roof over us. While the men made the shelter I fired another charge of dynamite in a pool, and this time I was more successful, getting a number of good-sized fishes. So we had enough for a fairly good meal that night and for another the next morning before we started, that being the last food we tasted before we reached the village four days later. The river was now in flood to such an extent that it was dangerous to cross over, and as we could not keep continually on one side of it owing to the many hills, we decided to leave it altogether and strike across country until we reached the Aring, where we could make a raft and drift down to the village. Soon after we had left the river bank, we got to some hills, and seeing no chance of getting round by the foot of them, I started climbing up, the Malays of course protesting; but as I did not take any notice of that, they had to follow me, grumbling very much as they went, and sitting down very often to rest. My Chinese boy proved to be the best man of the lot and kept fairly close behind me, whereas the Malays were soon left far behind,

The hill proved to be very much higher and steeper than I expected, being in fact a mountain range 3,000′ high, dividing the Relai and Aring rivers, and the Malays were terribly done up when they at last reached the top. While I waited for them up there, I found a spur sloping gently down on the other side towards the north-east, and this we now followed right to the foot of the range, where we came across a small stream and camped close by it. We had no dinner that night, but there being still some tea left, we each had a cup of this before going to sleep. Following the stream next day we at last reached the Aring river, of which this was a tributary called Patei. It was about noon when we struck the Aring, and great was our joy on finding an old disused bamboo raft lying half way up on the banks. It had evidently been left there by some gutta hunters, and we soon had it in the water; luckily it was just big enough to hold us and our things, and after having cut some long poles to steer with, we started on our way down river.

Owing to the late heavy rains the river was in flood, and this was rather in our favour, as there would be no shallow places over which we otherwise would have had to haul the raft. We were travelling at a great rate of speed, it being impossible to stop the raft, but we did not anticipate any danger, as the Malays seemeed well able to steer us clear of all rocks and snags. The men were all in high glee, now, at the prospect of soon reaching the village, shouting, singing and chaffing each other, and in their own estimation they were evidently great heroes. So we went dashing down one rapid after the other, the men yelling derision at them all, when just as we came round a bend in the river we dashed into the stem of a huge tree that had fallen across the stream and effectually blocked the whole river. The thing happened so suddenly that it was impossible to do anything to prevent it; there was a great cracking of the bamboos and down went the raft, throwing us all out in the river. We all managed to scramble up on the tree, and as all our things were light we fished them up again, with the exception of my only pair of shoes, which I had taken off as a precaution when we started, in case we should have to swim for it. We also managed to haul the raft up over the tree, and

as the Malays thought that it would still hold together, we decided to go on with it. A great many of the bamboos had been split open by the collision, so the raft was not nearly as buoyant as it had been before, and could scarcely carry us all. Going down over the rapids now became very dangerous, as the water would come rolling in over the raft, pressing now this now that side under water, so that we had difficulty in balancing ourselves on it, and I was afraid the raft would go to pieces at any minute. So after we had had about one hour of this dangerous sport, I thought it better to stop and keep to the jungle. So we landed and made a shelter, but it was a very poor one, the Malays being now again very disheartened, did not work very willingly, and the rain coming on again we passed a really miserable night in our wet clothes, with wet blankets, and the rain dripping on us from above, and running in streams under the few leaves on which we had made our bed, and without a morsel of food. Next day we looked for bamboos with which to repair our raft, but not finding any, we had to abandon it and start on our weary tramp again. I went ahead myself cutting a path for the others, as they all had something to carry, and a pretty bad time I had of it with my bare feet; for as I had to keep looking ahead, I could not always see where I put my feet, and as a consequence I often trod on thorns and sharp sticks; besides which there were thousands of leeches about, which took a great fancy to my bare legs, where they stuck till they had had their fill, as I often felt too weary to stoop down and pick them off. We knew that there was a native path on one side of the river, running from the village into Pahang; and so we went inland away from the river, trying to find it, but coming to a range of hills the Malays declared themselves unable to get over them; so we had to go back to the river and follow its many bends and curves. Often we had to make great detours inland when we came to tributaries of the Aring, which were deep and swollen, so that we had to find fords before we could cross over them. We walked the whole day, camping just before it got dark, and started off again early next morning, having then good hopes of reaching the village that day, as I had found some landmarks that I knew. The Malays were however very slow, so I got

far ahead of them all, by myself, thinking they would hurry on when they found that they were being left so far behind. Towards three o'clock in the afternoon, just when I had decided to stop and await my men, I heard a shout down river, and on my answering, a boat appeared, that had been sent up from the village to meet us. Two of the Malays whom I thought were far behind me had lost my track altogether, and in looking for it they had come across the real path to the village, and this cheering them up, they had hurried on to the village, and hearing there that we had not yet arrived, they sent a boat up stream to meet us. I waited till my other men came up, and then we all went down the river to the village, arriving there just as a heavy thunderstorm came on, and very thankful were we to be under a good roof again. The day after, the three men that I had sent for provisions came back to the village with a long tale of woe. They had arrived there four or five days before us, having taken fourteen days to reach it, whereas it took us only seven days. They had then bought some provisions and started on their return journey to the mountain. When two days out, their Sakai coolies ran away and left them; and instead of pushing on by themselves as they ought to have done, they returned to the village to obtain other coolies. So it was well for us that we did not stop at the foot of the mountain and wait for them to come back.

After the men had rested for four or five days, I sent them back to the mountain, together with a number of Malays from the village, to fetch the orchids and my other things that we had left behind. The coolies were to bring these back to Buntie, whereas my own men would go from the mountain back to Pulai, where they would fetch those of my things that I had left there; and then going down by the Galas river, join me at Kota Bahru. It was impossible for me to return to the mountain myself, having no shoes, with my feet in a terrible state, swollen and torn, so that I was scarcely able to walk for days after. Had it been otherwise I should certainly have gone back and stayed up on the mountain for another month. Shortly after the men had left I got a bad attack of fever, which luckily did not last very long but left me very weak. I got a tiger while waiting for the return of the men, there seeming to be

plenty of them in that part of the country, as a report came to hand that two men had been eaten by them at Quala Aring just before. Going down stream we passed eight of them,—two old and a young one,—that were disporting themselves in the jungle close to the bank; but we were then just passing over a rapid, and travelling at a great speed, so that it was impossible to get a shot at them. After waiting ten days the coolies returned, and I started on the return journey to Kota Bahru, the trip down stream taking only eight days, as all the rivers were in flood. The men that I had left on my first trip upon the mountain I picked up on the way down, and they stated that they had succeeded in scaling one of the peaks of the Tahan, to the south of where I got up, and they brought a fairly good collection of skins back with them.

I had to wait about a week in Kota Bahru for my men from the Galas river, and then went back to Singapore, the whole trip taking seven months instead of three as I had reckoned on.

On the Hymenoptera collected by Mr. Robert Shelford at Sarawak, and on the Hymenoptera of the Sarawak Museum.

By P. Cameron, of New Mills, Derbyshire.

This paper is based on material collected at Sarawak, by Mr. Robert Shelford of Cambridge University and on the species in the Sarawak Museum brought home by Mr. Shelford for the purpose of being named. In addition to many known species the two collections contain many noteworthy undescribed genera and species. Since the publication of the paper by the late Mr. F. Smith (Jour. Linn. Soc. 1857) on the Hymenoptera collected by A. R. Wallace, very little has been written on the Bornean species, of which an immense number must still remain to be discovered in all the families, but more particularly among the smaller parasitic tribes—Ichneumonidæ, Braconidæ, Oxyura and Chalcididæ.

Tenthredinidæ.

Hylotoma pruinosa, sp. nov.

Coerulea, dense albo pruinosa; alis hyalinis, macula substigmatali fusca, ♀.

Long: 10 mm.

Hab. Sarawak, Borneo (Shelford).

Bright metallic blue densely covered with a white pile. The flagellum of the antennæ is black, the hinder tibiæ are broadly fuscous in the middle. The frontal fovea is deep, its sides oblique, it extends from the ocelli to shortly below the antennæ and is open above and below; the lateral furrows of the face are wide and deep; the labrum has a slight violet tinge. The vertex and the mesonotum have a slight purple tinge. The cloud on the fore wing occupies all the radial cellule; the upper half

of the first cubital and the greater part of the second, the third cellule being also slightly clouded; the second cubital cellule is distinctly longer at the top and bottom than the third; both the recurrent nervures are received shortly behind the middle of the cellules; the third transverse cubital nervure is angled outwardly above the middle and from the angle a short nervure issues; the upper and lower parts are straight and have an oblique slope. Abdomen coloured like the body; the apex of the first and the base laterally of the second segment are fuscous.

Allied to *H. janthina* Kl. and *H. maculipennis* Cam. Characteristic is the third transverse cubital nervure with its distinct nervure issuing from the angle above the middle.

EVANIIDÆ.

Evania borneana, sp. nov.

Nigra, capite thoraceque albopilosis; mesonoto sparse punctato; alis hyalinis, nervis nigris, ♂.

Long: 8 mm.

Hab. Sarawak (Shelford).

Antennæ longer than the body: the scape not dilated, narrow covered with a pale pile and as long as the following two joints united: the third and fourth joints are about equal in length. Head shining, smooth, almost impunctate, and covered with short white pubescence. Clypeus on the lower side bounded by a distinct curved furrow. On the front, outside the antennæ, is a narrow covered keel. The ocelli are in a curve; the hinder are separated from each other by a distinctly greater distance than they are from the eyes. There is a narrow, but distinct, keel between the antennæ. The mesonotum bears some large scattered punctures; the lateral furrows are distinct, deep and curved; there is a distinct, longitudinal furrow opposite the tegulæ. The scutellum has scattered punctures in four irregular rows. The median segment is regularly reticulated, except in the middle above, where it bears large, deep scattered punctures. The apex of the propleuræ is irregularly furrowed above. The upper part of the mesopleuræ is smooth; the lower regularly punctured. The breast is sparsely, and not very strongly, punctured. Wings clear hyaline: the

stigma and nervures black; the second transverse cubital nervure is obsolete; as is also the cubitus from the first transverse cubital nervure, which is interstitial with the recurrent.

The radial cellule is wide at the apex, through the radius having an oblique downward slope at the base; the apical abscissa is straight and oblique; the transverse basal nervure is almost interstitial. Legs black; the calcaria fuscous; the tibiæ without spines.

The metastemal forks are roundly curved. In Schlettere's Monograph (Ann. K. K. H. of Mus. Wien. 1889) this species would come near *E. appendigaster* Linn.

Megiseleus longicollis, sp. nov.

Black, the head yellowish-red; the four front legs tinged with rufous; the wings clear hyaline, the cubital and the transverse cubital nervures obliterated; the radius incomplete, ♀.

Long: 18; terebra 17-18 mm.

Hab. Sarawak, Borneo (Shelford).

Antennæ black: the basal three joints rufous. Head pale rufous, the orbits with a yellowish tinge; the anterior three tubercles are longer and sharper than the posterior; the front is coarsely, closely striated, obliquely above, transversely below; the vertex, behind the ocelli, is indistinctly furrowed in the middle, and closely obliquely striated on either side of it; the outer orbits are smooth. The prothorax has a brownish tinge; it is distinctly longer than the mesothorax, is deeply and widely incised at the base, the apex of the incision being rounded; the basal half is closely transversely striated, the apex is indistinctly striated; the dilated apex is smooth. Mesonotum coarsely, irregularly reticulated at the base; the apex is widely depressed in the middle, the raised sides are irregularly punctured. Scutellum smooth, its sides punctured. Mesopleuræ smooth; the base pilose. Median segment closely and regularly reticulated. The propleuræ in front of the tegulæ are strongly striated. The hinder coxæ are closely, but not strongly, striated; the coxal teeth are irregular and not very prominent. Wings clear hyaline; the nervures and stigma black; the basal abscissa of the radius is straight and oblique and forms an angle with the apical branch which is about equal in length to it; only the basal two

cellules are enclosed or complete, and the only apical nervure is the abbreviated radius.

A species easily known by the abbreviated and obsolete ulur nervures. The pronotum, too, is longer and narrower than it is with the other Oriental species.

Megiseleus maculifrons, sp. nov.

Black, the head red; the vertex and the upper part of the front black; the outer orbits dull red, narrowly yellowish on the inner side close to the eyes; there is a broad red mark immediately behind the ocelli; legs black, the four front tarsi dull testaceous, the basal joint of the hinder tarsi white; the wings hyaline with a slight fuscous tinge; the stigma and nervures black, ♂.

Long: 12 mm.

Hab. Baram District. Low country (Hose).

Antennæ black; the scape and pedicle rufous. Head rufous, the outer orbits and the face duller, more yellowish in tint; the vertex and the upper part of the front and the upper part of the outer orbits, black; behind the ocelli is a red mark, which is broader than long. The front tubercle is longer, more sharply pointed than the others and is directed backwards; the hinder pair are shorter and broader than the middle. The vertex is narrowly rugose in the middle, the sides are striated transversely. Mandibles rufous, black at the apex, the palpi black, paler towards the apex. Prothorax short; the pleuræ depressed in the middle.

BRACONIDÆ.

Iphiaulax, Foer.

The following three species of *Iphiaulax* are similarly coloured—luteous with the wings fuscous, yellow at the base. They may be separated as follows:

(*a*) The keel on the centre of second segment not reaching to the middle of the segment, not much longer than broad; *acragas*.

(*b*) The keel on the centre of the second segment reaching beyond the middle.

The keel reaching to the apex, of equal width throughout; the segment at its sides not depressed, nor strongly transversely striated; *astriochus.*

(*c*) The keel not reaching to the apex; the segment at its sides depressed and strongly transversely striated; *ceressus.*

Iphiaulax acragas, sp. nov.

Long: 11 mm; terebra 6 mm.

Hab. Borneo (Shelford).

Antennæ black, the scape luteous beneath. Head smooth and shining; the face sharpened, sparsely covered with long fuscous hair; the clypeus is bordered by oblique furrows laterally; apex of mandibles black; the palpi luteous. Thorax smooth and shining sparsely covered with pale pubescence. Legs coloured like the body; the apical joint of the four hinder tarsi fuscous. Wings fuscous, with a slight violaceous tint; the base behind the transverse basal nervure yellowish-hyaline; the first cubital and the discoidal cellule are lighter coloured in the middle; the stigma is black, with a luteous spot on its base. The central part of the petiole is rugose and is stoutly longitudinaly striated in the middle; the second is closely rugously punclured; the lateral depressions are wide, deep and closely longttudinally striated; the oblique apical depressions are narroweir, are deep and closely striated; the suturiform articulation is deep and rather strongly and regularly striated; the third segment is closely punctured; the basal furrow is wide, deep and closely striated in the centre; it becomes narrowed and curved at the sides; its apical furrow is narrow. The apical segments are smooth; the furrows on the fifth segment are narrow and striated.

Iphiaulax ceressus, sp. nov.

Long: 12 mm.

Hab. Matang, 3000 feet (Shelford).

Antennæ entirely black. The face is more yellowish in tint than the vertex; its centre is irregularly striated; the sides punctured; the clypeus is distinctly raised and clearly separated from the face. Mandibular teeth black. Thorax smooth and

shining, sparsely pilose. Wings smoothy-fuscous from the transverse basal nervure; behind it yellowish-hyaline; the lower part of the stigma to the transverse cubital nervure luteous. The central part of the petiole is rugose and longitudinally keeled down the centre; the four following segments are closely rugosely punctured; the basal keel extends to near the apex; it is of nearly equal width to near the apex; its sides are keeled and it is distinctly raised; the segment on either side of it is depressed and bears three stout, irregularly curved keels, the lateral depression is shallow; the sides of the segment outside it forms three ridges. The furrows on the other segments are longitudinally striated; the basal branch of the suturiform articulation is larger, broader, and more oblique and more distinctly striated than the apical.

Iphiaulax astiochus, sp. nov.

Long: 9; terebra 1-2 mm.

Hab. Sarawak, Borneo (R. Shelford).

Antennæ entirely black. Front and vertex smooth, shining and bare; the face irregularly rugose; the mandibular teeth are black. Thorax smooth and shining; the median segment is thickly covered with long pale hair. Wings dark fuscous; yellowish-hyaline behind the transverse basal nervure. The central area of the petiole is rugosely punctured; it is slightly narrowed towards the apex. The middle segments are closely rugosely punctured; the central keel extends to the suturiform articulation; it is of equal width throughout; is longitudinally striated, with the sides raised and irregular; the basal lateral depression is narrow at the base, much wider at the apex and is stoutly striated at the base of the dilated part, which turns inwardly at the apex; the suturiform articulation is wide and deep; its basal lateral fork is more oblique and narrower than the apical; the other furrows are closely striated; the basal more strongly than the apical; the apical segments are smooth and are more yellowish in tint than the others.

Spinaria curvispina, sp. nov.

Rufa, thorace spina collaris curvata, abdominis dorso strigoso; capite, thorace pedibusque anterioribus rufis; abdominis

dorso pedibusque posticis nigris; abdominis apice pallide flava; alis fuscis, ♀.

Long 12-13 mm.

Hab. Borneo (Shelford).

Antennæ longer than the body, black, tapering towards the apex. Head and antennæ rufous, smooth and shining; the median segment irregularly reticulated; more strongly and regularly at the middle than at the base. On the back of the pronotum, at the apex, is a long curved spine, which tapers towards the apex and is directed towards the head; between this and the middle is a large leaf-like plate, hollowed above, its sides curved and expanded outwardly; the lateral wings are narrowed towards the apex; at the base, running up the spine, is a stout keel. At the apex of the middle lobe of the mesonotum is a stout keel; the part on either side of it is striated. On the depression behind the scutellum are six stout longitudinal keels; from the middle of the sixth runs a stout, transverse keel; behind this are three short keels. The sides of the median segment at the apex project into stout teeth. The four front legs are paler in tint than the thorax; the apical joint of the tarsi is black; the hind legs are entirely black. Wings uniformly dark fuscous; the stigma and nervures are deep black; abdomen deep black; the sides of the first and second segments and the base of the first and the apical segment are pale yellow; the dorsum is closely and strongly longitudinally striated; the first two transverse furrows are strongly striated; the sides of the third and fourth segments project into sharp, stout spines; the spine on the fourth is the larger; on the centre of the third at the apex, is a stout triangular tooth, on the middle of the fourth is a larger, sharper one; the apical segment ends in a longish, sharp tooth.

Comes nearest apparently to *S. spinator*, Guer, from Bengal, but differs in the colouration of the wings and legs.

Shelfordia, gen. nov.

Median segment with a narrow area in the centre, extending from the base to the apex; second, third and fourth segments of the abdomen closely longitudinally striated; the second with four converging keels; there is a transverse crenulated furrow

on the base of the third segments only, and no oblique ones. Malar space large; the oral region widely open. Front depressed in the middle; the centre with a stout keel; the sides of the depression keeled. The third and fourth joints of the antennæ are equal in length and somewhat longer than the fifth. Legs of moderate length; the fore tarsi twice the length of the tibiæ. Sheaths of the ovipositor densely pilose.

The middle lobe of the mesonotum is distinctly separated; the scutellar depression is shallow and longitudinally striated; the furrow on the metapleuræ is long, wide and deep; above its apex is a longitudinal keel. The occiput is not margined; the temples are moderately large and are rounded behind. The legs are pilose, but not so thickly as in *Myosoma*. The clypeus is bordered by a wide oblique depression. The second and third segments are distinctly longer than their width at the apex; the abdomen is fully twice the length of the thorax. The inner orbits above are distinctly keeled.

A distinct genus easily known by the area on the median segment, by the longitudinally striated abdominal segments, by the margined upper inner orbits and by the keeled front.

Shelfordia ruficeps, sp. nov.

Nigra, capite, pedibus anticis, prothorace mesothoraceque rufis; alis fumatis, ♀.

Long: 11; terebra 22 mm.

Hab. Sarawak (Shelford).

Antennæ black; the scape rufous in the middle beneath. Head rufous; the face and clypeus closely punctured and sparsely covered with long black hair; the centre of the face slightly raised and smooth. The clypeus is clearly separated, especially at the sides; the top, in the middle, is transverse, its sides rounded; at the sides is a smooth depression. Mandibles rufous, their teeth black. The vertex is sparsely punctured, especially at the sides; the depressed front is more shining and smooth. Pro- and mesothorax with the scutellum smooth and impunctate; the scutellar depression is narrow and is stoutly longitudinally crenulated. The median segment is smooth and is sparsely covered with longish black hair. The anterior wings are uniformly smoky-fuscous; the hinder have the basal half milk-

white; the nervures and stigma are black; in the anterior is an oblique white cloud on the base of the first cubital cellule and extending obliquely into the discoidal. The front legs are rufous like the thorax; the base of the middle coxæ rufous; the rest of them and femora piceous; the hinder legs are entirely black; the coxæ impunctate. The petiole is raised in the centre; the raised part is bordered by an irregular stout keel; the centre towards the apex is irregularly transversely striated. The centre of the second segment is raised, the raised part is bordered by a keel and becomes gradually narrowed towards the apex which is sharply pointed; it is irregularly striated; bordering this is an area of equal width extending from the base to the apex of the segment; it is stoutly transversely striated, with some irregular longitudinal striæ in the middle; outside this is an area which becomes gradually wider towards the apex and bears some stout, irregular striæ. The third segment and the basal two-thirds of the fourth are stoutly longitudinally striated; the transverse furrow on the base of the third segment is stoutly striated; the apical segments are smooth; the basal four ventral segments are milk-white.

Myosoma, Brulé

The species of this genus here described are black; with the head, thorax and the two or four anterior legs rufous, and the wings dark fuscous. The species may be divided into two sections:—

(*a*) Head, thorax and the four anterior legs rufous. The third segment with a deep wide transverse striated furrow near the centre, the base stoutly, longitudinally striated; *forticarinata.*

The third segment without a transverse furrow; the base not stoutly striated; *brevicarinata.*

(*b*) Head, pro- and mesothorax rufous, the two anterior legs rufous. The ovipositor not much longer than the body.

(*a*)' The keel on the second segment narrow extending to the apex of the segment; its base and apex dilated smooth and shining; *longicarinata.*

(*b*)' The keel on the second segment broad, not extending to the apex of the segment, its base not smooth.

The second segment at the base on either side of the keel deep black, striated, the middle segment deep black; *fuscipennis.*

The second segment at the base on either side of the kee 'brownish, not striated; the middle segments brownish; *trichiura.*

Myosoma forticarinata, sp. nov.

Long : 13; terebra 19 mm. ♀.

Hab. Sarawak, Borneo (Shelford).

Antennæ black, the scape rufous. Head and thorax rufous, smooth and shining; the face rugosely punctured, the punctures running into reticulations and sparsely covered with longish black hair; there is a narrow furrow on the front. Mandibles and palpi rufous; the mandibular teeth black. The four front legs are rufous; the middle pair darker in tint, especially on the tibiæ and tarsi; the tibiæ and tarsi are thickly covered with longish dark hair. Wings dark fuscous; the nervures and stigma black. Petiole broadly depressed, on the sides the central part is bordered by stout keels and there is a stout keel down the centre; the basal part bears some stout irregularly curved keels. The second segment bears a complete central and a shorter lateral keel, which converge slightly towards the apex; the basal area is triangular, smooth and shining; the base in the centre is depressed, the centre bears some stout irregular keels; the outer parts bear stout, oblique keels; the inner parts at the apex being smooth and more deeply depressed than the outer. The two transverse depressions are wide, deep and stoutly longitudinally striated; the part between the two is stoutly longitudinally striated. The apical segments are thickly covered with long black hair. The sheaths of the ovipositor are stout and are thickly covered with black hair. The tarsal spines are rufous.

Myosoma brevicarinata, sp. nov.

Long : 12; terebra 21 mm. ♀

Hab. Borneo (Shelford).

Scape of antennæ rufous; the flagellum is brownish beneath, especially towards the apex. Head rufous; the face slightly

paler, more yellowish in tint, rugosely punctured and covered with pale hair; the front and vertex are more sparsely covered with longer darker hair. Mandibles black, broadly rufous at the base. Thorax smooth and shining; the middle of the mesonotum behind is broadly expressed; the central lobe is clearly defined; the median segment is thickly covered with longish fuscous hair. Wings dark fuscous, with a violaceous tinge at the base; the nervures and stigma are black. Metapleuræ widely and deeply furrowed down the middle. The front legs are rufous with a yellowish tinge; the middle pair are brownish; the femora paler; the tarsal spines are black. The petiole is broadly keeled down the centre; the sides on the apical half are stoutly irregularly striated; the keel on the second segment extends to the transverse furrow; its dilated base is finely striated; the sides and centre are irregularly, longitudinally striated to near the apex which is smooth and laterally expressed; the third segment at the base is longitudinally striated; the striæ in the middle reaches to the apex; the apical segments are brownish.

Myosoma trichiura, sp. nov.

Long: 14; terebra 14-15 mm.

Hab. Sarawak (Shelford).

Antennæ black, the base and apex of the scape rufous. The sides of the head are punctured; in the centre of the face are three stout, transverse keels. Mandibles rufous, their apex broadly black. The face is rather thickly covered with long black hair; the frons and vertex sparsely so. Pro- and mesothorax rufous, smooth and shining; the median segment black. Legs black; the anterior pair rufous; the apex of the median segment is sparsely, longitudinally striated. The apex of the petiole is coarsely irregularly reticulated the lateral furrows are depressed and transversely striated. The second segment is irregularly longitudinally striated; its basal area is broad at the base, becomes gradually and sharply narrowed towards the apex, is longitudinally striated and extends beyond the middle; on either side is an oblique, closely striated furrow. The third and fourth segments are closely striated; the basal furrow on the third extends to the sides; from it issues a curved furrow; the furrow on the fourth does not extend to the

sides in a straight line but curves broadly backwards to it; there is a transverse, striated furrow on the apex of the third and fourth segments. The sheaths of the ovipositor are broad and thickly covered with stiff black hairs.

This species is an *Iphiaulax* with the hairy ovipositor and legs of a *Myosoma*.

Myosoma longicarinata, sp. nov.

Long: 11-12 mm ♀.

Hab. Sarawak. (Shelford).

Antennæ entirely black, head rufous; the face more yellowish in colour; it is smooth, sparsely punctured on the sides and bearing some longish black hair; the clypeus is irregularly rugose. Mandibles black, the base broadly rufous. Pro- and mesothorax rufous; the median segment, the base of the pleuræ and the lower part of the furrow black. The two front legs are coloured like the thorax; the middle have a piceous tinge; the tarsal spines are for the most part black. Wings dark fuscous, with a violaceous hue; the stigma and nervures are black. There is a stout longitudinal keel on the basal half of the petiole; the apical part is irregularly longitudinally, stoutly striated; the lateral depression bears stout, transverse keels. The central part of the second segment is obliquely narrowed towards the apex; the central keel reaches to the apex; there is a smooth triangular area at its base and a semicircular one at its apex; the central part is reticulated somewhat strongly; the lateral is closely longitudinally striated. The two transverse furrows are longitudinally striated; the second more finely and closely than the first. The third segment is closely longitudinally striated and is broadly depressed in the centre; the fourth is more closely and finely striated, the third and fourth segments are brownish.

Myosoma fuscipennis, sp. nov.

Long: 16 mm. terebra 16 mm.

Hab. Borneo (Shelford).

Antennæ black; the scape piceous in the middle below. Head mahogany coloured, smooth and shining; the centre of the face marked with some irregular transverse keels; the sides are

sparsely punctured. Mandibles black, broadly rufous at the base; the palpi rufo-testaceous. Thorax smooth and shining rufous; the median segment black. The anterior legs rufous; the posterior four black; the middle trochanters rufous. Wings brownish-smoky, with a slight violaceous tinge at the base; the stigma and basal nervures black; the apical nervures fuscous. The sides and ventral surface of the petiole are pale testaceous; its base is smooth; the rest of it coarsely reticulated. The second and third segments are closely, irregularly longitudinally punctured, at the apex almost reticulated; the fourth is closely reticulated, the centre more strongly than the sides; the other segments are smooth. The keel on the base of the second segment is not very distinctly defined; it is broad at the base, becomes gradually obliquely narrowed towards the apex, is more strongly striated than the rest of the segments and reaches to shortly beyond its middle; the lateral furrows are wide, oblique and stoutly striated; the lateral furrows on the third and fourth segments are narrower and more roundly curved; the transverse furrows on the base and apex of the third and fourth segments are closely longitudinally striated.

Holcotroticus, gen. nov.

Claws of all the legs bifid; the inner claw smaller than the other. Median segment completely areolated. Apex of the scutellum bifurcate, bordered by stout keels: the apex of the median segment obliquely depressed. Malar space moderately large, the oral region not greatly lengthened. Wings longer than the body; the areolet narrowed at the top; the nervures without a stump of a nervure. The oblique mesopleural furrow is wide and deep; a narrow oblique one runs from its middle. Pro- and mesopleuræ above with an oblique keel; between the tops of the middle and hinder coxæ is a stout keel. The fore tarsi are longer than the tibiæ; all the joints are longer than broad; the middle three are much shorter than the others. The hinder legs are much longer than the others; their coxæ are large, more than twice longer than wide. The joints of the maxillary palpi are elongated, the three penultimate joints are not short, compressed or lenticular. The occiput is margined, the sides more distinctly than the upper part; the two hinder ocelli are flat, not convex; there is a

small single keel between the antennæ; the scape of the antennæ is stout, about twice longer than broad; the front is keeled in the centre; the keel is stout with oblique sides; it is not hollowed, and there is no keel on each side. The first cubital cellule is clearly separated from the first discoidal; all the apical nervures in the hind wings are obliterated; there is only the brachial cellule defined and there are no transverse nervures; the radial cellule in the fore wing is elongate, narrow.

The affinities of this genus are with *Agathis* and *Troticus*. From the former it may be separated by the cleft claws; in the latter peculiarity it agrees with *Troticus*; but it wants the abnormal palpi of that genus. The hinder legs are longer than they are with *Agathis*, and this is also the case with the wings. The middle lobe of the mesonotum is distinctly raised; the scutellar depression is wide and narrow; the scutellum is keeled at the base.

Holcotroticus ruficollis, sp. nov.

Niger, capite, prothorace, mesothorace, pedibusque anticis rufis; alis fumatis, nervis stigmateque nigris ♂.

Long: 8-9 mm.

Hab. Sarawak, Borneo (Shelford).

Antennæ black; the scape rufous. Face and clypeus shining, sparsely and slightly punctured and thickly covered with short, blackish hair. Thorax rufous; the median segment, except the pleuræ at the base which are rufous, black. Mesonotum sparsely and indistinctly, the scutellum more distinctly, punctured; its apex stoutly keeled and depressed laterally above. Mesopleuræ, below the oblique furrow, closely and distinctly punctured; at the base above are two stout oblique keels; the furrow is wide and bears some stout oblique keels; below the middle behind is an oblique furrow; the apical bordering furrow bears some stout keels. The basal furrow on the metapleuræ is wide and deep; on it is an upper and three lower stout, widely separated, keels. On the base of the median segment are three, on the apex five areæ; the central basal area is smaller than the lateral and is stoutly transversely striated; the central apical one is hollowed and is gradually narrowed towards the apex; there is also an outer

large spiracular area. The two front legs are of a paler rufous colour than the thorax; the middle pair have a piceous hue. The wings are of a uniform dark fuscous-violaceous colour, with black nervures and stigma. Abdomen deep black, smooth and shining; the petiole is furrowed along the sides.

The malar space is not quite so long as in typical *Agathidini*, the head not being so rostriform as usual. It differs also from *Agathis* in the hinder claws having a tooth near the base.

ICHNEUMONIDÆ.

Siphimedia, gen. nov.

Wings without an areolet; the recurrent nervure interstitial, or almost touching the transverse cubital; the transverse basal nervure interstitial; the transverse median nervure in hind wings broken shortly above the middle. Mesonotum trilobate; the middle lobe transverse at the base, sharply pointed at the apex; the parapsidal furrows deep. Post-scutellum deeply bifoveate at the base. Median segment areolated more or less with three or four basal areæ; the areola distinct; the spiracles are linear, longish and are placed in the middle. Legs, and especially the posterior, stout; the hinder femora thickened, shorter than the tibiæ; the four front claws are cleft, the hinder simple; the hind coxæ are twice as long as thick, the basal joint only as long as the following three united and not much longer than the apical. The antennæ stout, shorter than the body. The petiole is twice longer than the width at the apex; it is broad at the base and becomes gradually wider towards the apex; the spiracles are placed shortly behind the middle; the abdominal segments are smooth, without furrows or depressions; the second and following segments are wider than long; the hypopygium is very large, plough-share-shaped and projects beyond the dorsal segment; the ovipositor is stout and is about as long as the body. The front legs have one, the four hinder two, spurs. There is a curved furrow on the sides of the mesosternum.

The antennæ are placed well up on the face, above the middle of the eyes, which are parallel; the apex of the clypeus is rounded; the mandibles have two subequal teeth; the clypeu

is not distinctly separated from the face. The head is wider than long, is not much developed behind the eyes, and is obliquely narrowed there; the labrum does not project. The transverse cubital nervure has the stump of a nervure in the middle. This genus is founded on the species which I doubtfully referred to *Macrogaster* (*Manchester Memoirs*, XLIII, 193). Its real position is with the *Acvenitini*, and comes, in Ashmead's arrangement, nearest to *Arotes*, which may be known from it by the long and slender hinder tibiæ and tarsi, the tibiæ being almost twice the length of the femora. From *Acvenites* it may be separated by the deep parapsidal furrows, and by the areolated median segment. To this genus may be referred the following species.

Siphimedia bifasciata, sp. nov.

Nigra, facie clypeoque flavis; alis hyalinis, fusco-bifasciatis.
Long: 10 mm.
Hab. Sarawak (R. Shelford).

Head black, the face, except for a triangular black mark in the middle above, and the greater part of the clypeus, pale yellow. The face is strongly, transversely punctured; the apex smooth and depressed; the upper part of the head smooth and shining, and has a distinct plumbeous hue, as have also the pro- and meso-thorax which are smooth and shining; the apex of the middle lobe is stoutly transversely striated. There are three stout longitudinal keels on the scutellar depression. The areola is longer than wide, becomes slightly narrowed towards the apex, which is rounded; the apical central area is long and extends to the apex, its apical half is widely dilated and has the sides stoutly striated; on the top is a stout, curved transverse keel; the outer central area has two stout longitudinal keels in the middle. The median segment is irregularly punctured and coarsely irregularly longitudinally striated in the middle, especially at the base. The mesosternal furrow is wide and is coarsely transversely striated, and is thickly covered with white pubescence. Wings hyaline; there is a fuscous cloud, extending from the stigma to the cubitals and there is a similar cloud at the apex. Legs black; the anterior tibiæ and femora testaceous in front, and fuscous behind. The apical dorsal segments of the abdomen are lined with white.

This species is nearly allied to *S. nigricans*, it is smaller, has the mesonotum impunctate, not strongly punctured; there are only two central areæ on the median segment, and the basal area is longer than wide, not wider than long.

Rhyssa nigritarsis, sp. nov.

Nigra, late flavo-maculata; abdommis apice late brunnea; pedibus flavis, tibiis femoribusque nigro lineatis; tarsis posterioribus nigris; alis hyalinis, stigmate testaceo ♂.

Long: 17 mm.

Hab. Borneo (Shelford).

Antennæ black, the scape yellow beneath. Head black, the face entirely; the inner upper orbits to the ocelli, and the outer entirely, yellow. Face almost smooth, sparsely pilose, shining. Clypeus brownish; in the centre, at the apex, is a short, broad tooth with an indistinct tubercle on either side of it; above, on either side, is a fovea. On the thorax the following parts are lemon-yellow; the sides and base of the pronotum; the basal two thirds of the scutellum, the post-scutellum, the median segment, except at the base and sides; the tubercles and a large oblique line below them. The transverse striation, on the mesonotum does not extend to the apex; the scutellum is closely rugose; the median segment is smooth and shining, its base is depressed and black. The fore legs are yellow; the femora are brownish behind; the fore tibiæ are as long as the basal joint of the tarsi; the middle coxæ, femora and base of tibiæ are lined behind with black; the four hinder tarsi are black; the hinder coxæ are broadly black below and laterally; the femora are broadly black above; the tibiæ black, with a narrow yellow band near the base and a broader one at the apex. The basal two dorsal segments of the abdomen are black, lined with yellow down the centre; the third is brownish-black, banded with black near the middle; the others are brownish; on the fourth segment is a broad yellow band near the middle; the fifth is indistinctly yellow near the apex. The basal half of the ventral surface is pale yellow, marked with black; the apical brownish. The pedicle of the areolet is nearly as long as the basal abscissa.

Xanthopimpla labiata, sp. nov.

Lutea, basi late apiceque mesonoti nigris; thorace laevo; abdomine late nigro-maculato; alis hyalinis, apice fusco-violaceo ♀.

Long: 13; terebra 2 mm.

Hab. Sarawak.

Antennæ black; the scape yellow below. Head pallid yellow; above smooth, the face and clypeus closely but not strongly, punctured; the vertex in the centre is black from shortly behind the ocelli and this black mark is continued half way down the front, it becoming gradually narrower as it does so; there is an irregular black transverse mark on the centre of the occiput. The thorax is deeper in tint than the head; and is quite smooth, without any punctures; near the base of the mesonotum is a large irregular mark which extends to the sides; it is broadly rounded at the base,; with short blunt projections in the middle; the sides at apex project, the projections becoming gradually narrower towards the apex; the apex of the mesonotum is broadly black; the black mark behind being continued into the scutellar depression. Scutellum smooth, broadly rounded, smooth; the sides and apex keeled. On the basal half of the median segment are four lateral and one large central areæ; the central area does not project beyond the lateral at the apex, which is transverse; its basal third is obliquely narrowed: the apical two thirds are also obliquely narrowed; the apical lateral areæ are quadrangular and of equal width throughout; the apical half is keeled on the outside. Wings clear hyaline, except at the apex which is narrowly fusco-violaceous: the areolet is small and is distinctly appendiculated; the upper half of the recurrent nervure is sharply angled. The abdomen has the four middle segments closely punctured; the basal segment has a broad irregular black mark in the centre; the second and fifth segments have two large marks, those on the third and fourth being larger than the others; there are two minute marks on the sixth, and two broad, transverse ones on the seventh; the last segment is immaculate.

The labrum is longer than usual, being longer than the clypeus, it becomes gradually narrowed from the base to the

apex; the eyes are large, parallel; the malar space is small; the spiracular area is obsolete; below the spiracles, in the middle of the metapleuræ, is a curved longitudinal keel, which originates shortly behind the middle, but not extending to the base; there are two transverse lines on the base of the median segment; the bases of the tibiæ are black. The basal segment is longer than the width of its apex; the other segments are all wider than long; the transverse and oblique furrows are distinct; the head is only very slightly developed behind the eyes.

Comes nearest perhaps to *X. punctata*. Fah. The edge of the pronotum is more sharply raised than usual; the base of the middle lobe of the mesonotum more distinctly separated, and the labium more projecting and sharper pointed.

Xanthopimpla nigrobalteata, sp. nov.

Lutea, nigro-balteata; mesonoto lævo, nigro, flavo-bilineato; pedibus flavis, late nigro-lineatis; alis hyalinis, stigmate fusco ♀.

Long: 12 mm.

Hab. Borneo (Shelford).

This species forms a section with three large areæ on the median segment and only one apical.

Antennæ brownish on the under side; the scape yellow beneath; head luteous; the ocellar region and the greater part of the occiput black. Face sparsely punctured, slightly keeled down the middle. Clypeus smooth and shining, its apex broadly rounded. Mandibles black at the apex. Mesonotum smooth and shining, base covered with a short pile, black; the sides and two lines in the middle, extending from the base to near the apex, bright yellow. Scutellum thickly covered with long black hair; its apex, from shortly behind the middle, black. The base of the median segment between the stigmas and to near the apex of the areæ is black; the central area is nearly square; the lateral are longer and narrowed towards the apex and are longer on the outer than on the inner side, the apex being oblique. The apex of the propleuræ, the base of the meso-, the top below the tubercles and the apex except a large spot above, and the basal half of the metapleuræ, are black. Legs coloured like

the body; the top of the four front femora, the extreme base of the hinder, an oblique mark near the apex of the hinder and their extreme apex; the basal two thirds of the four anterior tibiæ, the base of the hinder pair and a broad band on their middle and the four hinder tarsi, black. The middle of the petiole broadly, the sides at the base and the base of the other segments broadly, black; the bands on the apical segments occupy more of the segments than on the basal; the segments and the transverse furrows are smooth, impunctate; there is an oblique furrow on the sides of the second and third segments and a narrower one on the fourth. The abdominal segments are all distinctly broader than long; the middle of the mesonotum is distinctly raised at the base; the scutellum is roundly convex and is not raised above the level of the mesonotum; its sides are keeled.

A species not difficult to separate from any of the described species by the smooth thorax and abdomen, by the black abdomen, banded with yellow, by the black mesonotum with two yellow lines, and by the three large areæ on the base of the median segment. It has a very similar appearance to *Chrysopimpla ornatipes* Cam.

Charitopimpla, gen. nov.

Apex of the clypeus obliquely depressed and with semicircular emargination; its top separated from the face by a straight furrow. Areolet small, triangular; the recurrent nervure is received at the apex. Abdominal segments closely punctured; segments 2-4 with transverse depressions, which are prolonged obliquely backwards; there is also a shallow transverse furrow at the apex. Median segment smooth without keels. Tarsi spinose; the claws simple. The transverse median nervure in hind wings is broken far below the middle.

The areolet is straight, not oblique; the transverse basal nervure is interstitial; the eyes are large, parallel and reach quite close to the base of the mandibles. The second to fourth abdominal segments are, if anything, wider than long, almost square; the metathoracic spiracles are small, oval. The last joint of the antennæ is not longer than the preceeding two united. The legs are short; the hinder tarsi are shorter than

the tibiæ; the anterior are longer. The antennæ are stout and taper towards the apex.

Characteristic of this genus is the obliquely depressed semicircularly emarginate apex of clypeus. It comes near to *Erythropimpla*, Ashmead.

Charitopimpla flavo-balteata, sp. nov.

Nigra, abdomine flavo-balteato; pedibus flavis; posticis nigro alboque maculatis; alis hyalinis, stigmate testaceo, nervis nigris ♀.

Long: 13; terebra 7 mm.

Hab. Sarawak, Borneo (Shelford).

Antennæ about two thirds of the length of the body; black, distinctly tapering towards the apex; the scape yellow beneath. The face and clypeus are shining, have a plumbeous hue and are uniformly but not strongly punctured; the face is covered sparsely with white, the clypeus with dark hair; the front and vertex are bare, smooth and shining. Mandibles black; the palpi lemon-yellow. Pro- and mesothorax smooth and shining, covered closely with short fuscous hair; the scutellum bears longer and paler hair; the median segment is, especially towards the apex, thickly covered with long white hair. The lower part of the metapleuræ is smooth and bare. The four front legs are yellow, with the femora suffused with fulvous; the hinder legs white; black are the coxæ, except above the base and apex of the femora, a ring near the base of the tibiæ, a broader band on their apex and the apical joints of the tarsi; the femora have the sides and lower surface rufous; the coxæ are bright yellow above. Wings hyaline, with a slight fulvous tinge. Abdomen black: the apices of the basal five segments bright lemon-yellow; the sixth is yellow on the sides; the seventh broadly in the middle above; the segments are closely punctured; the petiole has the middle smooth and slightly depressed; the apical two segments are impunctate, the transverse depressions are shallow except on the fifth where they are wider and deeper and the basal one is striated.

OPHIONIDES.

Anomalon perornatum, sp. nov.

Nigrum, abdomine late ferrugineo; pedibus anterioribus, basi tibiarum posticarum late tarsisque posticis flavis; alis fulvo-hyalinis, stigmate testaceo ♀.

Long: 22 mm.

Hab. Borneo (Shelford).

Antennæ black; the scape yellow beneath. Head black; the face clypeus, labrum, the inner orbits, the malar space and the mandibles, except at the apex, bright lemon-yellow. The face broadly projects in the centre; the sides and upper part are irregularly wrinkled; the clypeus is smooth; the front, especially above, is coarsely, irregularly striated; above, the striæ are oblique; below, they almost form reticulations. Thorax entirely black; the median segment is coarsely, irregularly reticulated: the scutellum is coarsely reticulated and striated; above, it is flat in the centre and has an oblique slope; the mesonotum is rugosely punctured and irregularly reticulated; the apex is somewhat strongly transversely striated. The upper half of the propleuræ is closely rugose; the lower in the middle stoutly, longitudinally striated: the mesopleuræ above the middle coarsely striated, at the base reticulated. The four front legs are bright yellow: the apical three joints of the tarsi black: the hinder legs black; the basal two thirds of the tibiæ and the tarsi yellow; the trochanters beneath and the base of the femora fuscous. Abdomen ferruginous; the petiole and the second segment above black.

Anomalon fuscicorne, sp. nov.

Long: 15 mm. ♀.

Hab. Borneo (Shelford).

This species resembles closely the preceding species. The differences between the two may be expressed thus:

Face not raised in the middle; the front with oblique striæ; the upper part of the mesopleuræ coarsely longitudinally striated, the lower smooth.

Face not raised in the middle; the front not striated; the upper part of the mesopleuræ closely reticulated.

Antennæ brownish beneath; the scape yellow below. The face, clypeus, the inner orbits to near the ocelli, an oblique mark on the top of the eyes, the malar space, the lower orbits and the mandibles except at the apex, lemon-yellow. The front and lower part of the vertex are stoutly longitudinally striated; the striæ are curved and form almost reticulations; the face in the middle is irregularly longitudinally striated. The middle lobe of the mesonotum is coarsely longitudinally reticulated; the lateral are closely rugose. Scutellum coarsely rugose. Median segment coarsely reticulated, the top more distinctly than the sides, which have the reticulations less distinct on the lower part. The upper part of the propleuræ is coarsely reticulated, as is also the upper part of the meso-pleuræ, but less closely and not so distinctly. The four front legs are yellow; the femora are more fulvous in tint; the hinder legs are black; the apex of the coxæ, the basal joint of the trochanters and the basal third of the tibiæ, dark rufous; the hinder tarsi yellow. Abdomen ferruginous; the petiole, the second segment above and the apical segment black.

Anisobas cincticornis, sp. nov.

Rufo flagello antennarum nigro, medio albo annulato; alis hyalinis, nervis stigmateque nigris, ♀.

Long: 10 mm.

Hab. Sarawak, Borneo (R. Shelford).

Antennæ black; the base rufous; the seventh to the fourteenth joints for the greater part white; the basal joints of the flagellum are rufous below. The front is obscurely punctured; the face is distinctly but not very closely punctured; the clypeus is obscurely punctured above, below smooth and shining; the labrum is fringed with long hair. The mesonotum is darker coloured than the rest of the thorax and is shagreened; the scutellum is thickly covered with longish black pubescence. The basal three areæ of the median segment, are smooth and shining; the others are closely, rugosely punctured; the posterior median is smooth, with the sides slightly striated; the lateral teeth are large, and narrowed gradually towards the apex. Propleuræ punctured above; the apex irregularly striated in the middle;

the base and the lower half of the mesopleuræ closely, but not strongly punctured; the middle longitudinally striated; the metapleuræ punctured at the base, the rest closely longitudinally striated. Legs coloured like the body, the hinder tarsi black. The base of the wings have a fulvous tinge. Abdomen shining, the middle segments aciculated; the gastrocœli are smooth, shallow.

It is doubtful if this is a true *Anisobas*. The antennæ are stout and are slightly thickened towards the apex; the basal joints of the flagellum are all much longer than broad; the face is obliquely narrowed from the top to the bottom; the labrum projects and is narrowed towards the apex; the keel on the propleuræ (characteristic of typical *Anisobas*) is stout; the scutellum is obliquely raised, the sides stoutly keeled and the apex at the top depressed; the median segment is completely areolated; the areola is longer than wide, is not much narrowed towards the apex and rounded backwards at the base and apex; the sides are stoutly spined. The wings are as in *Ichneumon*. The abdomen is not much longer than the head and thorax united; there are seven segments; the last is large, above nearly as long as the sixth; the ovipositor largely projects.

Bodargus, gen. nov.

Eyes placed high up, separated by their own length from the base of the mandibles. Face and clypeus forming almost one piece; the suture separating them being almost obsolete; the foveæ are shallow; apex of clypeus transverse, its sides broadly rounded. Occiput deeply emarginate. Antennæ shorter than the body, serrate. Scutellum roundly convex; the sides stoutly keeled. Median segment depressed at the base; the areola is faintly indicated, is twice longer than broad, is open at the base and is gradually narrowed towards the apex; the other areæ are obsolete, except on the apical slope where there are three. Areolet much angled, narrowed at the top. The transverse basal nervure is interstitial; there is a short nervure on the cubital-disco nervure and a longer more distinct one on the recurrent; the transverse median nervure in the hind wings is broken far below the middle. Legs short; the hinder femora do not reach much beyond the apex of the second segment. The

middle segments of the abdomen slightly project at the apex; they are closely punctured; the last segment is as long as the penultimate. The main characteristics of this genus are the flat face, continuous with the clypeus, the indistinctness of the keels on the median segment; the short legs and the large, roundly convex, sharply keeled scutellum.

Bodargus rufus, sp. nov.

Ferruginea, apice femorum posticorum, basi tibiarum, apice late apiceque tarsorum posticorum nigris ♂.

Long: 15 mm.

Hab. Sarawak, Borneo (Shelford).

Antennæ dark rufous, darker towards the apex; the scape is yellow. Head uniformly coloured; the face and base of clypeus closely punctured; the vertex is more closely and strongly punctured; the ocellar region black. Mesonotum closely and distinctly punctured; the scutellum is more strongly and not quite so closely punctured, except on the basal slope. The median segment is rugosely punctured, except on the basal slope; on the apex it is transversely striated. Legs coloured like the body; the apical fourth of the hinder femora, the base of the tibiæ narrowly and their apex broadly, the apex of the metatarsus, the apical half of the second joint and the whole of the others, black. Wings hyaline, the stigma and nervures fuscous-black. Abdomen coloured like the thorax; the fifth, sixth and base of seventh blue-black; the apical half of seventh white.

Diapetus, gen. nov.

Median segment smooth and shining; its base broadly depressed in the middle; there are two stout, transverse keels. Prothorax with a stout, oblique keel above the middle; its base sharply keeled. Areolet minute, not clearly defined through the cubital and radial nervures uniting; the apical abscissæ of the radius and the cubitus spread out obliquely from it. Parapsidal furrows deep, uniting at the apex into one short, wide furrow. Metathoracic spiracles large, linear. Petiole curved, not much narrowed at the base; the spiracles are placed close to the middle, nearer the apex than to the base.

The antennæ are longer than the body, are filiform, and have the third joint distinctly longer than the fourth; the clypeus is roundly convex and is separated by a deep furrow from the face; the mandibles have two unequal teeth; the meso-pleural furrow is wide and deep and is interrupted in the centre. The transverse median nervure is received behind the transverse basal; the stigma is narrow, lanceolate in the hind wings; the cubital nervure is broken above the middle. The legs are long and slender; the claws moderate in size, the hinder tarsi are longer than the others. The abdomen is bluntly pointed and the last segment is larger than the penultimae.

This genus may be referred to the *Cryptinæ*, but it does not quite agree with that group, as the spiracles on the petiole are placed near the middle. The small, or more correctly, obsolete areolet might place it in the *Mesostenini*; but there is no known genus in that group in which it could be placed.

Diapetus nigroplagiatus, sp. nov.

Rufo-fulvo, vertice, mesonoto, metanoto, pleuris abdomineque late nigro-maculatis; alis flavo-hyalinis, nervis stigmatique testaceis ♀.

Long: 12; terebra 2 mm.

Hab. Borneo (Shelford).

Antennæ longer than the body, darker towards the apex. Head smooth and shining; the vertex and upper part of the occiput largely black; the front is broadly dark rufous in the middle. Face and clypeus yellowish, smooth and shining, sparsely covered with long black hair. Mandibles broadly black at the apex, yellow at the base, rufous in the middle. Thorax smooth and shining except the apex of the middle lobe and the furrows. Scutellum and post-scutellum yellow. The base of the median segment is black except in the middle depression; between the two keels are two large black marks, rounded and narrowed at the apex; the basal two-thirds of the mesopleuræ black; the middle of the metapleuræ broadly, and the greater part of the mesosternum black. Legs coloured like the body; the hinder femora are darker coloured at the base; the tarsi are minutely spinose. Wings yellowish-hyaline; the stigma testaceous; the nervures are of a darker testaceous colour. The petiole i

lighter in colour than the other segments; its central region is broadly black except narrowly down the middle; the second segment is black at the base to near the middle; the third has the basal third black; the fourth and fifth are more narrowly black at the base. On the metapleuræ are, in the middle, four short stout keels; the middle two are longer than the others.

Acleasa, gen. nov.

Median segment reticulated all over, without transverse keels; the apex with two large conical teeth. Thorax about three times longer than broad; the mesonotum with indistinct parapsidal furrows, and coarsely reticulated. Metapleural keels absent. Areolet large, wider than long, of equal width throughout; the transverse cubital nervures slightly oblique; the apical one distinct; the transverse median nervure is received behind the transverse basal; the transverse median nervure in hind wing broken shortly below the middle. Legs of moderate length; the basal joint of the hinder tarsi is thickened; the claws are small. The petiole becomes gradually wider towards the apex; its sides near the middle on the lower side project into a stout triangular tooth, the part behind this being keeled: in front of it is a rounded tubercle. The head is rather narrow: the eyes are large and projecting: the front is stoutly striated in the middle: the front and vertex are depressed; the eyes project above the vertex: the sides of the pronotum are indistinctly toothed at the base; they project at the tegulæ: the scutellar depression is larger and deeper than usual and bears four longitudinal keels.

A distinct genus of *Mesostenini* easily known by the completely reticulated median segment without transverse keels, by the stoutly spined petiole, by the raised scutellum, by the coarsely reticulated thorax, and by the thickened base of the hinder tarsi.

Acleasa albispina, sp. nov.

Nigra, scutello spinisque albis; abdomine rufo-balteata; pedibus flavis, coxis, trochanteribus posticis apice femorum posticorum apiceque tibiarum posticarum nigris; alis hyalinis, nervis stigmatique nigro-fuscis ♀.

Long: 12; terebra 2 mm.

Hab. Borneo (Shelford).

Antennæ stout, longer than the body; the ten middle joints white. Head black; the face and clypeus thickly covered with long white hair; the middle is irregularly striated. Clypeus roundly convex, shining; its upper part closely and finely punctured. The middle of the front is stoutly irregularly striated, more closely below than above. Mandibles rufous, their teeth black. Thorax black; the scutellum and teeth yellow. The middle lobe of the mesonotum is closely transversely striated, the lateral are coarsely irregularly reticulated and hollowed down the centre. Scutellum yellow, black at the base; smooth and shining; the basal depression is large; it has two stout complete keels in the centre, and an indistinct one on either side. Post-scutellum smooth and shining; its apex is dilated. Median segment coarsely, closely reticulated; the spines are large, conical and lemon yellow. Pro- and upper half of the mesopleuræ coarsely, irregularly striated; the lower part of the meso- smooth and shining; the furrow is crenulated. Metapleuræ closely reticulated. Legs yellow; the hinder coxæ, except the basal two-thirds above, the trochanters, apical third of femora, the extreme base of the femora and their apex more broadly, black. Abdomen black, the base of the petiole, its apex somewhat more narrowly and the apex of the other segments, yellow; the post-petiole is punctured and striated down the middle; the second, third, and fourth segments are closely punctured.

Fislistina, gen. nov.

Post-petiole much widened and clearly separated; its spiracles wider from each other than from the apex. Median segment rugose and reticulated; its sides bearing short thick spines; the spiracles large, oblong. Areolet small, square, open at the apex; the transverse basal nervure is insterstitial; the transverse median nervure in hind wings broken below the middle; the stigma narrow, linear; below it, is a wide cloud. Antennæ stout, longish, annulated with white; the third and fourth joints subequal in length. Head as wide as the thorax; almost transverse and not much developed behind the eyes, which are large and parallel; the malar space is small. Clypeus clearly

separated from the face, roundly convex; its apex depressed. Mandibles large, wide; their apex with two equal triangular teeth. Parapsidal furrows extending beyond the middle. Scutellum roundly convex; the basal depression wide and deep. The metapleural furrow is wide, deep and reaches to the apex; there is only a basal keel on the median segment; the legs are stout and of moderate length; the fore tarsi are longer, the four hinder shorter, than the tibiæ; the fore tibiæ are distinctly narrowed at the base; the claws longish, curved. There are distinct gastrocœli on the second abdominal segment; the apical segment is transverse, bluntly pointed and bears distinct cerci.

Belongs to the *Mesostenini* and is most nearly related to the American genera *Mesostenoideus* and *Christolia*.

Fislistina maculipennis, sp. nov.

Nigra, abdomine late flavo-balteata; pedibus rufi; tibiis late apiceque femorum posticorum nigris; alis hyalinis, fascia substigmatali fusca ♀.

Long: 10; terebra 2 mm.

Hab. Borneo (Shelford).

Antennæ stout, longer than the body, black with two white bands, one on joints 6-10 and another on joints 13 to 16. Head entirely black; the face rugose, roundly projecting in the middle; the front smooth; the lower part of the vertex stoutly, longitudinally striated. Mesonotum smooth and shining, the furrows appear to bear a silvery pubescence. Scutellum smooth, yellow; the basal depression has four keels. Median segment coarsely reticulated; the basal region in the middle smooth; the teeth are yellow, short and broad. The upper part of the propleurae closely obliquely striated; the middle less closely and more strongly longitudinally striated; the basal half of the mesopleurae is closely longitudinally striated; the apical smooth and shining; the metapleurae coarsely rugose. Wings hyaline, a broad fuscous cloud extends from the stigma to the opposite side. Legs rufous; the tibiæ and tarsi paler, the hinder white; the greater part of the four front tarsi, the four front tibiæ in front, the apex of the hinder femora, the tibiæ, except at the base, and the apical joint of the hinder tarsi,

black. On the abdomen, the post petiole, the apex of the second segments, the band roundly widened backwards in the middle, a broad band on the third segment, widest in the middle, and the greater part of the penultimate segment, yellow. The gastrocœli are rufous.

Chrysocryptus, gen. nov.

Head and thorax densely covered with longish hairs, the abdomen sparsely haired. Median segment areolated; the transverse and longitudinal keels distinct; the areola large, twice longer than wide. Stigma conspicuous, wide, obliquely narrowed towards the base and apex. Areolet large, wide, not much narrowed above, five-angled. Radial cellule wide; the basal abscissa of the radius shorter than the apical and more curved than it; there are no nervelets on the disco-cubital and the recurrent nervures; the transverse basal nervure is interstitial. In the hind wings the cubitus is broken shortly below the middle. Head, if anything, wider than the thorax; the occiput rounded; eyes large, distinctly projecting; the malar space small. The middle lobe of the mesonotum is distinctly separated; the parapsidal furrows are deep and reach near to the scutellum. The furrow at the bottom of the mesopleuræ is distinct. The spiracles are linear; the spiracular area is well defined, as is also the area at its apex. The base of the metanotum is obliquely depressed. Ovipositor projecting; the sheaths are covered with longish white hair. Legs slender; the hinder coxæ and trochanters longish; the fore tarsi are longer than the tibiæ.

The first three joints of the antennæ are much lengthened, being fully four times as long as wide at apex, or longer; the abdomen is twice the length of the head and thorax united; the disco-cubital nervure is roundly curved, not angularly broken; the clypeus is roundly convex; its apex broadly rounded. The face is densely covered with golden hair. The median segment is completely areolated; the areæ are all large and have stout keels; the areola is rounded at the base, transverse at the apex; the lower part of the metapleuræ is stoutly keeled; the radius is thickly pilose at the base; the apical nervures in the hind

wings are faint and incomplete; the second transverse cubital nervure is bullated largely above.

This genus does not fit well into any of the known tribes of the *Cryptina*. The areolated median segment would place it near the *Hemitelini* and the *Phygadenonini*. Characteristic is the densely haired head and thorax.

Chrysocryptus aureopilosa, sp. nov.

Niger, capite thoraceque dense aureopilosis; abdomine pedibusque posticis rufo-testaceis; pedibus pallide testaceis; alis hyalinis, apice fumatis; stigmate nervisque testaceis ♀.

Long: 12; terebra 4-5 mm.

Hab. Borneo (Shelford).

Antennæ rufo-testaceous; the scape paler, and thickly covered with pale testaceous hair. Head black, smooth and shining densely covered with longish bright fulvous hair. Mandibles rufo-testaceous; the teeth black. Legs rufo-testaceous, the anterior paler; the hinder tarsi infuscated; they have the coxæ, trochanters and femora covered with long pale hair; the tibiæ and tarsi are closely covered with short pubescence. Wings hyaline; the apex infuscated; the basal nervures are dark; the apical, pale testaceous. The apex of the abdomen is pale testaceous, the basal three segments are sparsely covered with long pale hair.

Lattera, gen. nov.

Median segment not areolated; the base smooth; the rest striolated; the sides spined. First joint of the flagellum, if anything, shorter than the second. Antennæ over twenty-jointed Eyes large, parallel, reaching close to the eyes; the hinder ocelli are separated from each other by about the same distance they are from the eyes. Pterostigma elongated, narrow; areolet small, square, open at the apex; the transverse median nervure is received behind the transverse basal. Radial cellule elongate, narrow, sharply pointed at the apex, the apical abscissa of the radius is not twice the length of the first; the nervures in the hind wing are complete; the transverse median nervure in the hind wings is sharply angled below the middle where the cubital nervure issues from it. Metathoracic spiracles small, twice longer than wide. Belongs to the *Hemelitini*. The non-

areolated strongly striolated median segment affords a good mark of recognition. The head is dstinctly wider than the thorax; the clypeus is clearly separated from the face: the mandibles are large, broad and bi-dentate at the apex; the parapsidal furrows only extend to shortly beyond the middle of the mesonotum; the scutellar depression is deep, wide and keeled; the base of the mesopleurae is keeled; the petiole is longer than the second segment; the post-petiole is distinctly separated.

Latteva albobalteata, sp. nov.

Nigra, abdomine albo balteato; pedibus testaceis; tibiis, tarsis trochanteribusque posticis nigris; tibiis posticis albo annulata; alis hyalinis, fusco-bifasciatis ♀.

Long: 8 mm.

Hab. Sarawak, Borneo (Shelford).

Antennæ black, the eighth to sixteenth joints white beneath; the scape is brownish on the under side. Head entirely black; the front is keeled down the centre; the keel on either side is oblique. Face opaque, alutaceous; the clypeus bare, smooth and shining. Mandibles black, rufous in the middle. Maxillary palpi white. Thorax black, except the scutellum which is broadly yellow in the middle; the apex of the middle lobe of the mesonotum is rugose. The median segment behind the keel is smooth; the middle is obliquely-longitudinally striated; the apical slope is transversely striated, the striæ running into reticulations; the spines are black, longer than broad. The propleuræ obliquely striated in the middle; the middle have a plumbeous hue; they are finely striated below the tubercles, stoutly behind the keel, and closely on the upper part of the depression behind the middle; the lower curved keel has some stout keels on the basal half as has also the apical bordering one. Metapleuræ striated indistinctly at the base and much more strongly towards the apex; the oblique furrow behind the middle is broad and deep. The anterior four legs are testaceous, paler, more yellowish at the base; their tarsi fuscous; the hinder pair are black; the femora rufous, black at the apex; the coxæ are pale rufous; there is a narrow white band near the base of the tibiæ; the apical joints

of the tarsi are testaceous at the base. Wings hyaline; there is a fuscous cloud at the stigma extending from the base of the cubitus to the apex of the areolet; there is another fuscous cloud at the apex. Abdomen black; the petiole is rufous, with a broad fuscous band near the base of the post-petiole; the apical third of the second segment and the apical two segments are white.

Friona, gen. nov.

Radial cellule elongate. Areolet moderately large (larger than in *Mesostenus*) wider than long; the cubital nervures parallel, straight, not oblique; the second faint; the transverse basal nervure interstitial or nearly so. The transverse median nervure in the hind wings is broken far below the middle. Head wider than the thorax; the front is stoutly striated and is depressed in the middle. Eyes large, parallel; the malar space is moderate. Face short, not extending below the level of the eyes. Clypeus roundly convex, clearly separated behind; its apex broadly rounded; labrum projecting. Mandibles with two large triangular teeth. Thorax more than three times longer than broad; pronotum dilated in front; the parapsidal furrows deep, extending beyond the middle. Median segment elongate, its base smooth; there is a transverse keel near the base, the part beyond it is closely transversely striated; the apex of the segment has a straight, steep slope and projects bluntly at the edges above; the spiracles are small, about three times longer than broad. Legs longish, slender; the fore tarsi are twice the length of the tibiæ. Antennæ longish, slightly, but distinctly, dilated at the middle; the third joint is longer than the fourth.

Has the usual form and colouration of the *Mesosteni*. The generic distinctions lie in the strongly striated depressed front and the transversely striated median segment, with its steeply sloped, clearly separated apex.

Friona striolata, sp. nov.

Nigra, late flavo maculata; mesopleuris fere immaculatis; pedibus fulvis, posticis nigro-maculatis; alis hyalinis nervis stigmatique nigris ♀.

Long: 13-14; terebra 4 mm.

Hab. Sarawak, Borneo (Shelford).

The sixth to seventeenth joints of the antennæ are white. Head black; the face, clypeus, labrum, inner orbits to the end of the eyes, the outer from shortly above their middle, almost the basal two-thirds of the mandibles and the palpi, yellow; the front in the centre is strongly obliquely striolated; the face is rugosely punctured. Thorax black; the projecting middle of the pronotum, the tubercles, tegulæ, the scutellums, a large raised mark, narrowed on the inner side behind the hind wings, and a small curved mark behind the mesopleural suture, pale yellow. Pro- and mesonotum smooth and shining; the pro- and mesopleuræ closely longitudinally striated, the striæ becoming weaker somewhat towards the apex. The part of the median segment immediately behind the transverse keel is coarsely aciculated; the rest is closely and distinctly transversely striated; shortly behind the transverse keel a broad yellow band originates, which becomes broadly dilated on the apical slope, where it extends to the middle, its sides being dilated, and the centre rounded. Legs fulvous; the four front coxæ and trochanters are pale yellow; the fore femora are lined with black above; the hinder coxæ are black, yellow above and at the apex below; the trochanters, apex of femora and of tibiæ black; the tarsi white. Abdomen black above; all the segments with their apices yellow, the apical one very narrowly.

Lactolus, gen. nov.

Median segment elongate, with one transverse keel; its base smooth, the rest closely transversely striated; its apex has a gradually rounded slope; the keel on the lower part of the metapleuræ is complete and is roundly and broadly dilated at the base. Front and vertex depressed, stoutly striated. Areolet of moderate size, longer than broad; the transverse cubital nervures have an oblique slope from the top to the bottom; the apical one is faint; the transverse basal nervure is almost interstitial.

There is only one transverse keel on the median segment; its spiracles are of an elongate oval slope; the clypeus is not separated from the face; the thorax is more than three times longer than

broad; the legs are long; the claws longish; the hinder coxæ are long and reach near to the apex of the petiole; the spiracles on the petiole are separated from each other by about half the distance they are from the apex; the scutellum is stoutly keeled laterally to near the middle, the parapsidal furrows extend to shortly beyond the middle. The ♂ is similar to the ♀; the antennæ are longer and more slender, they are broadly ringed with white in both sexes; the apical abdominal segments in both sexes are marked with white.

The species of the genus are very similarly coloured to *Buodias* with which genus it agrees in some other respects; the difference in the form of the median segment enables them to be separated; in *Buodius* it is shorter, is stoutly spined, and the apex has a straight oblique, not a gradually rounded slope; in *Buodius*, too, the recurrent nervure is received at the apex of the areolet, almost united to the second transverse cubital nervure. Also the median segment is not transversely striated.

Lactolus albomaculatus, sp. nov.

Niger, annulo flagello antennarum tarsisque posticis albis; coxis posticis rufis alis fumato-hyalinis, nervis stigmatique nigris ♀.

Long. 13; terebra 3 mm.

Hab. Sarawak, Borneo (Shelford).

Antennæ longer than the body; the sixth to twelfth joints, for the greater part, white. Face rugosely striated in the middle; at the sides the striæ are oblique and more distinctly separated. Clypeus stoutly keeled in the middle; the rest aciculated and irregularly and not very strongly striated. The base of the mandibles closely striated; the teeth are for the greater part rufous. The front and the vertex from the hinder ocelli stoutly striated. Thorax shining; the pro-mesonotum and the base of the median segment smooth, striated. The meso-pleural furrow is wide and deep; its lower part is stoutly striated. Legs black; the apical half of the metatarsus, the second and the fourth joints except at the apex, white; all the coxæ and the four front trochanters bright red; the anterior tibiæ and, to a less extent, the femora are brownish. Wings hyaline, with a slight, but distinct, smoky tinge; the stigma and nervures are black; the second transverse cubital nervure

is largely bullated ; as is also the cubital-disco, and the recurrent nervures. Abdomen black ; the top of the sixth, seventh, and the eighth segment more narrowly above, white ; the apex of the second segment is obscure testaceous.

Lactolus ruficoxis, sp. nov.

Niger, apice metanoti apiceque abdominis albis ; pedibus fulvis, trochanteribus tibiisque posticis nigris ; tarsis posticis albis ; alis hyalinis, nervis stigmatique nigris ♀.

Long : 9-10 ; terebra 4 mm.

Hab. Sarawak, Borneo (Shelford).

Antennæ as long as the body ; the middle of the flagellum is broadly white. The face is rugosely punctured, almost reticulated ; the clypeus is smooth and shining, roundly convex ; the curved keels on the lower part of the vertex are few in number and stout. Mandibles black ; the palpi white. Mesonotum smooth and shining, except on the apex of the middle lobe, which is transversely striated. The scutellar depression is large and is stoutly keeled in the middle ; the top of the scutellum is obscure brownish ; the post-scutellum is white. The median segment at the base is smooth and shining ; the rest of it, from the keel, is closely transversely striated ; its apical slope is white ; this white band is directed broadly backwards in the middle. The upper half of the propleuræ is closely, longitudinally reticulated, the lower strongly longitudinally striated. Mesopleuræ, except in the middle behind, strongly longitudinally striated ; the base is smooth below ; the striæ in the middle are smaller and closer ; the metapleuræ, from the oblique keel, longitudinally striated ; the striæ are waved. Legs fulvous, the anterior paler in tint ; the hinder trochanters, the apex of the femora, the tibiæ and the base of the tarsi are black ; the rest of the tarsi white. Abdomen black ; the apical three segments white ; the basal three segments are aciculated.

Lactolus flavipes, sp. nov.

Niger, annulo flagello antennarum late, abdominis apice tarsisque posticis albis ; pedibus anterioribus flavis ; alis hyalinis, nervis stigmatique nigris ♀.

Long: 10 mm.

Hab. Sarawak, Borneo (Shelford).

Antennæ black; the apex of the fifth, the sixth to eleventh entirely, and the twelfth and thirteenth partly, white. Head black, the inner orbits in the middle narrowly white; the face rugosely punctured, the punctures running into reticulation above. Clypeus roundly convex, smooth and shining and sparsely covered with longish hair. Mandibles rufous before the middle, smooth; the base coarsely aciculated. Front irregularly striolated, coarsely in the centre, more finely in the middle. Pro- and mesonotum with the scutellum smooth and shining; the apex of the middle lobe irregularly longitudinally striated. Median segment behind the keel smooth and shining; the rest of it strongly, transversely, closely striated; on the apex is a curved white band, which is dilated backwards in the middle. Pleuræ closely longitudinally striated; the striæ on the mesopleuræ are more irregular and more or less curved. The four front legs are pale yellow; their coxæ black, rufous towards the apex; their tarsi infuscated; the hinder tarsi are white, except narrowly at the base. The basal two segments of the abdomen are aciculated; the others smooth and shining; the second and third segments are narrowly pale at the apex; the apical three are for the greater part white.

Baodias, gen. nov.

Thorax three times longer than wide: the median segment behind the keel obliquely rugosely striated; its sides with a broad spine; the apical keel is wanting. Front stoutly striated. Petiole not much longer than the second segment, stout, becoming gradually wider towards the apex from the base. Areolet of moderate size, wider than long, wider at the apex than at the base; the recurrent nervure is received close to the apex; the transverse basal nervure is received behind the transverse basal. The petiolar spiracles are nearer each other than they are to the apex. Scutellum flat, keeled on the basal half. Ptero-stigma elongate, narrow. The median segment is about one half the length of the meso-thorax: its apex has an oblique, straight slope; its spiracles are small, about three times longer than broad. The abdomen is stout, not longer than the

head and thorax united, its apex is blunt and marked with white. The legs are long and stout; the tarsal claws of moderate length; the tibiæ are slightly bent at the base. The clypeus is roundly convex, not very clearly separated behind; its apex is transverse and has a distinct margin. The mandibles are broad, curved, bidentate at the apex; lower tooth, small; the base is broadly raised on the upper side, the raised part forming a tubercle-like mass. The head is much wider than the thorax; the metapleural keel is complete and is dilated at the base. On the median segment in the middle behind the keel is an incomplete area, open behind.

In Ashmead's arrangement this genus should come near *Mesostenoideus* and *Christolia*.

Buodias ruficoxis, sp. nov.

Niger; annulo flagello antennarum abdominisque apice albis; coxis trochanteribusque anterioribus rufis; alis fusco-hyalinis, nervis stigmatique nigris ♀.

Long: 21 mm. terebra 4-5 mm.

Hab. Sarawak (Shelford).

Antennæ not quite so long as the body, if anything, thickened towards the apex; the sixth to thirteenth joints white beneath; the scape bare smooth and shining. Head entirely black; smooth and shining; the front obliquely stoutly striated below the ocelli; the face coarsely irregularly reticulated. Mandibles black, rufous at the base above. Palpi testaceous. Thorax black; the sides of the scutellum to near the apex white; the spines on the median segment dull white. Pro- and mesonotum shining, bare; the middle lobe aciculated. The scutellum is, if anything, more shining than the mesonotum; post-scutellum is dull white. The base of the median segment in the middle is stoutly keeled; the part behind the keel is aciculated; there is one curved keel on the outer side of the stigma and several on the inner side; the teeth are broad and bluntly rounded at the apex. The middle of the propleuræ obliquely, and the upper two-thirds of the apex stoutly, striated. The base and the part in the middle is irregularly reticulated, this part being bounded by a keel in front and by an irregular furrow behind; the lower apical part is irregularly crenulated.

Metapleuræ coarsely obliquely striated; the striæ are irregular and more or less wrinkled; the base is aciculated behind the furrow, which is wide and deep; the upper part is irregularly, the median segment from the keel finely and closely transversely striated; the apical slope is rufous. The middle of the propleuræ, the greater part of the meso- and the meta- below the keel are closely and finely longitudinally striated. Legs black; the hinder coxæ rufous; the fore femora and tibiæ more or less testaceous, especially in front, the apical two-thirds of the basal joint of the hinder tarsi, the second, third, fourth and base of the fifth joints, white. Wings fuscous-hyaline; the nervures and stigma black; the second transverse cubital nervure is almost obliterated. Abdomen black; the sixth and seventh segments broadly above and the eighth narrowly white.

Mesostenus Shelfordi, sp. nov.

Niger; labro abdominisque apice albis; coxis posterioribus rufis; alis hyalinis, stigmate nervisque fuscis ♂.

Long: 9 mm.

Hab. Sarawak, Borneo (Shelford).

Head black; the labrum and palpi white. Mandibles black, whitish-testaceous near the middle. Face opaque, closely but not very distinctly, punctured; the clypeus smooth and shining, front and vertex alutaceous, shagreened; the upper part of the front is furrowed in the centre. Pro- and meso-thorax smooth and shining and with a plumbeous hue. Median segment opaque; above closely, but not very strongly, transversely punctured. Wings clear hyaline; the stigma and nervures fuscous. Legs black; the four posterior coxæ orange red; the front coxæ black, pale at the apex; the four front legs are fuscous; the hinder tarsi are white, except narrowly at the base. The abdominal segments are narrowly lined with dull white at the apex; the apex of the fifth and the sixth and the seventh entirely, are clear white.

This is a *Mesostenus* as defined by Ashmead in his generic revision of the *Ichneumonidæ* (Bull. U. S. Nat. Mus. XXIII. 44)—The keel on the mesopleuræ curves broadly and roundly upwards on the apical half; the basal keel on the median segment is complete; the apical one does not reach to the sides; the

keel on the lower edge of the metapleuræ is broad and plate-like; the transverse median nervure is received shortly behind the transverse basal; the areolet is moderately large, about one half longer than broad; the recurrent nervure is received shortly behind the middle.

LISTRODROMINI.

Maraces, gen. nov.

Claws pectinated, scutellum flat throughout, its sides and apex keeled. Areola obliquely narrowed behind, open in front, not separated from the posterior median area: it is separated at the base from the lateral area. Antennæ dilated beyond the middle. Labrum hidden. Areolet narrowed at the top, nervure uniting there; the transverse median nervure is widely distant from the basal. The apex of the hind femora reaches to the middle of the fourth segment; the abdominal segments are aciculated.

The pronotum projects above, broadly at the base, more narrowly at the apex; the apex of the scutellum has a perpendicular slope and is clearly raised above the post-scutellum; the abdominal segments do not project much at their apices. The stump of a nervure on the disco-cubital nervure is almost obsolete. Clypeus separated from the face, foveate at the base. Mandibles large; the teeth large, widely separated. Metathoracic spiracles linear, much longer than wide.

The eyes are large and parallel; the malar space is large. There are seven abdominal segments; the ventral keel is on the third and fourth segments. The occiput is roundly incised and is keeled above. Median segment, short, rounded gradually behind.

The pectinated claws refer this genus to the *Listrodromini*. The claws have long teeth and are toothed uniformly to near the apex. There are no spines on the median segment; the spiracles on the first abdominal segment are elongated; the segments are banded with yellow; the ovipositor projects largely.

Of the known genera of *Listrodromini*, *Maraces* comes nearest to *Neotypus* which, among other differences, is readily separated from it by the very small, rounded spiracles of the petiole. If it were not for the pectinated claws the genus might be placed with the *Joppini*.

Maraces flavo-balteata, sp. nov.

Niger, late flavo-maculato; pedibus flavis, coxis trochanteribus femoribusque posticis nigris; apice tibiarum posticarum late nigro; alis hyalinis, nervis stigmatique nigris ♀.

Long: 14 mm. ♀

Hab. Sarawak, Borneo (Shelford).

Antennæ black, the middle of the flagellum broadly banded with white. Head black; the face, except for a broad black line in the middle, the clypeus, the inner orbits narrowly to the top of the eyes on the inner side, and the outer, entirely below and broadly above, pale yellow. The face closely, the clypeus sparsely, punctured. Mandibles black. Front and vertex impunctate, bare, shining. Thorax black; the edge of the pronotum, two marks on the mesonotum, obliquely and sharply narrowed at the base, the apex of the scutellum broadly, the mark narrowed behind the apical part of the scutellar keels, the post-scutellum, two marks on the apex of the median segment, narrowed below as they follow the outline of the lateral areæ, the lower part of the propleuræ, of the mesopleuræ more broadly, the tubercles, the hinder edge of the mesopleuræ, and the apical half of the metapleuræ, yellow. Mesonotum closely rugosely punctured, reticulated in the middle behind; the scutellum is similarly punctured. The base of the median segment is smooth; the areola is coarsely sharpened; the posterior area coarsely irregularly reticulated; the lateral area smooth at the base, the rest coarsely punctured; the spiracular area rugose, the apex transversely, coarsely striated. The upper part of the propleuræ is closely punctured, the apex stoutly striated, the striæ in the centre extending to the centre. Meso- and metapleuræ distinctly and closely punctured; the middle of the former finely and closely longitudinally striated. Wings hyaline, the nervures and stigma black. The four front legs yellow; the femora, tibiæ and tarsi black behind; the hinder coxæ, except at the apex on the inner side, the basal joint of the trochanters, the femora and the apical third of the tibiæ, black; the rest yellow. Abdomen black; the base of the petiole broadly, its apex and the apex of all the other segments, yellow; the middle segments of the abdomen are closely punctured; the gastrocoeli are

yellow, the steep apex of a more rufous hue; the base of the segment between them is striated; the sides of the apical three segments are yellow, the yellow becoming gradually broader towards the apex.

Maraces pectinata, sp. nov.

(Niger, late flavo ornato; pedibus fulvis, coxis trochanter ibusque anterioribus flavis, posticis nigris; alis fulvo-hyalinis, nervis, stigmatique nigris ♀.

Long: 17 mm.

Hab. Khasia Hills (Coll Rothney).

Antennæ black, the eighth to sixteenth joints white; the scape covered with white hair. Head black; the face, clypeus, the inner orbits,—narrowly below, more broadly above, the yellow not extending beyond the inner top of the eyes,—and the outer orbits entirely, from above the middle of the eyes to the base of the mandibles, pale yellow. The face and clypeus obscurely punctured and thickly covered with white hair; there is a black line down the face and an elongate mark on the apex of the clypeus. Front and vertex smooth, shining, and bare. Mandibles yellow, the teeth black. Thorax black; the edge of the pronotum, two lines on the mesonotum, obliquely narrowed on the inner side at the base, the apical half of the scutellum, the mark roundly narrowed at the base, the base of the pronotum, the lower side of the propleuræ from behind the middle to the apex, the tubercles, a small mark on the middle of the mesopleuræ, a smaller one behind it lower down, the lower third of the mesopleuræ, the apex of the mesopleuræ broadly below the keel, yellow. Legs fulvous; the four front coxæ, trochanters pale yellow; the hinder coxæ black on the outer side and on the outer half of the top; the basal joint of the trochanters black, wings hyaline, the base with a slight fulvous tinge; the stigma and nervures black; the areolet oblique; the second transverse cubital nervure longer and with a more oblique slope than the first; they almost touch above; the recurrent nervure is received shortly behind the middle. Abdomen black, the apices of all the segments yellow; the band on the third is interrupted in the middle; the petiole shining, the base of the post-petiole strongly punctured: the second, third, fourth segments closely

punctured; the gastrocoeli narrow, deep, smooth, and shining. Mesonotum rather strongly and closely punctured; the scutellum is as strongly, and more widely punctured; its sides, under the keels, strongly but not closely, punctured. The base of the median segment is smooth; the rest coarsely punctured, the apex especially in the middle, closely reticulated; the supramedian area large, about as wide as long; the sides at the base obliquely narrowed, the middle straight, the apex is not clearly separated from the posterior median by a keel. Pro- and mesopleuræ smooth; the depression on the former stoutly striated; the lower half of the meso- is depressed and separated from the raised upper half; the meta- closely and strongly punctured. The median segment is thickly covered with white hair.)

Joppini Zonojoppa, gen. nov.

Antennæ short, distinctly dilated and compressed between the middle and the apex; the dilated joints hollowed laterally. Wings violaceous throughout; the areolet is narrowed at the top, the transverse cubital nervures almost uniting there; the transverse basal nervure interstitial. Scutellum roundly convex; not raised above the level of the mesonotum, its sides stoutly keeled. Areola widely separated from the base of the segment, rounded and narrowed behind, the basal half deeply hollowed, the lateral basal areæ clearly separated. Clypeus broadly rounded at the apex, the labrum hidden. Legs short; the apex of the hinder femora not extending beyond the apex of the third segment. The abdominal segments do not project much laterally at the apex; the second and third segments are longitudinally striated at the base, the last (seventh) segment is well developed; its cerci are much longer than usual.

The thorax is shorter than the basal three segments of the abdomen; the middle of the mesonotum is raised and separated in front; the post-scutellum is shortly striated and depressed laterally; the apical three areæ on the median segment are closely defined, as is also the spiracular area; the sides of the mesonotum are bordered by a wide deep furrow; there is a short stump of a nervure on the disco-cubital nervure.

The characteristic features of this genus are the violaceous wings, the stoutly keeled scutellum, and the excavated areola.

Zonojoppa violaceipennis, sp. nov.

Nigra, capite thoraceque flavo maculatis; abdominis basi late rufo; pedibus nigris; coxis trochanteribusque anterioribus flavis, alis violaciis, nervis stigmatique nigris ♀.

Long. 15 mm.

Hab. Sarawak (Shelford).

Antennæ black, the scape yellow beneath. Head black; the face, clypeus, base of mandibles, the inner orbits to shortly beyond the ocelli, the outer more broadly from near the top, the line becoming gradually wider from top to bottom, pale yellow. Front and vertex smooth, bare and shining; the black on them has a plumbeous hue, and they are sparsely covered with pale hair. Thorax black; the upper edge of the pronotum from near the base (the yellow with a black band in the middle), the keels of the scutellum from near the base, the apex of the post-scutellum; the base of the prothorax from the keel on the pleuræ, the tubercles and a large mark on the lower part of the mesopleuræ at the base, yellow. Mesonotum in the middle stoutly punctured; the punctured space prolonged laterally at the base; the sides near the tegulæ are deeply furrowed. The scutellum, except at the base, is irregularly and rather strongly punctured; the sides are stoutly keeled; in the centre of the post scutellum are four stout keels. The central basal depression of the median segment is smooth; the sides are strongly punctured; the areola has a large, round depression at the base, which extends to shortly beyond the middle; the apical central area is smooth and depressed at the base; the rest of it stoutly transversely striated; the lateral stoutly, irregularly striated, almost reticulated; the spiracular, beyond the spiracles, irregularly obliquely striated. The lower part of the propleuræ is aciculated and irregularly striated; the meso-, except behind, finely and closely punctured; the meta- closely and coarsely striated; the meso- and metapleuræ are thickly covered with white hair. The four anterior coxæ entirely, the trochanters, the femora, except at the base, and the tibiæ and tarsi in front, pale yellow, black behind; the legs black; the coxæ above, except at the base, the apical half of the trochanters, a line on the femora above and on the base of the femora, pale yellow; all the legs are thickly covered with pale

pubescence; all the calcaria are pale yellow. Wings uniformly violaceous; the transverse cubital and the recurrent nervures are largely bullated. The basal three abdominal segments and the base of the fourth broadly, ferruginous; the basal three segments are narrowly lined with yellow at the apex. The post-petiole is finely longitudinally striated, the sides punctured; the second and third segments have a narrow keel in the centre, bordered by some longitudinal striations; the gastracœli are large, smooth, and have two oblique stout keels on the outer side.

MUTILLIDÆ.

Mutilla herpa, sp. nov.

Nigra, pro-mesothorace scutelloque ferrugineis; abdomine nitido, dense nigro piloso; segment secunodo dense albo piloso; alis violaceis; tegulis rufis ♂.

Long: 12 mm.

Hab. Sarawak, Borneo (Shelford).

Head as wide as the base of the mesonotum; coarsely rugosely punctured, running into reticulations on the front, which, at the apex, broadly projects; its apex and side are sharply keeled; the middle is obliquely incised; the sides are broadly rounded; the face is rugose and bears, on the middle at the apex, three irregular punctures. Antennæ black, the scape shining, pilose; the flagellum opaque, bare. Pro- and mesonotum, with the scutellum, closely rugosely punctured. The scutellum, is broad; its sides are smooth and project; its apex has a rounded slope. Wings violaceous, lighter in tint at the base; the third transverse cubital nervure is only indicated by a stump on the top; there being thus only two complete cubital cellules; the second transverse cubital nervure is broadly rounded. The median segment is coarsely reticulated; the basal three are of equal length, but the central is much narrower and is acutely pointed at the apex. The pro- and the upper two-thirds of the mesopleuræ are ferruginous; the propleuræ and the base and apex of the mesopleuræ are smooth. Abdomen deep black, shining; the petiole is broad and becomes gradually

wider towards the apex; the apex is smooth; at the base of this smooth part is a row of large punctures; from this the petiole slopes obliquely to the base; the ventral keel is straight, rounded at the base and apex; the second segment is covered with short depressed clear white pubescence; and is smooth and shining in the middle at the apex; the pygidium bears large round punctures all over. Legs black, thickly covered with long white hair; the spurs white.

Mutilla ira, sp. nov.

Nigra, dense albo piloso; alis fusco-violaceis, basi fere hyalinis ♂.

Long: 17 mm.

Hab. Sarawak, Borneo (Shelford).

Head distinctly narrower than the thorax; closely rugosely punctured and thickly covered with long white pubescence; the vertex and front with the hair sparser and shorter. The clypeus is smooth and shining and is keeled in the middle; the mandibles, at the base, are thickly covered with long white hair. Thorax densely covered with longish grey pubescence; the mesonotum is strongly, distinctly and uniformly punctured; the furrows are distinct on the apical half. Scutellum strongly, deeply and uniformly punctured and roundly convex; the postscutellum opaque, coarsely aciculated. Median segment coarsely reticulated; the basal median reticulation is twice longer than broad and has the apical half abruptly narrowed. Mesopleuræ coarsely punctured in the middle and thickly covered with grey hair; the lower part of the metapleuræ is alutaceous, the upper punctured. Legs thickly covered with long white hair; the calcaria pale. Wings dark violaceous, paler at the base; the cubital cellules complete; the middle one, is, above and below, longer than the following. Abdomen black, the basal two segments, the basal half of the third rufous; the base of the petiole is broad, more than half the width of the apex; the ventral keel is broadly rounded; the hair is white on the basal segments, shorter and black on the apical two; the hypopygium is punctured, smooth and shining in the middle; there are no keels or furrows on the epipygium.

Mutilla olbia, sp. nov.

Black, densely covered with longish pale hair; the first, second and the base of the third abdominal segment red; wings fuscous-hyaline with a violaceous tinge; the stigma and nervures testaceous, ♂.

Long: 15 mm.

Hab. Penrissen, 4500 feet, Sarawak.

Antennæ densely covered with a pale pile; the second and third joints together are equal in length to the fourth. Head distinctly narrower than the thorax; roundly, obliquely narrowed behind the eyes; the vertex strongly but not very closely, punctured; the front more closely rugosely punctured; the vertex sparsely, the front more thickly covered with long fulvous hair. Clypeus depressed in the middle; the edges rounded and forming a semicircle; the apical tooth of the mandibles is long, rounded at the apex; the subapical one is short and blunt. Thorax thickly covered with long fulvous hair; the pro- and mesonotum closely rugosely punctured; the scutellum is more closely punctured. Median segment closely reticulated; the basal three central areæ larger than the others; the central is longer than the others Propleuræ at the base rugosely punctured; the lower part of the apex with five stout keels; the central, raised part of the mesopleuræ is punctured but not deeply or strongly; the base of the metapleuræ smooth, the apex reticulated. The third transverse cubital nervure and the second recurrent are faint; the first transverse cubital nervere is oblique and rounded; the second is roundly curved and not obliquely sloped; the second cubital cellule at the top is shorter, at the bottom longer than the third: the recurrent nervures are received near the base of the apical third of the cellules. Legs thickly covered with white hair; the spines and calcaria white. On the abdomen the first, second, and the base of the third segments are rufous; the basal five segments are covered with long pale, the apical with black, hair; the ventral keel is slightly dilated at the base, roundly narrowed at the apex; the last segment above has the apical two-thirds broadly smooth in the middle; below it is strongly punctured, except at the apex, which is smooth and rufous.

Mutilla bagrada, sp. nov.

Long: 16-17 mm. ♂.

Hab. Kuching, Sarawak.

This species comes very near to *M. casiphia*; the differences between the two may be expressed thus:—

Scutellum not furrowed down the middle; the keel on the petiole straight; the face not tuberculate; the propleuræ smooth except above. *bagrada.*

Scutellum furrowed down the middle; the keel on the petiole curved; the face tuberculate below; the propleuræ rugose. *casiphia.*

Flagellum of antennæ brownish beneath, the third and fourth joints equal in length. Front and vertex coarsely rugosely punctured; the punctures running into reticulations on the front; the apex of the tubercles rufous. Clypeus slightly depressed in the middle; smooth, shining; the apex transverse. The face thickly covered with long grey hair. Mandibles at the base thickly covered with grey hair; the subapical tooth is indistinct; the apex of the projection behind the middle is oblique, rounded on the lower part. Pro- and mesonotum closely and rugosely punctured; there is a smooth keel in the middle; there is a furrow on either side of it on the apical half. Scutellum roundly convex, coarsely rugosely punctured. Median segment reticulated; the basal area short, not reaching beyond the middle; its basal third widened. Propleuræ smooth; the upper part at the base bordered by an oblique keel. Mesopleuræ thickly covered with silvery pubescence, the base smooth; there is a wide oblique depression. Legs thickly covered with white hair; the calcaria pale. Wings fuscous-violaceous, paler at the base; the third cubital cellule at the top and bottom distinctly shorter than the second; the first transverse cubital nervure is almost straight, and oblique; the second is roundly bent outwardly in the middle; both the recurrent nervures are received shortly beyond the middle. Abdomen thickly covered with white hair; the hair on the apical two segments is black; the basal two segments and the base of the third are rufous; the ventral keel is roundly curved and narrowed at the base; the last dorsal segment has no area; its lower surface is flat.

Mutilla agapeta, sp. nov.

Black; the abdomen red, with the apical two segments black; the clypeus broadly convex in the middle; the centre of the scutellum smooth and shining, its base depressed; wings fusco-violaceous, hyaline at the base. ♂.

Long: 15 mm.

Hab. Kuching, Sarawak.

The third joint of the antennæ is shortly, but distinctly, longer than the fourth. Front and vertex closely punctured; the vertex sparsely covered with longish pale hair; the front, especially in the centre, thickly covered with silvery pubescence. Face roundly convex, smooth and shining; the clypeus short, depressed, clearly separated, slightly and broadly waved; the edges depressed. Mandibles densely pilose at the base; the lower basal tooth stout, obliquely directed downwards; there is no distinct subapical tooth; the palpi are black. Pro- and mesonotum closely punctured; the pronotum above thickly covered with griseous pubescence; the lower and hinder part of the propleuræ bear stout, clearly separated keels. The raised central part of the mesopleuræ is thickly covered with silvery pubescence and punctured but not very deeply or closely. Metapleuræ smooth, irregularly reticulated at the base above. Mesonotum closely punctured. Scutellum strongly convex; the basal and apical slopes oblique; the base in the centre is flat, smooth and shining. Median segment reticulated, thickly covered with silvery pubescence. Legs thickly covered with white pubescence; the calcaria and spines pale. Wings fuscous-violaceous, hyaline behind the transverse basal nervure; the third cubital cellule at the top and bottom distinctly shorter than the second; the recurrent nervures are received beyond the middle of the cellules; the second transverse cubital nervure is roundly curved outwardly. Abdomen ferruginous; the basal half of the petiole below and the apical two segments black. The ventral keel is almost straight; the last segment is broadly smooth and bare in the centre; below it has the sides broadly, obliquely depressed and clearly separated from the centre which is depressed, especially at the apex, where it is bounded by keels.

Mutilla ilerda, sp. nov.

Black; the prothorax, mesonotum, scutellum and base of median segment rufous; abdomen black, with violet and purple tints; the apex of the second and of the third segments banded with clear white pubescence; wings fuscous-violaceous, lighter in tint at the base. ♂.

Long: 12 mm.

Hab. Kuching, Sarawak.

Antennæ stout, covered with a microscopic pale pile; the third joint is about twice the length of the pedicle and not quite one-half the length of the fourth. Head distinctly narrower than the thorax, thickly covered with long white hair, except on the front and vertex where the hair is sparser, shorter and black. The ocellar region is bounded laterally and below by two stout keels; the space between is depressed; a keel runs into the front ocellus. The clypeus is broadly keeled above; its apex is transverse, with the sides oblique. Mandibles irregularly bidentate at the apex; their base sparsely covered with longish golden hair. The pro- and mesonotum are closely and strongly punctured and covered with golden pubescence. Median segment closely reticulated; the central basal area is twice longer than broad and has the apical half narrowed. Propleuræ closely and strongly punctured except behind; the lower part is bounded by a stout keel: above this, on the apex, are four short keels, which become gradually shorter from the bottom to the top. Mesopleuræ closely and strongly punctured. Metapleuræ reticulated, except behind; on the upper part, at the base, is a narrow keel and above the middle a wide longitudinal furrow. Wings fuscous-violaceous, paler at the base; the third transverse cubital nervure is faint, as is also the cubitus from the second transverse cubital and the second recurrent nervures; the first transverse cubital nervure is oblique, and roundly curved on the lower part; the second is roundly curved outwardly in the middle; the second cubital nervure above is slightly more than one half of the length of the first. Abdomen shining, black; the third and following segments with blue and violet tints; the basal segments sparsely covered with white, the apical more thickly with black, hair; the apex of the second

and of the third with a broad band of depressed clear white pubescence; the basal ventral segment has a straight, rounded keel in the centre; its sides are stoutly punctured; its apex has an oblique slope; the pygidium is closely punctured and covered with black hair; its apex is depressed: there is no defined area on it; the epipygium is flat, closely and strongly punctured and has its sides margined.

Comes close to M. *gracillima*, Sm.

Mutilla mamblia, sp. nov.

Black, the scape of the antennæ, the thorax and the femora rufous, two oval spots of silvery pubescence on the base of the second abdominal segment; the whole of the third segment covered with depressed silvery pubescence; the sides of the pygidium fringed with silvery hair. ♀.

Long: 11 mm.

Hab. Kuching, Sarawak.

This species comes near to *M. prosperpina* Sm. which differs from it in having the legs ferruginous except that the knees and tarsi are slightly fuscous; the pubescence on the thorax is reddish-brown. The present species comes close to *M. gispa* Cam. but, apart from the difference in colouration, it may be known from it by the perfectly smooth pygidium.

Scape of antennæ rufous, covered with pale fulvous hair; the flagellum black, stout: the third joint twice the length of the fourth which is shorter than the fifth. Head nearly as wide as the thorax; closely rugosely punctured: the punctures longer than broad; the antennal tubercles black. Face and clypeus smooth and shining, sparsely covered with long pale fulvous hair. Mandibles rufous, black at the apex; the palpi blackish fuscous, darkest at the base; the subapical tooth straight and oblique at the apex. Thorax twice longer than broad, slightly narrowed in the middle; the base rounded with the edge irregular; the apex transverse, the sides above rounded; the sides of the median segment sharply denticulate: the outer edge of the pronotum is stoutly keeled above; the pleuræ smooth, impunctate; the upper part of the thorax is covered with longish black hairs. Legs black; all the coxæ, trochan-

ters and femora, except at the apex, rufous; they are covered with longish white hair; the spines on the four front tibiæ are rufous, on the posterior black; on the tarsi they are rufous, and their basal joints are thickly covered with rufous, stiff pubescence. The basal segment of the abdomen is short and is much narrower than the second; underneath it is rufous, smooth below; the base of the keel obtusely dentate. On the base of the second segment are two irregular, broader than long, marks of silvery pubescence; the third segment is almost entirely covered with silvery pubescence; the pygidium is smooth and is fringed laterally with long silvery pubescence; the ventral segments are thickly covered with silvery hair.

Mutilla palaca, sp. nov.

Antennæ and head black; the thorax red; the abdomen blue, thickly covered with long white hair, without any bands of depressed pubescence; wings uniformly fuscous, with a slight violaceous tinge; the third transverse cubital completely, and the second recurrent nervure almost completely obliterated ♂.

Long: 9 mm.

Hab. Kuching, Sarawak.

Antennæ stout, black, covered with a pale pile; the third joint is slightly, but distinctly, shorter in length than the fourth. Head black, nearly as wide as the thorax; behind transverse, the edge of the occiput sharp and slightly raised above. Front and vertex shining closely punctured all over and covered with longish white hair. Clypeus largely depressed in the centre; the depression largest below, narrowed above; the apex raised and closely punctured. Mandibles bidentate; the apical tooth long and curved at the apex. Thorax entirely rufous, thickly pilose; the hair on the mesonotum fulvous, on the median segment longer and white. Pro- and mesonotum, with the scutellum closely rugosely punctured; the post-scutellum is bordered laterally by a keel and there is a short, less distinct, keel in the centre. Median segment reticulated; the central basal one is very broad at the base, the apex much narrowed; the areæ surrounding it are large. The upper part of the propleuræ is irregularly, indistinctly, punctured; at the apex is an elongated area, rounded below, which reaches to shortly below the middle.

Mesopleuræ closely punctured; the metapleurg reticulated, smooth at the base. Legs black; the calcaria and spines pale; the hair dense, long and white. The second recurrent nervure is narrowed at the top, being there as wide as the space bounded by the first recurrent and the second transverse cubital nervures; the first transverse cubital nervure is straight and oblique; the second is curved and only slightly oblique. The first abdominal segment is broad at the base; below it is flat; its central keel does not project much and the part bordering it is irregularly punctured on either side of it. The last segment above is closely punctured, except for a smooth space in the middle at the apex; below, the apical half is stoutly keeled along the sides.

Agrees closely in colouration with *M. ilerda*, which may easily be separated from it by the keels on the front and vertex.

SCOLIIDÆ.

Scolia (Triscolia) aglaua, sp. nov.

Long: 12 mm. ♂

Hab. Sarawak (Shelford).

This species is not unlike what I take to be *S. opalina* Sm., which has also been taken in Borneo by Mr. Shelford. The difference between the two may be expressed thus:—

The frontal area clearly defined bounded by a ridge behind, the hair on the head and thorax black; the median segment punctured throughout. *opalina*, Sm.

The frontal area not clearly defined, not bounded by a ridge behind; the hair on the head and thorax white; the median segment not punctured throughout, there being a wide smooth space on the inner side of the lateral lobe. *aglaua*, sp. nov.

Antennæ opaque, bare. Head strongly and closely punctured and thickly covered with long white hair; the middle of the clypeus smooth impunctate; there is no defined frontal area. Mesonotum closely and rather strongly punctured, less closely in the middle. The scutellum and post-scutellum are similarly punctured. The central region of the median segment is bounded by a distinct deep furrow and is punctured, if anything, more strongly than the mesonotum; the inner half of the outer lobe

is smooth and impunctate, the outer punctured. The pro- and basal part of the mesopleuræ, are closely punctured: the apical part is smooth in the middle; with a punctured band above and a wider one below. The metapleuræ smooth, with a punctured band round the top; the punctures are smaller than on the mesopleuræ. Wings fuscous, with a distinct, violaceous tinge and highly iridescent. Abdomen black, with a distinct violet iridescence; the hair is black above, white below; the punctuation is distinct. Legs black; the hair is long and white; the fore calcaria are pale; the spines on the fore tarsi rufous.

Scolia (Discolia) ergenna, sp. nov.

Black; the greater part of the clypeus, the pronotum broadly, the scutellum, except at the apex, the post-scutellum, the sides of the metanotum and the apex of the metapleuræ broadly, lemon-yellow, as is also the upper part of the mesopleuræ at the base; abdomen broadly banded with yellow; legs black; the four anterior tibiæ lined with yellow; wings hyaline; the radial cellules infuscated, the stigma and nervures dark rufous ♂.

Long: 13 mm.

Hab. Pankalan Ampat, Sarawak.

Antennæ black; the scape covered with white hair. Head thickly covered with long soft white hair. Except immediately below the ocelli, the vertex is closely punctured; the front ocellus is larger than the hinder pair and is placed in a deep pit; except above, the front is closely and strongly punctured, and has an oblique slope. The face has a smooth, flat keel in the middle and is sparsely punctured; the clypeus is roundly convex, sparsely, and distinctly, punctured; it is yellow, except at the apex, where there is a black line, which is roundly dilated above. The yellow bands on the thorax are broad and of equal breadth throughout; they are united above by a narrow yellow line on the hinder edge of the pronotum. Mesonotum thickly covered with short fuscous hair; the scutellum with longer paler hair. The median segment is thickly covered with long soft white hair; the black central part is depressed; the sides are broadly rounded and project slightly. Mesopleuræ thickly covered with long pale hair; the pro- and metapleuræ shortly pilose. Legs thickly covered with white soft hair; the calcaria black. Wings

hyaline; the radial cellules infuscated; the nervures dark rufous; the second transverse cubital nervure is broadly rounded above. Abdomen thickly covered with white hair; the apices of the basal three segments are broadly yellow; the black on the basal segment is triangularly produced in the middle; on the second it is squarely produced, the dilated part being more broadly and more distinctly separated; on the third the black band becomes gradually narrowed towards the apex; on the fourth and fifth the black bands are not dilated and extend to the middle; the apical three segments are entirely black.

Scolia (*Discolia*) *patara*, sp. nov.

Long: 17-19 mm.

Hab. Santubong, Sarawak.

This species comes very near to *D. thyatira* Cam. but the two are, I consider, distinct. *D. patara* is smaller, it wants the curved yellow marks on the top of the clypeus, there is no yellow mark below the antennæ, and the lower part of the radius is broadly rounded outwardly and does not form an angle with the upper abscissa.

Head black, the front, vertex and the upper half of the outer orbits narrowly orange-yellow; the front and vertex thickly covered with long pale fulvous hair; the face more sparsely with long black hair The front and vertex strongly, the face, if anything, more strongly punctured, but not quite so closely; the clypeus is almost impunctate; the occiput is thickly covered with black hair. The orange band on the pronotum is narrowed behind, is broad, and covered with fulvous hair; the mesonotum is sparsely punctured and is thickly covered with short black hair; the scutellum is covered with long black hair except at the apex; the post scutellum is much more sparsely haired. The median segment is thickly covered with long black hair; as are also the pleuræ; the metapleuræ have also a pale pubescence. Wings uniformly fuscous-violet and moderately iridescent. Abdomen, except in the middle, thickly covered with black hair, smooth, shining, and, especially on the middle segments, bearing brilliant blue and violet tints, this being also the case with the ventral surface.

Scolia (Discolia) acutinerva, sp. nov.

Black; the apices of the basal four abdominal segments lined with yellow; the wings yellowish-hyaline, the cubital cellules with a more decided yellow tinge than the rest; the head and thorax covered with a pale golden pile and thickly with pale fulvous hair; the basal three segments of the abdomen have blue and violet tints and are fringed with pale fulvous hair; the hair on the apical segment is long, dense and black ♀.

Long: 23 mm.

Hab. Borneo.

Antennæ black, the scape shining and sparsely covered with long pale fulvous hair. The head, except on the ocellar region, is thickly covered with long pale fulvous hair; the vertex is more sparsely covered than the front; the vertex is shining and is strongly, but not closely, punctured; the front is impunctate and is furrowed down the middle. The clypeus is fringed above with long fulvous hair, is smooth above, the apex is irregularly, stoutly, longitudinally, striated; the extreme apex is depressed, smooth, and more or less piceous. The apices of the mandibles are piceous. The mesonotum is strongly punctured, except in the middle behind; the scutellum is, if anything, more strongly and closely punctured, except at the apex, which is smooth; the post-scutellum is more closely punctured. The golden pile on the median segment is dense, except laterally at the base, it is closely punctured. The golden pile on the pleuræ is very dense. Legs black, covered with fulvous hair. The long spines on the front tarsi are bright rufous; on the four hinder they are of a paler rufous colour; the tibial spines are pale yellowish; the calcaria are of a still paler yellow colour. The malar nervures are rufous; the transverse cubital nervure is sharply bent outwardly in the middle and projects there in a short branch. The abdominal segments are smooth, impunctate and are sparsely covered with long pale fulvous hair; the micaceous tints on the basal three segments are very distinct in certain lights; the hairs on the hypopygium are stout, stiff and black.

The clypeus is subtriangular and is broadly, roundly convex; its apex in the middle is transverse, its sides broadly rounded.

Comes near to *S. indica* Sauss. *sec.* Bingh. Characteristic is the peculiar form of the transverse cubital nervure.

Dielis borneana, sp. nov.

Black; the second and third segments broadly, and the others narrowly on the sides, red; the wings fuscous-violaceous, the apex without a violaceous tinge; the pile on the pygidium golden or rufous; the middle and apical segments of the abdomen fringed with rufous hair.

Long: 45 mm.

Hab. Bajong and Santubong, Sarawak.

Head; the vertex sparsely punctured; the ocellar region more sparsely punctured than the rest; the front is much more closely and strongly punctured and there is a smooth line down the middle. The face and clypeus closely punctured, except for a somewhat triangular large smooth space on the centre of the latter. The occiput is thickly covered with long black stiff hair; the vertex is almost bare; the front is covered with black hair, which has a rufous tinge; the face and clypeus are covered with shorter hair of a darker colour; the sides of the face are thickly covered above with silvery pubescence; the hinder orbits are covered with black hair and with silvery pubescence. Mesonotum strongly and closely punctured except for a smooth impunctate space behind the middle. The scutellum has a punctured, irregular band on the base and an irregular row of punctures before the apex. The post-scutellum is punctured at the base and there is an irregular row of punctures at the apex. The basal region of the median segment is closely and distinctly punctured, except broadly laterally at the base, and more narrowly down the centre; the apical slope is smooth, closely, minutely punctured above and at the sides. Propleuræ closely and rather strongly punctured, except behind; the meso- smooth; the middle thickly covered with black hair; the metapleuræ smooth and almost bare. Legs thickly covered with black hair; the hair on the hinder tarsi bright rufous. Wings fuscous-violaceous; the violaceous tinge absent from the apical portions, which are also lighter in tint; the stigma and nervures black, abdomen black; there are two large rufous marks on the second segment which are narrowed and rounded on the inner side;

the third segment is almost entirely rufous; the fourth and fifth segments are more or less rufous laterally; the apical fringe on the second and following segments is bright rufous; the pygidium is thickly covered with pale golden pubescence, which probably varies in tint.

Comes near to *E. luctuosa* Sm. and *E. 4 guttulata* Burm., but has the abdominal markings red, not yellow. *E. luctuosa* differs from it further in having the wings darker, more uniformly blue-violaceous in colour, in the scutellum and post-scutellum being much more strongly and broadly punctured, the punctuation on the former extending to near the apex, while the latter is strongly punctured at the base and apex.

POMPILIDÆ.

Salius sostratus, sp. nov.

Black; the antennæ, head, pro- and mesonotum, with the scutellum ferruginous, and except the antennæ, thickly covered with golden pubescence; the legs entirely ferruginous; wings entirely flavo-hyaline, the stigma and nervures fulvous ♀.

Long: 22 mm.

Hab. Sarawak, Borneo (Shelford).

Antennæ bare, uniformly ferruginous. Head ferruginous, densely covered with golden pubescence, the lower outer orbits black. The apex of the clypeus is depressed, clearly separated, smooth, bare and broadly rounded; the sides straight and oblique. The apex of the mandibles black, the rest ferruginous; the palpi ferruginous. The eyes distinctly converge above where they are separated by not much more than the length of the fourth antennal joint; the hinder ocelli are separate from the eyes by a slightly greater distance than they are from each other. Thorax black, the hinder half of the pronotum, the mesonotum and the scutellum ferruginous; and the whole is covered with a golden pile. The pronctum is furrowed in the middle: the mesonotum is broadly rounded at the base; it is alutaceous. The scutellum is flat, smooth and is not much raised above the top of the post-scutellum; the latter is broadly rounded from the top to the bottom; the sides of both have a distinct oblique slope (and more particularly the post-scutellum) so that both are narrowed on the top. The part at the sides of

the post-scutellum is strongly, but not closely, transversely striated. The median segment has a gradually rounded slope to the apex; the base and apex are smooth; the rest coarsely, irregularly transversely striated. Wings uniformly yellowish-hyaline, the apex not infuscated; if anything paler than the rest of the wing; the stigma and nervures yellowish; the first transverse cubital nervure is obliquely curved; the upper (longer) part has a more sharply oblique slope than the lower; the second is straight and oblique; the third is broadly rounded; the first recurrent nervure is received near the base of the apical third of the cellule, not close to the second transverse cubital nervure as in *Myginimia;* the first transverse cubital cellule is distinctly longer than the second above, but slightly shorter below; the second recurrent nervure is received at the apex of the apical fourth of the cellule. Legs uniformly ferruginous. Abdomen black; the last segment rufous all round and thickly covered with long rufous hair; the penultimate segment is covered with a golden pile.

This is a much more slenderly built species than *S. flavus;* and may be readily separated from it by the cubital cellules being more equal in length, by the pronotum not bulging broadly outwardly in the middle, not narrowed at the apex, by the median segment having a more gradually rounded slope and the head is shorter and more obliquely narrowed behind the eyes. Characteristic, as compared with most of the species of the *flavus* group, is the fact that the coxæ and trochanters are not black.

Salius iobates, sp. nov.

Claws with one tooth. Black, the abdomen with a bluish tinge; the antennæ rufous yellow, the scape and the apical four joints black; the basal half of the wings fuscous-violaceous; the apical yellowish-hyaline; the hinder wings entirely smoky violaceous. ♀.

Long: 24 mm.

Hab. Kuching, Sarawak.

Head black; the part between and below the antennæ testaceous; the clypeus with a brownish tinge; its apex rufo-testaceous. Front and vertex alutaceous: the front distinctly

furrowed down the centre. Eyes distinctly converging above: at the top separated from each other by the length of the fourth antennal joint: the hinder ocelli are separated from each other by a less distance than they are from the eyes. Thorax velvety black, sparsely covered with long black hair; the scutellum not projecting much over the mesonotum; the post-scutellum has a lower elevation than it; its apical two-thirds have an oblique, straight slope; its centre is keeled. Median segment obscurely transversely striated. The dark part of the wings extends close to the first transverse cubital nervure and on the lower edge near to the apex; the base of the cubital cellule is blackish also; the second cubital cellule is distinctly shorter than the third above and below; the third transverse cubital nervure is obliquely narrowed towards the second on the upper half; the accessory nervure in the hind wings is instertitial. Legs black; the calcaria and spines black; the tooth on the base of the claws short and bluntly pointed. Abdomen black, with a distinct plumbeous-sericeous tinge; the anal segment thickly covered with long black hairs.

Macromeris aureopilosa, sp. nov.

Nigra, antennis subtus brunneis: capite thoraceque dense aureopilosis; alis flavo-hyalinis, apice fusco-violaceo, ♀.

Long: 13 mm.

Hab. Borneo.

Antennæ slender, black above, brown below. Head densely covered with depressed golden pubescence and more sparsely with long silvery hair Apex of clypeus broadly rounded. Mandibles black, broadly rufous near the middle; the base covered with silvery pubescence. Palpi testaceous. Thorax densely covered with depressed golden pubescence: the apex of the median segment transversely striated; the pleural tubercle nipple-like. Wings yellowish-hyaline; the apex from the second transverse cubital to the middle of the second recurrent nervure bright fuscous-violaceous. Legs long; the fore knees and tibiæ testaceous; the tarsi are minutely spined; the hind spurs are not much more than one fourth of the length of the metatarsus.

Allied to *M. castanea* (Bingh.)

Pompilus citherus, sp. nov.

Black, marked with yellow; a mark on the apex of the mesonotum, two spots on the scutellum and the tegulæ, yellow; wings yellowish-hyaline, the apices of both smoky; the second and third cubital cellules equal in length; legs black, marked with red and yellow; the four front tarsi annulated with yellow. ♂

Long: 11-12 mm.

Hab. Kuching, Sarawak.

Antennæ reddish-brown, black above; the fifth and following joints dilated on the underside. Head, if anything, wider than the thorax, black; the face, the inner orbits broadly to near the ocelli, the clypeus, except for a broad black line in the centre above, the base of the mandibles broadly, and the outer orbits to the outer edge, yellow; the hinder part of the vertex and the occiput and cheeks thickly covered with long soft pale hair. The apex of the clypeus is broadly rounded; the labrum is two-thirds of its length and is black; the eyes are parallel; the ocelli are in a curve, the hinder are separated from each other by a slightly greater distance than they are from the eyes. The temples are narrow; the occiput transverse. Thorax thickly covered with silvery pubescence, black; a broad line on the hinder edge of the pronotum, a mark, broader than long, on the apex of the mesonotum, two oval marks behind the middle of the scutellum, tegulæ and a small oblique mark over the middle coxæ, yellow. The apex of the pronotum is broadly rounded; the scutellum is roundly convex, but not much raised above the level of the mesonotum. Median segment alutaceous, and thickly covered with longish pubescence. Legs black; the coxæ and trochanters black, except at the apex of the anterior; the fore femora, except at the base, the middle and four posterior to near the middle, and the anterior tibiæ entirely, red; the four anterior tibiæ are yellow behind; the anterior tarsi yellow, black towards the apex; the middle black, with the four basal joints annulated with yellow; the hinder black; the spurs yellow. Wings yellowish-hyaline, the apices of both fuscous; the third cubital cellule is slightly shorter than the second; the first recurrent nervure is received near the base of the apical

fourth; the second shortly beyond the middle; the transverse basal nervure is interstitial; the accessory nervure in the hind wing is received shortly beyond the cubital. Abdomen densely pruinose; there are two large marks, wider than long on the base of the second segment, two marks on the base of the fourth, two larger marks on the base of the sixth and the whole of the seventh, yellow. The tibial and tarsal spines are yellow.

Allied to *P. vagabundus* Sm., which, *inter alia*, may be known from it by the second cubital cellule being twice the width of the third.

Pompilus iliacus, sp. nov.

Black, pruinose; the wings fuscous-violaceous; the first recurrent nervure is almost interstitial; the third cubital cellule at the top shorter than, at the bottom longer than, the second. ♀

Long: 13-14 mm.

Head wider than the thorax, the temples very narrow, the occiput transverse. Eyes large, distinctly converging above; the ocelli in a triangle; the hinder separated from each other by about the same distance they are from the eyes. Clypeus transverse at the apex in the middle; the sides broadly rounded. Prothorax large; the basal part distinctly separated all round; at the sides it projects broadly. Median segment broadly rounded from the base to the apex. Wings fuscous-violaceous, the posterior lighter in tint; the second cubital cellule at the top is distinctly longer, at the top distinctly shorter, than the third; the transverse basal nervure is almost interstitial, as is also the first recurrent (as in the *Salius-Mygnimia* section); the second is received almost in the middle of the cellule; the accessory nervure in the hind wings is interstitial. Legs black; the tibial and tarsal spines black; the long spur of the hinder tibiæ does not reach to the middle of the metatarsus. Abdomen smooth; the last segment thickly covered with long black hair.

There is no transverse furrow on the second ventral segment; the meta-thoracic spiracles are large, raised and bordered behind by a furrow; the tibial and tarsal spines are long; the underside of the tarsi are thickly spined; the tarsal claws have a stout, sharp subapical tooth.

Comes near to *P. perplexus* Sm.

Pompilus cariniscutis sp. nov.

Niger, facie, clypeo, orbitis oculorum, linea pronoti, scutello post-scutelloque flavis; pedibus rufo-fulvis; coxis, trochanteribus, femoribus apiceque tibiarum late nigris; alis flavo-hyalinis, apice violaceis. ♂

Long: 13-14 mm.

Hab. Borneo (Shelford).

Antennæ black; the scape yellowish beneath. Head black, sharpened, sparsely pilose; the face, clypeus, the inner orbits broad below, narrowed above and the outer more narrowly and uniformly, bright orange-yellow. The hinder ocelli are separated from each other by a slightly less distance than they are from the eyes, which converge slightly below. Mandibles orange-yellow, black at the apex. On the thorax there is a broad, interrupted line on the pronotum not extending to the tegulæ; a mark, wider than long, and with the sides at the base slightly projecting, on the hinder part of the mesonotum, a large mark on the scutellum roundly narrowed towards the base, where there is in the middle, a rounded point; at its apex and touching it, is a transverse line, which does not extend to its outer edge; and the top of the scutellum, all orange-yellow. The scutellum is broadly rounded above; the post-scutellum is slightly higher than it; it is more distinctly raised and separated; its top is keeled; the sides have an oblique slope. The median segment is opaque, and thickly covered with pale pubescence; it is, except in the middle at the apex, closely irregularly reticulated. Legs rufo-fulvous, the coxæ, trochanters, the femora to near the apex and the apical third of the hinder tibiæ, black. Wings, yellowish-hyaline; the apex of both wings violaceous, the first cubital cellule at the top is fully one-fourth longer than the second; the third transverse cubital nervure in the hind wings is interstitial.

The median segment has a gradually rounded slope; the inner spur on the hinder tibiæ is not half the length of the metatarsus; the basal segment of the abdomen is narrow at the base, becoming gradually wider towards the apex; the pronotum is rather short. The transverse median nervure is received in front of the transverse basal.

Belongs to the group of *P. multipictus* Sm., and the European *P. 4 punctatus*, Fab. Characteristic is the prominent, raised, keeled post-scutellum.

P. 4 punctatus, I may add, is found in Japan also.

Pompilus parmenus, sp. nov.

Niger, vertice, fronte, linea pronoti, scutello, post-scutello, macula mesonoto, linea abdominis segmento 2', maculaque segment 7', flavis; alis flavo-hyalinis, apice fusco-fumato. ♂

Long: 12 mm.

Hab. Borneo (Shelford).

Antennæ black, the scape for the greater part yellow. Head black, the face, front and the vertex, except behind, lemon-yellow; the ocellar region black; smooth, shining, almost bare. The eyes distinctly converge above, where they are separated by slightly less than the length of the third antennal joint. The apex of the clypeus is broadly rounded. Thorax black; a broad band on the centre of the pronotum behind, a large mark on the apical half of the mesonotum, its sides straight, its base irregular; and it is broader than long; the greater part of the scutellum (the mark obliquely narrowed laterally at the base), the post-scutellum and a line on the base of the second abdominal segment, lemon-yellow. The median segment is thickly covered with greyish hair; wings yellowish-hyaline; the apex is smoky, broader at the top, where the cloud extends to the second transverse cubital nervure; the second cubital cellule at the top is distinctly shorter than the first; the two transverse cubital nervures converging there; the transverse basal nervure is interstitial. Legs black; the tibiæ and tarsi rufo-fulvous. The base of the second abdominal segment is lined with orange yellow; the last segment above is broadly pale yellow.

Has the general colouration of *P. cariniscutis* here described; but is readily known from it by the flat post-scutellum and by the interstitial transverse basal nervure.

Pseudagenia reticulata, sp. nov.

Nigra, abdominis basi late f emoribusque posticis rufis: alis fusco-violaceis, basi hyalinis ♀.

Long: 11-12 mm.

Front, face and clypeus covered with a silvery pile. Eyes distinctly converging above; at the top they are separated by twice the length of the second joint of the antennæ; the hinder ocelli are separated from the eyes by the same distance they are from each other. Clypeus rather short, broader than long. Palpi black. Thorax thickly covered with silvery pubescence; the central part of the mesonotum punctured and clearly separated from the lateral by a narrow furrow; the lateral parts are smooth, and the central part is more strongly punctured on the sides. Scutellum sparsely punctured; the post-scutellum shagreened. Median segment thickly covered with white pubescence; irregularly, closely reticulated. Meso- and metapleuræ closely, irregularly reticulated. Legs black; the hinder femora clear red; the tibiæ obscurely rufo-testaceous, the calcaria black. Wings fusco-violaceous, narrowly hyaline at the base; the third cubital cellule at the top shorter than the second, below about equal in length to it; the first recurrent nervure is received shortly behind the middle; the second at the apex of the basal third. Abdomen smooth and shining; the basal three segments ferruginous, the apical black and thickly pruinose.

Pseudagenia borneana, sp. nov.

Nigra, dense argenteo-pilosa; femoribus posticis rufis; alis fere hyalinis, nervis stigmatique nigris; flagello antennarum late rufo ♀.

Long: fere 12 mm.

Hab. Sarawak, Borneo (R. Shelford).

Antennæ black, the fourth and following joints rufous beneath. Head alutaceous; the lower part of the front, the face, clypeus and base of mandibles densely covered with silvery pubescence. The hinder ocelli are separated from the eyes by a slightly greater distance than they are from each other. The apex of the clypeus in the middle is smooth and shining; mandibles piceous near the middle; the apical joints of the palpi pale testaceous. Thorax densely pruinose; the pile has a fulvous tinge; the pronotum is broadly rounded; the propleuræ behind have two rounded, clearly separated, tubercles, the basal being

the larger. The median segment has a short, rounded slope; it is irregularly transversely wrinkled. The wings are hyaline, with a slight, but distinct, fulvous tinge; the first and second cubital cellules are equal in length above; the first recurrent nervure is received in the middle; the second at the apex of the basal third of the cellule; the accessory nervure in the hind wings is interstitial. Legs black; the hinder femora entirely and the four anterior tibiæ and base of tarsi rufous in front. Abdomen pruinose; the basal segment is triangular, and becomes gradually wider from the base to the apex, and without a neck at the base.

This species comes near to *P. tincta*. Sm., *sec.* Cam., Manch. Mem. 1891, p. 441. That species may be known from it by its head and thorax being densely pilose, by the first cubital cellule being distinctly shorter than the second above; by the apex of the propleuræ not being so distinctly bituberculate, and by the first transverse cubital nervure being roundly curved, not straight, as in the present species.

Agenia balteata, sp. nov.

Nigra, scapo antennarum, clypeo, mandibulis, pedibusque pallide testaceis; femoribus, tibiis tarsisque posterioribus nigro-maculatis; alis hyalinis; stigmate nigro, nervis fuscis ♀.

Long: 11 mm.

Hab. Kuching, Sarawak, and Singapore.

The basal two joints of the antennæ rufo-testaceous; the third joint dark testaceous; the fourth, fifth and sixth joints dark testaceous beneath. Head black; the clypeus, mandibles, and lower inner orbits yellowish testaceous; the palpi at the base testaceous, the apical joints pale yellow; the hair bundle long and dark testaceous. The front is thickly covered with a golden pile and has a narrow furrow down the middle. The eyes distinctly converge above and are separated there by the length of the third antennal joint. Thorax thickly covered with golden pubescence; the prothorax yellowish-testaceous. Legs yellowish-testaceous; the four hinder trochanters, the middle femora with an irregular line above, the apex of the hinder femora, the apex of the middle tibiæ, the apical two-thirds of the hinder tibiæ, the apex of the fore tarsi and four posterior, except at the

base, black. Wings clear hyaline; the stigma black, the nervures paler. Abdomen black; the apices of all the segments testaceous; the last segment almost entirely testaceous.

This is an *Agenia* as now limited. The species recorded by Smith from the Malay and Indian regions are probably mostly referable to *Pseudagenia*, Kohl. The distinction between the two consists in *Agenia* having a bundle of stiff bristles at the base of the maxilla in the ♀.

SPHEGIDÆ.

Ampulex striatifrons, sp. nov.

Dark green, largely tinged with blue; the flagellum of the antennæ black; the wings hyaline; the radial cellule and the space bounded by the first and third transverse cubital nervures and the discoidal cellule smoky; the front with three stout, longitudinal keels; the space bounded by them is transversely striated ♂.

Long: 12 mm.

Hab. Kuching, Sarawak.

Antennæ black, covered with a pale pile; the scape with hardly any metallic tint. Head blue, the ocellar region largely tinged with purple; the three keels in the front are stout and all reach to the base of the mandibles; the part between them, from near their top, bears stout, oblique striæ; the part on their outer side at the top bears some large punctures; the vertex is sparsely and strongly punctured. The front ocellus is separated from the hinder by a greater distance than these are from each other, and the latter are separated from the eyes by a distinctly greater distance than they are from each other. Clypeus distinctly keeled in the middle, green, smooth and thickly covered with white pubescence. Mandibles brownish-black; their middle, on the lower side, with a row of large punctures. Prothorax elongate, the base distinctly narrowed; it is sparsely punctured and the middle of the pleuræ bears a longitudinal furrow. The central part of the mesonotum is strongly and deeply punctured; the sides are more sparsely punctured, are coppery in colour and are depressed behind. Scutellum and post-scutellum sparsely punctured. Median segment irregularly transversely striated;

the striæ are more widely separated in the centre; the second keel does not reach to the apex. The apical slope is thickly covered with white hair; the striation is close and obliquely transverse; the upper lateral teeth are small. The mesopleuræ are distinctly, but not closely, punctured; the upper part of the metapleuræ is stoutly striated. Legs for the greater part blue; the femora more greenish in tint than the tibiæ; the inner tooth of the claw is shorter and stouter than the outer. Wings hyaline, the radial cellule, the space bounded by the first and third transverse cubital nervures and the upper part of the discoidal are smoky; the three transverse cubital nervures are distinct. Abdomen largely marked with blue and purple tints; the third segment is largely marked with rosy and brassy tints; it is strongly punctured; its apical half is distinctly depressed, is more fiery in tint than the base and is more closely and not so strongly, punctured.

Comes near to *A. sodalicia*, Kohl. from Malacca.

Tachytes borneana, sp. nov.

Black; the head and thorax densely covered with pale silvery pubescence; the abdominal segments banded with silvery pile; the pygidium covered with golden pubescence; wings hyaline, with a faint yellowish tinge; the nervures pale testaceous; the second and third cubital cellules at the top equal in length ♀.

Long: 13 mm.

Hab. Kuching, Sarawak.

Antennæ black, covered with a pale microscopic pile. Front, face and clypeus densely covered with silvery pubescence and more sparsely with long pale hair; the vertex sparsely with long pale hair; alutaceous; the lower part of the vertex has a narrow furrow in the middle, which ends, above the ocelli, in a smooth depression. Mandibles black; the palpi testaceous. The basal portion of the median segment has a thin furrow down the middle, which becomes conically dilated at the apex; the furrow on the apical slope is wide and deep. The second and third cubital cellules are equal in length above; they are as wide there as the space bounded by the two recurrent nervures. Legs black; the front tarsi testaceous at the apex; the calcaria

testaceous; the tibial and tarsal spines white. The abdominal segments are banded with depressed silvery pubescence; the pygidium is covered with bright golden pubescence.

The radial cellule has the apex rounded, not acute; the eyes above are separated by not quite the length of the second and third antennal joints united; and there is no appendicular cellule in the fore wings. Comes near to *T. nitidula* F. and *T. rothneyi* Cam., from both of which it may be known by the golden pile on the pygidium.

Notogonia umbripennis, sp. nov.

Black, covered with silvery pubescence; the pygidium with a stiff golden pile; the wings fuscous-violaceous ♀.

Length 14-15 mm.

Hab. Kuching, Sarawak.

The lower part of the front and the clypeus thickly covered with silvery pubescence; the front and vertex closely and minutely punctured; the centre of the face has an impressed line; the clypeus is smooth, shining and bare. Eyes large, distinctly converging above, where they are separated by about the length of the fourth antennal joint. The base of the mandibles is thickly covered with silvery pubescence; the palpi are black and covered with a grey pile. The mesonotum is depressed in the middle at the base; and there is a short longitudinal furrow opposite the tegulæ. Median segment alutaceous; there is a narrow keel down the centre of the basal two-thirds; above the middle of the mesopleuræ is a distinct striated longitudinal furrow, which does not reach to the apex. Wings fuscous-violaceous; the second and third cubital cellules above are equal in length; the recurrent nervures are received close to each other near the apex of the basal third of the cellule. Legs stout; the apex of the hinder tibiæ and the metatarsus covered with a golden pile; the spines on the tibiæ and tarsi are black, as are also the calcaria. Abdomen pruinose; the segments banded with silvery pile; the pygidium densely covered with bright golden pile and thickly with long stiff fulvous hair. The sides of the median segment are obscurely obliquely striated.

Comes nearest perhaps to *N. jaculatrix* Sm. from which it may be known by the dark violaceous wings.

Notogonia tegularis, sp. nov.

Black, densely covered with silvery pubescence; the wings hyaline, highly iridescent; the apex slightly smoky; the mesonotum and scutellum closely minutely punctured; the median segment obscurely transversely striated; the base with a longitudinal keel ♂.

Long: 9 mm.

Hab. Kuching, Sarawak.

Front, face and clypeus densely covered with silvery pubescence, this being also the case with the outer orbits and the base of the mandibles; the eyes distinctly converge above, where they are separated by almost the length of the second and third joints united. Thorax covered with a silvery pile; the mesonotum and scutellum are closely, minutely punctured, the latter more strongly than the former. The post-scutellum is depressed in the middle. Median segment alutaceous; the basal half transversely striated, but not strongly or closely and keeled down the middle. The mesopleuræ closely and distinctly punctured; on the basal half, in the centre, is a distinct longitudinal furrow; the basal half of the mesopleuræ longitudinally striated in the middle, the striæ longest in the middle. Legs black, pruinose; the spines on the tibiæ are pale, on the tarsi rufous. Wings hyaline, highly iridescent, somewhat infuscated at the apex; the second and third cubital cellules at the top are about equal in length and are of the length of the space rounded by the two recurrent nervures, the outer of which is received in the middle of the cellule; the appendicular is longer than usual. Abdomen shining; the segments banded with silvery pubescence; the last segment entirely covered with silvery pubescence. The first transverse cubital nervure is broadly and roundly curved and is not angled. The tegulæ are black at the base, pale testaceous in front.

Cerceris crassidens, sp. nov.

Black, the basal four or five abdominal segments rufous; the antennal keel, a mark on the apex of the clypeus and the base of the mandibles, pale yellow; the wings smoky violaceous, paler at the base; the lower part of the mesopleuræ projecting into a stout tooth ♀.

Long: 18-19 mm.

Hab. Pankalan Ampat, Sarawak.

Antennæ stout, black, the apex rufous. Head black; the outer part of the antennal keel pale yellow; it is longish, stout and has a narrower keel on its apex; the face, cheeks and clypeus are thickly covered with silvery pubescence; except behind the ocelli it is closely and somewhat strongly punctured. Mandibles black; the basal half broadly yellow; behind the middle above they project upwards into a large, smooth shining, bluntly pointed tooth. Thorax densely covered with silvery pubescence; above closely and distinctly punctured, the punctures in the middle of the mesonotum running into longitudinal striations. The scutellum is slightly depressed in the middle; the area on the median segment is longitudinally striated. Legs black, covered with a silvery pile: the four hinder tibiæ are broadly lined with pale yellow behind. The wings are dark smoky, the base and the discoidal cellule paler; the hinder wings are almost hyaline except at the apex. Abdomen red, the apical two segments for the greater part black above; it is smooth, with the petiole and the penultimate segment sparsely punctured. The pygidium is closely punctured, reticulated; the sides of it are fringed with stout stiff hairs; the oblique sides of the segment are sparsely punctured; the apical half of the epipygium is incised in the middle: the incision is distinctly bordered, is rounded and obliquely narrowed behind; the segment at the base is depressed on either side.

In colouration this species is not unlike *C. viligans* Sm. and *C. sepulcralis* Sm., but may be easily separated from them by the stout projecting tooth on the mesopleuræ. The head is large and is well developed behind the eyes; the apex of the clypeus is depressed and is bluntly and shortly tuberculated in the middle and at the sides, the basal half of the petiole is keeled in the middle; the second cubital cellule on the lower side is distinctly shorter than the third.

Cerceris latidens, sp. nov.

Black; the inner lower orbits, the base of the mandibles, the sides of the scutellum, the post-scutellum, the apex of the petiole and an interrupted line on the apex of the third segment,

yellow; the apex of the clypeus bidentate; the area on the median segment obliquely striated; the wings hyaline, with a smoky fascia on the apex ♀.

Long: 7 mm.

Hab. Kuching, Borneo.

Antennæ black, the scape yellow, the flagellum brownish beneath. Front and vertex closely punctured, except over each antennæ; the antennal keel is stout, yellow, black above; the face is sparsely punctured, as is also the clypeus, except at the apex, which is bidentate; the teeth are broad and slightly oblique at the apex. Mandibles broadly yellow at the base. Mesonotum punctured, but not closely or deeply, as is also the median segment; the scutellum is more closely punctured. The area on the median segment is obliquely striated, except in the centre. Mesopleuræ reticulated, more strongly and distinctly below than above; the centre is deeply furrowed. Legs black; the anterior and middle tibiæ in front, the anterior tarsi, and the base of the middle tarsi, pale yellow. Wings clear hyaline, the radial cellule at the apex and the upper part of cubital below it dark smoky; the petiolated cellule is distinctly shorter than the following and receives the recurrent nervure at the apex of the basal third. The apex of the petiole, the base of the second segment and an interrupted line on the third segment are yellow; the pygidium is brownish, smooth at the base, punctured at the apex; the sides are strongly punctured; the epipygium is broadly depressed.

There is a stout, curved keel on the lower part of the metapleuræ in the middle; the lower part of the clypeus, under the projecting toothed part, is bluntly bidentate; the apex of the mandibles is bluntly rounded.

VESPIDÆ.

Icaria latebalteata, sp. nov.

Dark ferruginous, variegated with black and yellow; the petiole short, wide, narrowed distinctly at the base; rufous, its apex broadly yellow; the apex of the second segment broadly yellow, much broader in the middle than at the sides; wings hyaline, the radial cellule dark smoky, except along the lower

edge; the stigma dark, the nervures of a lighter fuscous colour (worker).

Long: 9-10 mm.

Hab. Kuching, Sarawak.

Scape of antennæ yellow, dark testaceous above, the flagellum blackish, brownish at the base and apex beneath. Head dark ferruginous, thickly covered with silvery pubescence, the vertex sparsely with fuscous hair: the lower inner orbits to near the inner part of the incision; the sides of the clypeus broadly, its apex more narrowly, a line on the outer orbits near the top, another one below and the base of the mandibles broadly above, pale yellow. The front and the vertex to the end of the ocelli are distinctly, regularly, but not very closely, punctured; the clypeus is sparsely punctured, more especially noticeable on the dark central part. The meso- and metapleuræ are black, the metanotum dark rufous: the rest of the thorax rufous, with the following parts yellow: the base of the prothorax all round and broadest on the top of the pleuræ, a large mark on either side of the base of the scutellum, a broad band, incised in the middle, on the base of the post-scutellum, two large marks on the apical slope of the median segment, and a longish mark on the mesopleuræ below the tegulæ. The pro- and mesothorax with the scutellum are closely and distinctly punctured; the median segment is almost impunctate; its central furrow is wide, with oblique sides; its upper two-thirds irregularly transversely striated. Legs dark rufous: the anterior coxæ broadly, the apex of the femora (the anterior broadly) and the base of the tibiæ broadly, yellow. Wings clear hyaline, the apex of the costal and the radial cellules, except on its lower edge, smoky; the costa and stigma blackish; the nervures pale. The petiole is not quite so long as the second segment: its basal third is narrowed; the second segment is not narrowed at the base, is bell-shaped, its length greater than its width at the apex and it is closely and distinctly punctured, more closely and rugosely at the base than at the apex; the following segments are lined with yellow at the apex.

Comes near to *I. ferruginea*, but is smaller, and darker coloured; the clypeus is broadly black in the middle, the radial cellule entirely black above, not broadly hyaline at the base; the

stigma black, not clear testaceous, and the band on the second segment is broadly dilated backwards in the middle.

Icaria flavo-bilineata, sp. nov.

Black, the post-scutellum and the apex of the petiole yellow; the apex of the clypeus broadly pale yellow; wings hyaline, a fuscous spot in the radial and apical cellules; the stigma yellowish.

Long: 13 mm. (worker).

Hab. Kuching, Sarawak.

This species comes near to *I. lugubris* Sm. *Sec.* Saussure, S. E. Z. XXIII. p. 134, which is also from Borneo. The two may be separated as follows:

The cloud occupying all the radial cellule, the second transverse cubital nervure almost interstitial, the post-scutellum and apex of petiole not yellow, the stigma black. *lugubris* Sm.

The cloud in the radial cellule commencing at the end of the stigma, the stigma yellow; the second recurrent nervure not interstitial; the post-scutellum and apex of petiole lined with yellow. *flavobilineata.*

Flagellum of antennæ brownish beneath. Front and vertex alutaceous, sparsely punctured, there is a narrow keel between the antennæ; clypeus covered with a sparse pale down, sparsely haired, and roundly convex; its middle at the apex not distinctly toothed; it has the narrowed apical part pale yellow. Mandibles black, the teeth dark piceous. Thorax opaque; the mesopleuræ and scutellum closely and distinctly, but not strongly, punctured; the mesonotum is thickly covered with a fuscous down; the base of the prothorax is sharply keeled. The scutellum has a shallow furrow down the middle. The striation on the median segment is obscure. Legs black, pruinose; the calcaria and claws white. Wings hyaline; the costal cellule is slightly smoky; the cloud in the radial cellule is at the end of the stigma and at the second transverse cubital nervure and extends to the apex; in the cubital cellule it does not extend beyond the end of the radius; the recurrent nervures are received shortly behind and beyond the middle of the cellule. Abdomen black, densely pruinose, more thickly towards the apex; the apex of the petiole is yellow.

The middle of the median segment has only a shallow indistinct furrow, not a deep one, with oblique sides as in *lugubris*: the apex of the median segment is yellow, the yellow band extending sideways over the coxæ; the petiole is short, becomes gradually wider from the base to the apex; the second segment is not much, nor abruptly narrowed at the base; in length it is, if anything, shorter than its greatest width; the clypeus at the end of the eyes is as broad as its length.

Icaria xanthopoda, sp. nov.

Black, largely marked with yellow; two small marks on the apex of the petiole and two large ones, extending on to the ventral surface, on the base of the second segment; the legs yellow, the posterior trochanters and the base of the femora, black; wings hyaline, the stigma and nervures brownish (worker).

Long 11 mm.

Hab. Borneo (Shelford).

Antennæ brownish, marked above with black. Head black, the clypeus, the mandibles, except their teeth, the eye incisions entirely (the yellow mark is straight and oblique on the outer-side), a large mark, narrowed below, and ending in a sharp narrowed point above, and the outer orbits, bright sulphur-yellow; behind the ocelli are two small yellow marks. The clypeus is wider than long; its sides above are roundly curved; its apex does not end in a sharp tooth. Thorax black; the edge of the prothorax all round and broadest on the pronotum, two lines on the centre of the mesonotum, two large squarish marks on the base of the scutellum, two broad ones, narrowed and rounded on the inner side, on the post scutellum, the sides of the median segment largely, and a large mark, obliquely narrowed below on the mesopleuræ, orange-yellow. Abdomen black; a mark on the sides of the post-petiole, two large marks on the base of the second segment, continued on to the ventral surface, which has the basal half yellow; a narrow line on the apex on the second segment all round and the apical segment, orange yellow.

The petiole is not quite so long as the second segment; its basal fourth is greatly and distinctly narrowed compared to the enlarged apical part; the second segment is bell-shaped; its apex about two-thirds of the total length; the base of the pro-

thorax is sharply keeled; the third cubital cellule is of the same width above as below; the third transverse cubital nervure is parallel with the second, and both are roundly curved inwardly.

Ischnogaster flariplagiatus, sp. nov.

Ferruginous brown, the clypeus, eye orbits, two marks, obliquely narrowed, on the base of the scutellum, the pleuræ and the apical half of the median segment, pallid yellow; the wings clear hyaline, the stigma testaceous, the third cubital cellule not half the length of the second, the fourth at the top as long as the third. ♀

Long: 13-14 mm.

Hab. Kuching, Sarawak.

Antennæ ferruginous, the flagellum darker in the middle above. Head smooth; the front and vertex covered with silvery pubescence; the clypeus with longer fuscous hair. The lower part of the clypeus is ferruginous, the upper yellow. Mandibles yellow, their apex black. The inner orbits and the eye incisions yellow. Thorax smooth and shining, thickly covered with glistening white hair. The base of the median segment is darker coloured than the mesonotum; it is smooth and is distinctly keeled down the centre. Wings clear hyaline, highly iridescent; the stigma clear testaceous; the nervures darker; the second cubital cellule is more than twice the length of the third, which, at the top, is as long as the fourth; the second and third transverse cubital nervures are straight and converge above; the first recurrent nervure is received quite close to the first transverse cubital; the second at fully twice the distance from the second; the second recurrent nervure is slightly and roundly bent outwardly in the middle. Legs paler in tint than the body, and thickly covered with pale hair. Abdomen coloured like the thorax, the segments mottled with pallid yellow; there is a distinct pale yellow mark on the base of the second segment at the sides and a large one on the side of its ventral surface; the extreme base of the narrowed neck is also yellow. On the mesopleuræ under the tegulæ is a mark which reaches to the middle; below the middle is a large curved yellow mark.

Comes near to *I. nitidipennis* Sauss. *Sec.* Bingham.

Ischnogaster nigricans, sp. nov.

Black; a line on the pronotum, a broad one on the post-scutellum, one below the tegulæ and two small ones on the apex of the median segment, yellow; the four front tibiæ yellow behind; the wings clear hyaline, iridescent, the stigma and nervures black. ♀.

Long. 12 mm.

Hab. Kuching, Sarawak.

Head entirely black; the face and clypeus thickly covered with silvery pubescence; opaque, closely, but not very strongly, punctured, the clypeus less strongly punctured; the apical tooth bluntly pointed. Thorax black, covered with silvery pubescence; the scutellum with long pale hair. Mesonotum, scutellum and median segment closely and distinctly punctured; the median segment with a distinct, narrow, deep furrow down the centre, which is widened and smooth at the apex. A line on the pronotum, a mark under the tegulæ, the post-scutellum broadly and two marks on the apex of the median segment, yellow. The second and third transverse cubital nervures are straight, slightly oblique and converge slightly above; the fourth cellule at the top is two-thirds of the length of the third. All the knees are yellow, the four front ones broadly; there is a black line on the yellow, near the base of the middle tibiæ. Abdomen entirely black; the petiole twice the length of the thorax; the base of the second segment is widely narrowed.

Ischnogaster ornatifrons, sp. nov.

Black, largely marked with yellow, the antennæ brownish, black above, except at the sides of the median segment with a large yellow mark dilated at the apex; the wings hyaline, the radial and two apical cubital cellules infuscated. ♀.

Long: 22 mm.

Hab. Santubong, Kuching, Sarawak.

Head black, the front, except for a small black mark in the middle above, the clypeus, the mandibles, a small oblique mark on the outer side of the antennæ, one in the eye incisions and a small one on the hinder edge of the vertex, yellow. The front is distinctly, but not closely, punctured and is furrowed in the

middle, deeply and distinctly above. Thorax shining and smooth; the mesonotum more opaque and closely punctured; the scutellum is more sparsely punctured, and has a narrow keel on the basal half. The following are yellow:— a broad line on the pronotum, two large marks, rounded behind, on the base of the scutellum, a broad band, almost interrupted in the middle, on the post-scutellum, a large broad band, widened below, on the sides of the median segment, half on the metanotum, half on the pleuræ, a large oval mark below the tegulæ and a large curved mark on the lower side of the mesopleuræ. Wings hyaline, the radial and the apical two cubital cellules smoky; the second transverse cubital nervure is slightly, roundly bent outwardly, the fourth cubital cullule is half the length of the third. The front legs are yellow, lined with black in front; the apical joints of the tarsi are brownish; the middle legs are brownish-black; the base of the tibiæ, their apex more broadly and the base of the tarsi more narrowly, yellow; the four hinder coxæ are broadly yellow behind. Abdomen black; a large oval mark near the middle of the second segment below; a short line on the sides of the ventral surface, a band near the base of the third segment broadest on the sides, a mark on its ventral surface, rounded on the outer side, a smaller one on the fourth and a narrow line on the fifth dorsal segment, yellow.

Ischnogaster fulvipennis, sp. nov.

Black, with small yellow marks; the clypeus with two marks above and one in the centre below and two small marks on the apex of the median segment; the legs and petiole dark rufous; wings fulvous; the stigma testaceous; the second transverse cubital nervure is roundly curved; the fourth cubital cellule is fully half the length of the third. ♀

Long: 23 mm.

Hab. Mt. Penrissen, Sarawak.

Antennæ black, the scape and apical joints brownish beneath, the apical joints entirely so. Head black; an irregular mark roundly narrowed below and ending in a joint, on either side of the front, a longish mark on the upper half of the face, narrowed and curved above, and there is a longish broad mark on the centre near the apex, extending to the base of the tooth and

yellow. The lower part of the vertex is sparsely and distinctly punctured: the front is more closely and not so strongly punctured, except in the middle where it is smooth; almost bare and impunctate. Mandibles black, sparsely punctured and shining. Thorax smooth and shining, except on the mesonotum which is closely and distinctly punctured: the scutellum is less strongly punctured and has a narrow keel in the middle; both are thickly covered with fulvous hair. Median segment and pleuræ smooth and shining; the pleuræ have a plumbeous hue. On the thorax the following are yellow: a line on either side of the base of the pronotum, an irregular spot on either side of the base of the scutellum, two smaller spots on the base of the post-scutellum in the centre, two small marks on the apex of the median segment, a spot about three times longer than broad on the mesopleuræ in the middle below the tegulæ, and a curved mark below the furrow, this spot having the apex narrower and more oblique than the base. Legs dark rufous, probably varying in tint; the coxæ, tibiæ and tarsi are darker coloured than the femora: the hair is long and fuscous. Wings fulvous-hyaline, darker at the apex; the stigma is testaceous, the nervures fuscous; the second transverse cubital nervure is roundly curved outwardly: the fourth cellule is fully half the length of the third. The petiole is brownish, the node black above except at the base; there is an oval, small yellow mark on either side of the second segment below, and two elongate marks on the base of the third, with a small spot on either side. There are two obscure yellow marks on the base of the median segment.

The ♂ is more richly coloured than the ♀ the yellow markings being larger and the rufous colour of the legs and petiole much brighter in tint. The front is yellow, except for a black line in the centre, the clypeus entirely yellow: the mandibles are dark testaceous: the marks on the thorax are larger, especially the upper mark on the mesopleuræ and on the base and apex of the median segment. The petiole is almost twice the length of the rest of the abdomen: the rufous colour extends to the narrowed part of the second segment, the lower half of the clypeus is keeled in the middle, the tubercle on the propleuræ is large: there is a narrow striated band on its apex, and a broader, oblique one below its middle.

One of the largest of the Oriental species.

Ischnogaster flavolineata, sp. nov.

Black, largely marked with yellow; two small marks on the lower part of the front, one on either side of the ocelli behind, two lines on the mesonotum, the basal half of the scutellum, the post-scutellum and the median segment, except a squarish black mark on the base, yellow; legs pale yellow, the apical half of the tibiæ and of the tarsi black; wings clear hyaline; the fourth cubital cellule not much more than half the length of the third. ♀.

Long: 17 mm.

Hab. Lingga, Sarawak.

Antennæ black, the apical joints of the flagellum brownish beneath. Head black; a curved mark on the vertex behind the ocelli and touching the eyes and obliquely narrowed towards the apex, the eye incisions, an ovate transverse mark over each antennæ, the lower orbits broadly, the sides and apex of the clypeus, the outer orbits and the mandibles, pallid yellow. The vertex is obscurely, the face somewhat more strongly, punctured. Clypeus is smooth; its sides are covered with long silvery pubescence; the apical tooth is clearly separated, twice longer than broad, and its apex is slightly incised; the black mark has its sides at the apex prolonged, the part between them at the base being also separated. The upper edge of the pronotum is yellow, as is also the lower half of the propleuræ. Mesonotum black, except for two lines on the basal half, these being dilated on the outer side at the base. The yellow mark on the scutellum is dilated laterally. Post-scutellum yellow, its apex black. Pleuræ yellow, slightly streaked with fuscous; the median segment yellow, except for an irregularly squarish black mark at the base. Legs yellow; the hinder trochanters, the under side and base of the hinder femora, the basal two-thirds of the hinder tibiæ and the four apical joints of the hinder tarsi, black. Wings clear hyaline, the stigma testaceous, the nervures fuscous; the fourth cubital cellule is half the length of the third; the third transverse cubital nervure is straight and slightly oblique; the second is slightly, but distinctly, roundly curved on the lower half. Abdomen black, thickly covered with longish pale

hair; there is a clear yellow band at the base of the dilated part of the petiole, a narrower one at the base of the second segment, a large oblique mark on either side of its middle, a narrow longitudinal line in its centre, and the apices of the other segments narrowly, yellow. The black on the abdomen has a brownish tinge.

EUMENIDÆ.

Montezumia? forticeps, sp. nov.

Black: the clypeus, the underside of the scape, two oblique lines on vertex, a large mark, narrowed below on the outer orbits; the pronotum broadly, two lines on the mesonotum, two marks on the scutellum, two lines on the post-scutellum, the sides of the median segment broadly, a line on the side and apex of petiole, two lateral marks on the second abdominal segment and the apices of the second, third and fourth segments, yellow; the wings fuscous-hyaline, with a fulvous tinge. ♀.

Long: 21 mm.

Hab. Mt. Matang, Sarawak.

Antennæ black; the scape largely yellow below. Head largely developed behind the eyes; closely punctured, the front more closely and strongly than the vertex; the eye incision less closely punctured than the vertex; above the antennæ is a small, somewhat conical mark, which is smooth and furrowed in the middle, except above. Clypeus distinctly broader than long; sparsely but distinctly, punctured; its apex is narrowly black; the sides of the incision are oblique and project at the apex. The marks on the pronotum become roundly dilated on the outer side and do not quite reach to the middle; the two lines on the mesonotum are in the middle following the parapsidal furrows and are about equal distance from the base and apex. The two marks on the scutellum do not quite reach to the middle and are broader than long. The two marks on the median segment extend on the inner side to the edge of the furrow and are roundly narrowed on the inner side above. There is a yellow mark on the mesopleuræ, longer than broad, below the base of the front wings. Pro- mesonotum and scutellum closely punctured; the mesonotum less closely and strongly at the sides. The parapsidal furrows commence shortly beyond the middle. The

median segment is closely and strongly punctured at the base; the apical furrow is wide, becomes gradually wider towards the apex and is keeled down the middle; its apical slope is oblique. The second cubital cellule is narrowed at the top, the nervures almost touching there; both are straight and oblique; the first recurrent nervure is received distinctly behind the middle; the second close to the second transverse cubital, almost interstitial. Legs black; the fore femora are yellow at the apex; the four hinder are rufous below and probably in some examples above. Abdomen black; the apices of the basal four segments yellow; there is an oval oblique mark on either side of the second segment at the base. The petiole is nearly as long as the second segment; it is stout, with the basal third distinctly narrowed; it is distinctly, but not very closely, punctured; the second segment is alutaceous.

The generic location of this species is doubtful. It has 3- and 6-jointed palpi as in *Zethus*, and it has further the head largely developed behind the eyes as in that genus and thereby differs from *Eumenes*. The petiole is shorter and stouter than it is in the typical *Zethus* and also the second segment is not contracted at the base into a neck. The form of the cubital cellules is different from what they are in *Eumenes* and more like what they are in *Zethus*. It is not a typical *Montezumia* either, although it has certainly some affinity to that genus, which has five jointed maxillary palpi. I leave it, in the meantime, in *Montezumia*, which is, strictly speaking, an American genus.

Zethus varipunctatus, sp. nov.

Black; the upper side of the mandibles and a large mark on the apex of the clypeus, yellow; the scape of the antennæ, the tegulæ and the legs rufous; the hinder tibiæ and tarsi blackish; wings fuscous-violaceous towards the apex; the apex of the clypeus broadly rounded, not dentate ♀.

Long: 17 mm.

Hab. Kuching, Sarawak.

Head thickly covered with short pale pubescence, rugosely punctured, the punctures running into reticulations on the front. Clypeus roundly convex; its greatest width greater than its greatest length; closely and distinctly punctured, but not so

coarsely as the front; its apex broadly rounded. The scape of the antennæ is broadly rufous below; the apical joints are brownish beneath. Thorax entirely black covered with a pale pile; the mesonotum and scutellum more thickly with longer pale pubescence. Mesonotum closely rugosely punctured; the punctuation sparser towards the apex; the two furrows are indistinct at the base, being confounded with the punctuation. Scutellum strongly punctured and with a narrow furrow in the middle; the post-scutellum is, if anything, more rugosely punctured; its apex is opaque, alutaceous. The median segment is opaque, alutaceous, keeled down the centre and at the sides; above it is obscurely striated. Propleuræ smooth, the upper part at the base striated. Mesopleuræ closely, rugosely punctured; the basal and apical slopes smooth. Metapleuræ strongly punctured, except for a large oblique space on the base and apex. Petiole closely and uniformly punctured; the base rufous, smooth. Legs bright rufous; the hinder tibiæ and tarsi infuscated.

This does not appear to me to be the ♀ of *4.-dentatus*, as apart from the difference in colouration, there are structural differences between them not of a sexual nature. The two may be separated thus:—

The furrow at the base of the scutellum with five stout keels; the metapleuræ coarsely punctured and striated throughout. *4.-dentatus.*

The furrow at the base of the scutellum with eight short keels; the metapleuræ sparsely punctured above, smooth below. *varipunctatus.*

Odynerus cilicius, sp. nov.

Black, largely marked with yellow; the median segment yellow, except in the middle, a dagger-shaped line on the front, a mark on either side of the ocellar region and two oblique large marks on the mesopleuræ, yellow; wings hyaline; the radial cellule and the cubital nervures in front dark smoky ♀.

Long: 12-13 mm.

Hab. Kuching, Sarawak.

Front distinctly, but not very closely, punctured, the vertex almost impunctate. The mark on the front is narrowed in the

middle and obliquely narrowed above; the eye incision, the inner orbits narrowly, and the outer orbits more broadly, yellow. Clypeus yellow, smooth, obscurely punctured at the apex; its greatest length is slightly greater than its greatest breadth; the apical incision is wide and shallow. The scape is yellow, the flagellum brownish beneath. The basal two-thirds of the pronotum broadly yellow; there are two short, narrow lines in the centre of the mesonotum; almost the basal half of the scutellum is yellow; the apex is more strongly punctured then the base, and on the sides at the apex are three oblique keels. Post-scutellum strongly and closely punctured; it has a rounded slope from the base to the apex, and is on a level with the top of the median segment, which has a rather steep straight slope, with rounded sides and a deep furrow in the middle. Pleuræ punctured, but not strongly or closely; the mesopleuræ yellow, except at the apex and extreme base; the yellow is divided in two by an oblique furrow. Wings almost hyaline, the costal cellule infuscated; the stigma yellowish, the nervures black. Legs clear yellow, the hinder femora slightly lined with black above. Abdomen yellow; a large black mark, narrowed and rounded laterally, on the apical half of the first segment; the base of the second narrowly, a large mark, narrowed laterally, and extending from near the base to near the apex, the greater part of the third, fourth and the whole of the sixth, black. The ventral surface, except the last segment, is black.

Comes close to *O. maculipennis* Smith.

Odynerus hyades, sp. nov.

Black, largely marked with yellow; two short lines on the mesonotum, the sides of the scutellum, the mesopleuræ largely, the sides of the petiole and two large irregularly oval marks on the second abdominal segment, yellow; legs yellow, the femora slightly lined with black; the wings hyaline, with a slight fulvous tinge; the apex smoky; the stigma and nervures black ♀.

Long: 15 mm.

Hab. Sarawak (Shelford).

Antennæ black, the scape yellowish, the flagellum brownish beneath. Head black; the clypeus, the eye incision, a large mark, narrowed in the centre above, and the outer orbits to near the top, yellow. Front and vertex rugosely punctured, the punctures running into reticulations on the sides; the space between the antennæ is yellow and smooth. Clypeus long, pyriform, its width at the base half the length; the basal part roundly convex and irregularly marked with elongate punctures; the apex transverse. Thorax black, a large mark, obliquely narrowed on the hinder part, two short narrow lines on the mesonotum, two irregular marks on the base of the scutellum on the sides, the post-scutellum broadly in the middle and the sides of the median segment, broadly, yellow. Mesonotum strongly and closely punctured; the punctures large, deeper and closer on the base than on the apex. Scutellum flat, on the same level as the mesonotum; its apex rounded; it is not quite so strongly punctured as the mesonotum, especially at the base; the post-scutellum is more coarsely punctured. The median segment is keeled down the middle; above in the middle it is stoutly irregularly transversely striated; the sides, broadly above, narrowly below, are stoutly punctured; below the middle the sides distinctly project into stout blunt teeth. The upper part of the propleuræ is irregularly, stoutly, obliquely striated; the lower part bears stout, longitudinal keels. Mesopleuræ coarsely reticulated. Metapleuræ on the upper half irregularly, closely striated. Legs clear yellow, the tarsi darker; the femora irregularly lined with black. The second cubital cellule at the top is not quite half the length of the third; the first recurrent nervure is received shortly behind the middle; the second is interstitial. All the abdominal segments have a narrow yellow line before the apex; that on the second is broader than on the others and is largely dilated backwards at the sides; on the petiole there is a large semicircular mark behind and united to it; on the base of the second laterally is a large irregularly oval mark which is incised at the base on the lower side; the petiole is coarsely, the second and third segments are finely and closely punctured; the last segment is smooth; its apex is narrowly yellow. On the second ventral segment, on the sides, is a large yellow mark, which is rounded on the inner side.

Odynerus lybas, sp. nov.

Black; a band, greatly widened laterally, on the pronotum, the basal two-thirds of the scutellum, a large mark on the mesopleuræ under the tegulæ, two oval marks on the base of the second abdominal segment, the apex of the first and second segments and a transverse line on the middle of the fourth, pale yellow; the legs for the greater part black; wings hyaline, the radial cellule, except along the cubitus at the base, and the apex of the apical cubital cellule dark smoky; the costa and nervures black. ♀.

Long: 10 mm.

Hab. Sarawak (Shelford).

Antennæ black; the scape yellow, the apical joints brownish beneath. Head black; the lower part of the eye incision, the basal half of the clypeus, two oblique marks near its apex, a mark immediately over the antennæ and a band, narrowed below, on the upper half of the outer orbits, yellow. Front and vertex closely and strongly punctured; the front thickly covered with pale pubescence. Clypeus punctured, but not closely; the top almost smooth; its apex is depressed slightly in the middle; the teeth are short, broad and short. Mandibles black; the lower half yellow, tinged with rufous towards the apex. Prothorax and mesonotum closely, rugosely and distinctly punctured; the mesopleuræ obscurely punctured; the upper half of the metapleuræ is punctured, but not strongly; both are thickly covered with pale pubescence. Legs black; the apical half of the four front femora in front, the four anterior tiibæ except behind, and a broad band on the outer side of the hinder tibiæ, yellow. Abdomen pruinose; the petiole on the dilated apical part punctured, distinctly, but not strongly, or closely; the other segments smooth; the basal spots on the second segment are large, oval and oblique.

Comes near to *O. 2-pustulatus* Sauss. There is no suture on the base of the petiole; the basal slope of the petiole is long, straight and oblique and is distinctly longer than the apical.

ANTHOPHILA.

Nomia robusta, sp. nov.

Nigra, fulvo-pilosa; alis hyalinis, apice fusco-violaceo. ♀.

Long: 14 mm.

Hab. Borneo (Shelford).

One of the larger species. Head covered with deep fulvous pubescence, the vertex distinctly punctured, less closely and more deeply at the sides than in the middle; the front is rugose in the middle, with the sides punctured as in the vertex. Face roundly projecting in the middle and strongly, but not closely, punctured above. Clypeus clearly separated from the face; its middle depressed; it is strongly, but not very closely, punctured; its apex is transverse, with the sides rounded. The pubescence on the thorax is deep fulvous and dense, especially on the pleuræ; the mesonotum and scutellum are closely and somewhat strongly punctured, the base of the scutellum less strongly than the rest. The basal area on the median segment is smooth and shining, punctured round the edges; the furrow at its base is irregularly striated, especially laterally. Legs densely covered with long bright fulvous pubescence; the apices of the tarsi rufous. Wings hyaline, with a slight fulvous tinge; the apex is smoky, with a distinct violaceous tinge, the nervures, except at the apex, are dark testaceous. Abdomen shining; the apices of the segments fringed, but not very thickly, with fulvous pubescence; the ventral segments are more thickly fringed with similarly coloured hair. The tegulæ are for the greater part rufo-testaceous, the second transverse cubital nervure has a more oblique slope than the first; the recurrent nervure is received very close to it.

Nomia borneana, sp. nov.

Black; the basal four segments of the abdomen with smooth, shining blue bands; the legs fulvous and covered with fulvous hair; the clypeus smooth, not keeled, the face distinctly tuberculated in the middle; wings hyaline, the stigma fuscous—black; the nervures paler. ♀.

Long: 11 mm.

Hab. Borneo (Shelford).

Head black; the front, the face and sides of the clypeus thickly covered with fulvous pubescence, smooth, shining and impunctate; the tubercle on the face is more prominent than usual; the labrum is fringed with long golden hair. Mandibles

ferruginous, black at the apex. Thorax closely covered with fulvous hair; the post-scutellum region densely covered with fulvous hair; the mesonotum and scutellum are smooth and shining. The area on the median segment is shining, distinctly bordered behind and irregularly striated, the striæ more widely separated in the middle than laterally; the rest of the segment is opaque and densely covered with fulvous pubescence. The transverse cubital nervures are paler than usual, this being especially the case with the second. Legs uniformly yellowish-fulvous and thickly haired; the hair is paler in colour; the calcaria pallid yellow. Abdomen black; the basal four segments with smooth, shining, bare, bluish bands; the back is smooth and shining; the basal segment at the base is thickly covered with fulvous hair; the others are sparsely haired; the ventral segments are closely punctured; their apices thickly fringed with fulvous hair. The blue belts on the abdomen are slightly tinged with yellow; the furrow on the median segment is indistinct; the scape is testaceous at the base; the second cubital cellule is about one-third of the length of the top of the third; the third transverse cubital nervure is roundly curved; the first recurrent nervure is interstitial.

Comes close to *N. elegans* Sm. which may be known from it by the clypeus being coarsely punctured, subtuberculate on each side, and with a "central longitudinal depression."

Nomia leucozonata, sp. nov.

Black, the basal half of the abdomen above and the ventral surface rufous, the second, third, and fourth segments banded with white on the apex; the apex of the clypeus rufous; the legs black, densely covered with long white hair; the wings hyaline, the costa and stigma rufo-testaceous, the nervures paler. ♀.

Long: 8 mm.

Hab. Bidi, Sarawak.

Head thickly covered with pale fulvous pubescence, black, the apex of the clypeus broadly rufous; the clypeus and face strongly, but not very closely, punctured; the front is more sparsely punctured and has a narrow longitudinal keel in the middle. Mandibles rufous, black at the apex. Mesonotum and scutellum minutely and closely punctured; the post-scutellar

region is thickly covered with pale fulvous pubescence. Median segment smooth, shining and bare; its sides thickly covered with long pale fulvous hair; the basal depression is not clearly bordered behind and bears narrow longitudinal keels. Legs black, thickly covered with long pale fulvous hair; the hinder tibiæ become gradually thickened towards the apex; the metatarsus is thickened. Wings hyaline; the costa and stigma testaceous, the nervures paler; the second cubital cellule is narrow; the second transverse cubital nervure is faint; the first transverse cubital nervure is interstitial. Abdomen rufous; the apical three segments (the basal two broadly) marked with black in the centre; the apices of the second, third and fourth are banded with cream-white.

Coelioxys eriocephala, sp. nov.

Black, the head and thorax rugosely punctured; the scutellum coarsely reticulated, its sides at the apex projecting into sharp spines; the basal area of the median segment aciculated, the rest of the segment closely punctured, the upper half deeply furrowed in the middle; wings hyaline, the apex from the base of the radial cellule fuscous-violaceous. ♀.

Long: 11 mm.

Hab. Kuching, Sarawak.

Head rugosely punctured, the clypeus more closely and less strongly than the rest; the cheeks, the face and apex of the clypeus covered with pale pubescence; the outer orbits and occiput are thickly covered with white pubescence; the vertex and front are sparsely haired. Mesonotum closely rugosely punctured; the scutellum is coarsely reticulated-punctured; the apex is rounded, with the sides projecting into teeth, which are twice longer than broad; its apex projects over the post-scutellum. The basal area of the median segment is coarsely aciculated; the rest is closely punctured and thickly covered with white pubescence. Mesopleuræ closely rugosely punctured and covered with white pubescence; the sides and apex are aciculated. The second transverse cubital nervure has the lower half oblique; the upper distinctly oblique and straight. Legs thickly covered with woolly hair; the basal joint of the hinder tarsi is thickly covered with fulvous pubescence. The five

basal segments of the abdomen are shining, closely, distinctly, but not strongly, punctured; their basal furrows are covered with white pubescence; the basal part of the last segment is minutely, but not very closely, punctured; the narrowed apical part is closely rugosely punctured; in its centre is a smooth narrow keel. The last ventral segment is long, narrow, acutely pointed and projects over the dorsal.

There is a distinct furrow on the front; the lateral teeth on the scutellum distinctly project beyond the middle of the apex; the ventral surface of the abdomen is more strongly and closely punctured than the dorsal; the transverse median nervure is received shortly, but distinctly, behind the transverse basal. The last dorsal segment is distinctly depressed laterally at the base of the narrowed part. The second transverse cubital nervure is received shortly behind the middle of the radius; the nervures and stigma deep black.

Megachile alticola, sp. nov.

Nigra, albo-pilosa; scopa abdominisque apice supra dense albo pilosis; alis hyalinis; nervis stigmateque nigris. ♀ et ♂.

Long: 9 mm.

Hab. Matang, Sarawak, 3,000 feet.

♀ Head black; the face and clypeus covered closely with dark fulvous pubescence; the front and vertex less closely with longer black, intermixed, on the vertex, with shorter fulvous pubescence. The front is closely rugosely punctured; the vertex is more distinctly, more strongly and less closely, punctured. The apex of the clypeus is almost transverse, with its sides rounded; its sides above bear a belt of dense white pubescence. Mandibles strongly punctured; their apex broad, slightly oblique; the lower tooth is smooth, shining and sharply pointed; the subapical is shorter and blunter. Thorax closely and distinctly punctured; the mesonotum is densely covered with short black pubescence; the pronotum behind is covered densely with white pubescence; the scutellum has posteriorly long black hair. The basal area of the median segment is smooth, bare, aciculated and almost shining; and it bears a shallow furrow in the centre; the sides of the segment are thickly covered with white hair. There is a curved band of

white pubescence round the tubercles; the sternum is covered with white pubescence. The hair on the legs is thick, stiff and black. Wings hyaline, their apex slightly infuscated. Abdomen black; the segments are probably edged with white pubescence; the apical two above are thickly covered with grey depressed pubescence; the scape is white.

The ♂ is similarly coloured; the hair on the face is longer and denser, and has a slight fulvous tinge; the hair on the median segment is longer and denser; the basal four abdominal segments have, on the sides at the apex, broad bands of white pubescence; the apical segment is round and has a broad projecting border on the lower side; the ventral segments are fringed with soft white pubescence and there is also a band of similar pubescence on their middle; the pubescence on the four hinder tarsi is fulvous.

Comes into Bingham's Section *F*, but cannot well be confounded with anything there described.

Megachile viriplaca, sp. nov.

Black; the head and thorax covered with fuscous-black pubescence; a tuft of long white hair below the antennæ; and the labrum is fringed with long white hair; the wings yellowish-hyaline, the nervures and stigma yellowish-fulvous. ♀.

Long: 18 mm.

Hab. Kuching, Sarawak.

Antennæ black, bare, longer than the thorax. Front and vertex rugosely, closely punctured. The hinder ocelli are separated from each other by a slightly greater distance than they are from the eyes. Between the antennæ and the top of the clypeus is a dense tuft of longish white hair; and the labrum is fringed with longer white hair. The apical tooth of the mandibles is long, curved and sharply pointed; the subapical is bluntly rounded. Mesonotum and scutellum closely punctured and covered thickly with short black hair; the median segment is thickly covered with longish sooty-black hair, as are also the pleuræ and breast. Wings yellowish-hyaline; the stigma and nervures are yellowish; the two recurrent nervures are almost interstitial; the second cubital cellule at the top is about half the length of the bottom; the second transverse cubital nervure is broadly

rounded in the lower half and middle; the first is roundly curved. The hair on the legs is short and black; the base of the fore tarsi is rounded and deeply incised; the fore coxæ are stoutly toothed. Abdomen black and covered with short black hair; the middle segments are depressed at the base; the apical segment is, at the apex, roundly incised; its middle on the apical half is depressed, below the base it is roundly raised.

Megachile moera, sp. nov.

Black; the four posterior femora red; the head and thorax covered with long white hair; the abdominal segments narrowly edged with pale fulvous pubescence; the ventral scope white; the base of the hinder tarsi densely covered with long fulvous hair; the wings hyaline, the stigma and nervures black.

Long: 8-9 mm.

Hab. Kuching, Sarawak.

Head closely punctured; the face and clypeus more coarsely than the vertex; the apex of the clypeus in the middle projecting, smooth and shining; the sides of the face and clypeus thickly covered with white pubescence; the front less thickly covered with long white hair, the vertex more sparsely with shorter back hair. Mandibles closely, rugosely punctured and covered with white pubescence; towards the apex they are coarsely irregularly striated; the apical two teeth are of about the same size, are opaque and moderately acutely pointed; the rest of the outer edge is smooth and shining. Pro- and mesothorax, with the scutellum, closely and uniformly punctured; the pronotum and base of the mesopleuræ above thickly covered with woolly hair; the mesonotum has a short pubescence; the median segment is covered with long, soft hair; its basal area is closely aciculated, the rest punctured, but not strongly or closely; its middle is deeply furrowed. Wings hyaline; the first recurrent nervure is received nearer the transverse cubital than is the second. The four hinder femora and the hinder trochanters and coxæ are bright rufous; the hair on the basal four joints of the hinder tarsi is larger than usual; and it becomes gradually shorter towards the fourth joint; it is bright fulvous; the hair on the middle tarsi is shorter and paler. Abdomen closely punctured; the transverse furrows on the basal three

segments are distinct; the segments are banded with pale fulvous bands of pubescence; the ventral scopa is white; the basal ventral segments are more or less rufous; the apical dorsal segment is closely rugose and sparsely haired.

The scutellum is broadly rounded behind and has a rounded slope on the apex; the depression at its base is covered with white pubescence.

Comes near to *femorata* Sm.

Megachile œvola, sp. nov.

Black; the head and thorax covered with pale fulvous hair; the face and clypeus more densely with long pale hair; the abdomen densely with ferruginous pubescence, except on the base of the basal three segments; the wings almost hyaline, the stigma and nervures black; the apical abdominal segment entire. ♂.

Long: 12 mm.

Hab. Matang, 3600 feet. Sarawak.

Antennæ black, base shining. Head black, closely and strongly punctured; the lower part of the front, the face and clypeus are densely covered with long pale fulvous hair; the apex of the clypeus is transverse. Mandibles closely, irregularly longitudinally striated to near the apex; the lower part at the apex smooth and shining; the apical tooth is long and sharply pointed at the apex. Pro- and mesothorax closely and distinctly punctured and covered with long pale fulvous hair; the median segment is more thickly haired and the hair is longer; the basal area is closely punctured and has a wide and distinct furrow down the centre. Pleuræ thickly covered with long pale fulvous hair. Legs black; the four anterior tarsi are fringed with very long fulvous hair; the hair on the hinder tarsi is short and fulvous; on the rest of the legs it is short and paler. The second recurrent nervure is almost interstitial; the first is received close to the transverse cubital. The basal three segments of the abdomen are black, with their apices covered with bright ferruginous pubescence, the other segments are entirely covered with similar pubescence; the apical segment is entire and broadly rounded: the apical ventral segments are covered with fulvous pubescence.

Megachile osea, sp. nov.

Black; the face and apex of the clypeus fringed with long pale hair; the pleuræ and median segment covered densely with pale fulvous hair; the abdomen, except at its basal slope, with ferruginous pubescence; wings hyaline with a slight fuscous tinge, the stigma and nervures black; the apical abdominal segment roundly incised in the middle. ♂.

Long: 14 mm.

Hab. Matang, 3600 feet. Sarawak.

Head closely punctured; the front thickly covered with long black hair, the vertex more sparsely with shorter black hair; between the antennæ is a clump of long white hair and the apex and the clypeus is fringed with similar hair. The clypeus is shining and covered with short black hair; it is irregularly, somewhat strongly, but not very closely, punctured, and is clearly separated from the face, which is closely rugosely punctured—there is a smooth narrow shining line down the middle. The basal half of the mandibles is opaque and irregularly punctured; the apex is smooth and shining and with an acutely pointed apical tooth. Mesonotum and scutellum closely rugosely punctured and thickly covered with short black hair; the pleuræ and median segments are thickly covered with long pale fulvous hair. The apex of the scutellum is broadly rounded. The area on the median segment is opaque and shagreened; the rest of the segment is shining and closely punctured. Wings hyaline, with fuscous-fulvous tinge, and slightly clouded at the apex; the stigma and nervures black; both the recurrent nervures are received close to the transverse cubitals. Legs black; the anterior tarsi testaceous at the base; the femora and tibiæ are sparsely covered with short pale hair; the tarsi thickly with short fulvous pubescence on the under side; the anterior coxæ are toothed at the apex. Abdomen, except on the basal slope, and on the basal two ventral segments, thickly covered with bright ferruginous pubescence; the apical segment is widely but not very deeply, incised in the middle; it is broadly rounded and is not keeled down the middle.

Megachile amstela, sp. nov.

Long: 12 mm.

Hab. Borneo.

This species may be separated from *tarea*, with which it agrees closely in colouration, as follows:—

The clypeus distinctly narrowed, smooth and rounded above; the base of the mandibles broadly rounded, without a projection in the middle, the outer side not strongly, uniformly punctured. *tarea* Cam.

The clypeus not distinctly narrowed above, where it is strongly punctured, and where there is a smooth, transverse keel; the outer side strongly punctured; the inner side on the basal part projecting in the middle. *amstela* Cam.

Head strongly, closely, rugosely punctured; the top and apex of the clypeus with a smooth, impunctate band; its hair black; long and dense on the front and vertex, shorter on the clypeus. The clypeus is distinctly separated from the face by a smooth, shining band, the sides being also bounded by similar bands; its apex projects slightly and roundly at the sides. Mandibles rugosely punctured, irregularly, strongly, longitudinally striated towards the apex; the apical edge and the lower on the apical half, smooth and shining; the apical tooth is large; the subapical is shorter and broader. Thorax closely punctured; the hair on the pleuræ, mesonotum and scutellum is black; on the median segment it is long and soot-coloured; on the sternum pale fulvous. Wings hyaline, with a slight, but distinct fulvous tinge; the nervures are blackish, the stigma dark rufous. Legs black; the hair pale, mixed with black; on the base of the tarsi it has a slightly more rufous tint. The abdomen is black; its basal three segments are banded with bright ferruginous pile; the other segments are thickly covered with bright ferruginous hair, mixed with black in the middle; the scopa is ferruginous.

On the outer side of the apex of the tibiæ, in the middle, is a longish, sharp-pointed spine.

Megachile tarea, sp. nov.

Black: the head covered with black, the pleuræ and metanotum with pale, pubescence; the abdominal segments banded with ferruginous pubescence; the scopa fulvous, rufous towards the apex; the legs covered with fulvous, the metatarsus on the inner side with rufous, pubescence; wings hyaline, the apex slightly infuscated, the costa and nervures dark fuscous. ♀.

Long: 12 mm.

Hab. Borneo.

The hair on the upper part of the head is deep black; below long and white; on the front and cheeks it is longer and denser than on the face and vertex. The clypeus is narrowed and rounded above, where it is smooth and impunctate, or only sparsely, and indistinctly punctured; the lower two-thirds punctured, but not closely or strongly; there is a narrow, impunctate band in the centre; the centre, in the apex, is not quite transverse. The mandibles are broadly, roundly dilated in the middle; there are two apical teeth; the apical is the longer; the subapical is broader and more rounded; their upper side is irregularly punctured; on the inner side is a row of punctures, on the outer, on the apical half, a curved deep furrow; the basal half on the outer side is strongly punctured, the punctures becoming larger and more elongated towards the middle. Thorax closely and distinctly punctured, the pleuræ somewhat more strongly than the mesonotum. Legs black; the hair on the femora and tibiæ is long and pale; on the tarsi it is dense and rufous; the anterior calcaria rufous; the outer joint is straight, transverse, and not dilated at the apex; the subapical is curved and surrounded by a hyaline horny process; the claws are rufous at the base.

On the apex of the fore tibiæ in the middle is a large, platelike projection, which becomes gradually narrowed towards the apex, is rufous in colour and has the sides raised; on the outer side of it is a stout tubercle.

Megachile Shelfordi, sp. nov.

Nigra, opaca, nigro pilosa; alis flavo-hyalinis, apice fumato; nervis stigmateque fulvis. ♀.

Long: 17 mm.

Hab. Borneo (Shelford).

Front and vertex closely and uniformly punctured, thickly covered with black hair, which is much longer on the front. The clypeus is rather strongly, closely and uniformly punctured, except above in the middle, where it is smooth and shining. Mandibles below smooth and shining, above closely punctured; there are four teeth, all bluntly rounded; the inner two project more than the apical. The upper part of the thorax is thickly covered with short, stiff hair; the hair on the pleuræ is longer, is thick and sooty-black in colour. The hair on the legs is long and black; on the under side of the middle tarsi it is bright rufous. The hair on the abdomen, above and below, is deep black; the second segment at the base is deeply depressed, at the apex obliquely raised; the last segment has the apex depressed and broadly rounded. Wings yellowish-hyaline, the stigma and nervures rufo-fulvous; the apex, outside the radius, the second transverse cubital, the second recurrent and the discoidal nervures, smoky; the apex of the hind wings is likewise smoky.

Comes near apparently to *M. tuberculata* Sm.

Protoanthidium rufobalteatum, sp. nov.

Black; the head and thorax densely covered with stiff, moderately long black hair; the apical two segments of the abdomen entirely, the middle segments banded with rufous-yellow; the ventral fringe bright ferruginous.

Long: 12 mm. ♀.

Hab. Matang, 3600 feet. Sarawak.

Antennæ black, short, smooth and shining. Head closely rugosely punctured, the clypeus more finely than the vertex; in front and above closely covered with short, black hair; below with longer, soft, pale hair. The clypeus is distinctly, narrowly keeled in the middle; the apex of the clypeus is transverse, its sides are rounded. Mandibles opaque, closely rugose above, below covered with a pale fulvous pile and below also with some long pale hair; the apical tooth is bluntly rounded and projects; behind it are three short, bluntly rounded teeth. Thorax closely and somewhat strongly and uniformly punctured;

above the hair is black; on the sides it is longer and whitish; the scutellum distinctly projects over the median segment; its apical incision is rounded and not very deep. Legs black; the hair on the tibiæ and tarsi is thick and stiff: on the inner side it is rufous, the apical three joints of the tarsi are rufous. Wings hyaline with a faint, fulvous tinge; the stigma and nervures are black. Abdomen black; there is a narrow rufous line on the sides of the second segment; an almost entire one on the apex of the third, a broader one, narrowed at the sides, on the fourth and the whole of the apical two segments are rufous. The ventral scopa is bright ferruginous.

The ♂ has the antennæ much longer; there is a dense mass of white pubescence over them; the clypeus, the cheeks, on either side of it, and the mandibles, except at the apex, are rufous-yellow; the apical abdominal segment is roundly, but not deeply, incised. The mandibles are bidentate at the apex; the apical is more narrowed at the apex than the subapical, which is shorter, broader and more broadly rounded; the clypeus is slightly depressed in the middle at the apex.

Protoanthidium ovatum, sp. nov.

Black: the hair on the thorax and abdomen black; there is a tuft of fulvous hair on the front; the face and clypeus are covered with short rufous pubescence; the scopa rufous; the wings to the stigma smoky, the apex milk-white, the stigma and nervures black. ♀.

Long: 14 mm.

Hab. Matang, 3600 feet. Sarawak.

Antennæ black, the under side of the scape rufous. Front and vertex closely, uniformly and strongly punctured; the face is less closely and less strongly punctured; its apex and a line in the centre, smooth. Clypeus closely and uniformly punctured; its middle keeled, but not very strongly; its apex slightly bent inwardly. The lower part and the apex of the mandibles are smooth and shining; the rest punctured and pilose; besides the apical tooth, there are three short, round ones. Mesonotum and scutellum closely and uniformly punctured; the mesonotum thickly covered with fuscous-black pubescence; the apex of the clypeus is roundly incised and projects over the median segment

which is closely, but not strongly, punctured, and is shining in the middle. Legs black, and thickly covered with black hair; the calcaria black. The wings, to the stigma, smoky-fuscous; the rest milky-hyaline; the stigma and nervures black; the first transverse cubital nervure is straight and has an abrupt oblique slope; the second is two-angled, the upper is the longer and is more oblique; both the recurrent nervures are received distinctly beyond the transverse cubitals. Abdomen black; closely but not strongly, punctured above and covered, but not densely, with short black hair; the apical segment is roundly incised; the ventral scopa is fulvous.

Protoanthidium rufomaculatum, sp. nov.

Black; the clypeus and the antennæ rufo-testaceous; the top of the head and the mesonotum with the scutellum thickly covered with rufo-fulvous pubescence; the scopa rufo-fulvous; the apical-dorsal segment covered with whitish pubescence; the wings dark smoky-fuscous to the base of the stigma, lacteous beyond it. ♀.

Long: 8 mm.

Hab. Kuching, Sarawak.

Antennæ shining, base rufous, the second joint black. Head closely, rugosely punctured; above thickly covered with short rufous pubescence; the face and clypeus with soft, paler hair. The apex of the clypeus on the lower side is flat, smooth and shining. Mandibles rufo-testaceous, the lower edge of the apex black; it is sparsely punctured; its apical tooth is large, is sharply pointed and clearly separated from the subapical, which is short, does not project and is not defined behind. Mesonotum closely, uniformly and somewhat strongly punctured; there is an impressed line down its centre. The scutellum is flat, is not raised above the level of the mesonotum, and its apex projects largely over the median segment; it is more closely punctured than the mesonotum; its sides and apex are broadly rufous and the apex has a shallow, rounded incision in the middle. The median segment has a vertical slope, is closely punctured and covered with a short pubescence. Mesopleuræ closely punctured like the mesonotum; the base of which is smooth, projecting. Legs black; the hair black; the greater part

of the front femora, the apex of the front tibiæ and the base of the tarsi, rufous, as are also the apical joints of the hinder tarsi; the hair on the hinder tibiæ and metatarsus long, black and thick; the fore tibia at the apex on the outer side is armed with a short narrow tooth. The radial, cubital and recurrent nervures are pale; the first transverse cubital nervure is straight and oblique; the second is roundly curved; both the recurrent nervures are received shortly, but distinctly, beyond the transverse cubitals; the second recurrent nervure has the upper part roundly bent outwardly. The basal five dorsal segments of the abdomen are smooth, shining; the basal ones minutely and closed punctured and almost bare; the large apical segment is thickly covered with glistening grey hair and is rounded at the apex; the scopa is rufous.

Xylocopa Shelfordi, sp. nov.

♀ Black, the thorax above, the upper parts of the pleuræ and the basal two segments of the abdomen clothed with bright yellow pubescence; the wings hyaline, iridescent, the apex infuscated. The ♂ with the sides of the thorax and a broad band on the basal three segments of the abdomen clothed with bright yellow pubescence, otherwise coloured as in the ♀.

Long: 16 mm.

Hab. Matang, 3,600 feet. Sarawak (Shelford).

♀ Head densely covered with black hair; the black hair on the face mixed with white. Front and vertex closely and distinctly punctured; the furrow on the front is distinct; its lower half is bordered by distinct, flat, smooth keels; the clypeus is more strongly punctured than the face and has a smooth flat furrow in the centre. Mandibles smooth and shining: the basal half in the centre punctured: the apical teeth bluntly pointed and of almost equal length. Thorax above smooth and shining; the centre of the mesonotum and metanotum bare and impunctate; the apex of the latter sharply margined. The pubescence on the upper part of the mesopleuræ is yellow; on the hinder edge it is paler; on the rest and on the sternum, black; legs black and covered with black hair; abdomen black; the upper surface of the basal two segments covered with yellowish hairl the other segments clothed more sparsely with shorter black

hair. Wings hyaline, with a slightly fuscous-coppery iridescence; the apex much darker coloured.

The ♂ has the upper part of the thorax covered with yellowish pubescence except in the centre, where there is a broad band of black pubescence of the same width as the lateral bands; and on the apex, where there is a thin band of pale yellow pubescence; the upper part of the pleuræ is covered with pale yellow pubescence; the tarsi are thickly covered with long black hair; the black hair on the tarsi is mixed with rufous beneath, on the tibiæ with pale, hair. The hair on the sides of the inner and outer orbits is pale.

I believe I have correctly united the sexes of this species. Both are in the Sarawak collection from Matang, where the ♀ has also been taken by Mr. Shelford at an elevation of 3000 feet. The ♂ agrees, in the arrangement of the hair bands, with that of *X. perversa* Weid. from Java, but the females are different.

Trigona erythrogastra, sp. nov.

Black; the basal three segments of the abdomen rufo-testaceous, the others black, suffused with rufo-testaceous, especially at the sides; the wings yellowish-hyaline to the stigma, the rest hyaline; the stigma and nervures rufo-testaceous. ♀.

Long: 7 mm.

Hab. Sarawak (R. Shelford).

Antennæ black, the flagellum brownish beneath, more broadly and distinctly on the apical than on the basal half. The occiput and the hinder part of the vertex are thickly covered with long black, stiff hair; the front is covered with a dark fuscous, thick pubescence and above sparsely with black hair. Clypeus thickly covered with fuscous down and smooth and shining. Mandibles black, smooth and shining. Thorax black, smooth and shining: the base of the mesonotum and the hinder part of the scutellum covered with long stiff black hair; the propleuræ covered sparsely with long black hair; the metapleuræ thickly with a fulvous down. The first transverse cubital nervure is faint above and almost obliterated in the middle; the second is very faint. Legs black; their hair is also black. The ventral surface is rufous.

Comes near to *T. lucteifasciata* Cam. but that has the second cubital cellule narrower at the top; the thorax rufous and the femora rufous.

Trigona flavistigma, sp. nov.

Rufo-testaceous, the hinder tibiæ and the basal joints of the four hinder tarsi black; wings hyaline, the basal half with a distinct yellowish tint; the stigma fulvous yellow, the nervures slightly darker in tint; antennæ rufo-testaceous, the apical four joints black. ♂.

Long: 8 mm.

Hab. Kuching, Sarawak.

Head smooth and shining; the front and vertex sparsely covered with long black hair; the hairs on the vertex longer than those on the front. Cheeks and clypeus covered with golden pubescence; the clypeus also sparsely with black hair. Mandibles rufous, blackish at the apex. The thorax is narrower than the head and is similarly coloured; the mesonotum and scutellum are sparsely covered with blackish hair; the sides and apex of the former have a yellowish down; the pronotum is glabrous in front, sparsely haired behind; in the centre, at the base, is a wide depression. The apical slope of the scutellum is thickly covered with long pale fulvous hair. The centre of the metanotum is very smooth, shining and glabrous; the mesopleuræ thickly covered with long, pale fulvous hair. The wings have a distinct yellowish tinge to the base of the stigma; the stigma and nervures are bright rufo-fulvous. Legs coloured like the body: the hinder tibiæ and the basal joints of the four hinder tarsi black; the hair on the black part of the legs is black. Abdomen coloured like the thorax; its base lighter in tint; the ventral surface is darker and is thickly covered with long blackish hair.

Trigona latebalteata, sp. nov.

Black; the base of the scape, the basal and the apical two segments of the abdomen rufo-testaceous; the anterior legs, the middle coxæ, trochanters, femora and the tibiæ in front; the hinder coxæ and trochanters beneath, rufous, the wings clear hyaline, the stigma and nervures testaceous. Worker.

Long: 5 mm.

Hab. Kuching. Sarawak.

Head black, the apex of the clypeus pale testaceous; the front, face and clypeus covered thickly with pale pubescence; the front has a narrow furrow down the centre: the labrum is testaceous: mandibles pale rufous, blackish towards the apex; the occiput is fringed with long fusco-rufous hair. The mesonotum is bordered all round by a distinct belt of fulvous pubescence: there is a broader belt on the sides and apex of the scutellum: the post-scutellum is covered with short fulvous pubescence. Median segment closely, uniformly and distinctly punctured. Pleuræ covered with fulvous pile. Wings clear hyaline; the stigma pale, the nervures of a deeper testaceous colour: the two transverse cubital nervures are faintly indicated, the first more distinctly than the second. Antennæ black, the base of the scape broadly testaceous. Abdomen smooth and shining; rufo-testaceous; the second, third and fourth segments deep black.

Trigona lacteifasciata, sp. nov.

Dark luteous, the head, except the centre of the clypeus, the flagellum of the antennæ and the tibiæ and tarsi, black; wings hyaline, a milky cloud at the end of the stigma; the stigma and nervures luteous; there are two transverse cubital nervures, which are straight, oblique and approach close to each ther near the top. ♀.

Long: 8-9 mm.

Hab. Borneo.

Antennæ black: the basal two-thirds of the scape rufous. Head black, the clypeus broadly, in the centre rufous; the front, face and clypeus thickly covered with a pale down; the hinder part of the occiput thickly covered with stiff blackish hair. Mandibles black. Thorax dark rufous, thickly covered on the mesonotum and scutellum with short, stiff, dark fulvous hair, which is thickest and longest on the base of the mesonotum. Median segment smooth and shining and is bare in the middle. The coxæ, trochanters and femora are coloured like the thorax; the tibiæ and tarsi black, except the apical joint of the tarsi; and they are covered with black hair. The basal two joints of the tarsi are mahogany coloured; the others are darker in tint; the ventral segments are similarly coloured and are sparsely covered with longish fuscous hair.

Description of New Species of Aculeate Hymenoptera from Borneo.

By P. Cameron.

ANTHOPHILA.

Nomia varibalteata, sp. nov.

Black; the head and thorax densely covered with fulvous pubescence; the abdomen with five blue, mixed with red, bands: legs black, the wings hyaline, with black stigma and nervures ♂.

Long: 11 mm.

Hab. Borneo.

Antennæ black, the scape sparsely covered with fulvous hair, the flagellum with a pale down. The front to the ocelli is closely, distinctly and uniformly punctured; the vertex smooth; both are thickly covered with long fulvous hair. The face is smooth; its sides are broadly and thickly covered with fulvous hair; the clypeus is stoutly keeled in the middle, is obscurely punctured and thickly covered with fulvous hair. Thorax thickly covered with fulvous pubescence. Mesonotum and scutellum opaque, closely and minutely punctured; the scutellar depression is covered with depressed pale fulvous pubescence; the scutellum sparsely with long blackish hair; the postscutellar region thickly with fulvous pubescence. Median segment closely, irregularly punctured and thickly haired; the basal depression is clearly defined behind and is irregularly closely longitudinally striated. Legs black; the femora and tibiæ covered with pale hair; the tarsi on the under side thickly covered with fulvous pubescence; the hinder tibiæ are narrowed at the base and become gradually, but not greatly, thicker towards the apex. The abdomen is smooth, shining and sparsely haired above; the basal five segments are banded with blue belts, which are largely tinged in the middle with red. The ventral segments are covered with fulvous pubescence; the last segment is distinctly keeled in the centre.

The transverse median nervure is not interstitial, being received shortly behind the transverse basal; the first recurrent nervure is received shortly beyond the middle; the tegulæ are pale testaceous; the third transverse cubital nervure is roundly curved on the lower side; the punctuation on the apical half of the clypeus is coarser than on the basal and runs into striations or obscure reticulations: the sides of the last ventral segment are keeled and project obliquely at the apex; the last dorsal segment is punctured and thickly covered with black hair; its apex is smooth.

A species closely related to *N. iridescens* Sm.

Megachile zygia, sp. nov.

Black; the hair on the front, face, pleuræ and median segment, ferruginous; the abdominal segments banded with ferruginous pubescence, the ventral scopa pale fulvous; wings hyaline; the stigma and nervures rufous. ♀.

Long: 12 mm.

Hab. Borneo.

Head closely rugosely punctured; the face and upper part of the clypeus with a smooth, irrugular longitudinal keel in the centre. The apex of the clypeus is transverse, finely rugose; its sides are straight and oblique. The base of the mandibles is closely rugosely punctured, the upper apical half has, at the base, some distinct punctures: the apical and the lower half smooth; the apical tooth is large, projecting, and becomes gradually narrowed towards the apex; the subapical is blunt and indistinct: on the base are two shallow curves, the inner being the larger. The mesonotum is closely alutaceous, opaque, without distinct punctures; the mesopleuræ are coarsely rugosely punctured; the metapleuræ coarsely alutaceous. The hair on the mesonotum and scutellum is short and dark, on the upper part of the pleuræ and the median segment it is rufous; on the lower parts and on the sternum, pale fulvous. Wings hyaline, with a slight fulvous tinge; the costa, stigma and nervures are bright rufous. Abdomen black; the dorsal segments banded with a bright ferruginous pile; the scopa pale fulvous; the last dorsal segment is covered with short black hair. Legs black, covered with pale fulvous pubescence; that on the tarsi is

rufous in tint: on the apex of the front tibiæ in the middle is a a stout, slightly curved spine, which becomes narrowed towards the apex; on the apex, at the base, in front of this, is a shorter tooth; the apical claws are larger and stouter than usual and rufous in colour: the calcaria are obliquely narrowed at the apex.

SPHEGIDÆ.

Sphex malayanus, sp. nov.

Black; the second abdominal segment rufous at the base: the head and thorax densely covered with golden pile and thickly with long pale pubescence; wings clearly hyaline, the stigma and nervures deep black: the apex with a deep black cloud between the end of the radial nervure and the lower end of the third transverse cubital. ♂.

Long: 14 mm.

Hab. Borneo.

The eyes distinctly converge below: the inner orbits from near the ocelli and the face and clypeus are densely covered with a golden pile and the entire head is thickly covered with long pale hair: it is impunctate: the ocelli are in a curve, are large and prominent; below them is a short, distinct keel which becomes sharply pointed at the apex: the apex of the clypeus is broadly rounded; in its centre it is distinctly depressed or furrowed; the middle is keeled. The labrum is slightly keeled in the middle. Mandibles black, rufous towards the apex; they are bidentate: the upper tooth is long, is clearly separated from the lower, which does not project, and is straight or slightly oblique at the apex; the apical tooth projects on the upper side, slightly, but distinctly; this projecting part is about three times longer than broad. The golden pile on the thorax is dense: the long pale hair is dense, long and pale; on the median segment it is not quite so thick, but is, if anything, longer. The mesonotum is alutaceous: the mesopleuræ closely and distinctly punctured: the scutellum is sparsely punctured in the middle, more closely and distinctly on the sides. Neither it, nor the post-scutellum, is furrowed in the centre: the latter is thickly covered with golden pubescence. The median segment is closely, finely, distinctly and irregularly reticulated: the apical slope is largely hollowed. Legs black, pruinose:

the femora and coxæ covered with long, soft white hair; as with many species the apex of the hinder tibiæ has a rufous pile; the tarsi are spinose. Wings clear hyaline; the nervures and stigma deep black; the cloud commences at the end of the radial cellule and extends behind to the cubitus; the angle formed by the bending back of the third transverse cubital nervure is hyaline. Abdomen black; the second segment more or less rufous; the petiole is long and curved; it is, if anything, longer than the hinder tibiæ and is covered with long white hair. The apices of the segments are testaceous all round and more broadly below than above.

There are two teeth on the tarsal claws. The third cubital cellule at the top is not much shorter than the second; at the bottom it is longer than it; the second recurrent nervure is received close to the second transverse cubital; the first at three times greater the distance from it. The species comes near to *S. maria* Bing. and *S. nigellus* Sm.

Cerceris excavata, sp. nov.

Black; the lower inner orbits, the apex of the third and of the sixth abdominal segments, pale yellow; the four anterior tibiæ and tarsi and the base of the hinder tibiæ, yellow; wings hyaline; the radial cellule and the apical cubital cellule above, smoky; the area on the median segment not clearly defined, rugosely longitudinally striated. ♂.

Long: 7 mm.

Hab. Borneo.

Antennæ black; the scape pale yellow beneath; the eight basal joints and the apical joint of the flagellum reddish-brown. Front and vertex rugosely punctured as is also the clypeus and, to a less extent, the face; there is a broad yellow line, roundly narrowed at the top and bottom, on the lower inner orbits; the apex of the clypeus is slightly waved in the centre, the sides are thickly fringed with stiff longish pale golden hair. Antennal keel acute, and black and yellow. Thorax coarsely rugosely punctured, black; a spot on either side of the pronotum behind; the scutellum is smooth behind; the median segment is coarsely rugosely punctured; the punctures are round and deep; the apex is hollowed in the middle; the basal area is not clearly

defined; there is a stout longitudinal keel and two less distinct oblique ones on either side of it. Wings hyaline, the radial cellule and the greater part of the apical cubital cellule, smoky; the petiolated cellule is about one half the length of the following; it receives the recurrent nervure distinctly behind het middle. The four anterior tibiæ and tarsi are yellow: the mid tibiæ are marked behind with black; the hinder are black, except for a yellow band near their base and the metatarsus. Abdomen closely and coarsely punctured; black, the apex of the third and of the sixth segment banded with yellow; the pygidium is broad, coarsely punctured; its apex transverse, depressed, membranous, except at the sides; the epipygium is depressed. The third ventral segment is banded broadly with yellow in the middle.

A distinct species, not very nearly related to any of the described Indian species. Characteristic is the "enclosed space" at the base of the median segment which is less clearly bounded than usual and is longitudinally and obliquely coarsely striated and the excavated middle of the median segment.

SCOLIIDÆ.

Scolia pulchrivestita, sp. nov.

Black; the head and thorax densely covered with fulvous hair and with a dense golden pile; the basal segments of the abdomen with blue and purple tints; the segments edged with pale fulvous hair; the wings fulvous-hyaline; the fulvous tint deeper along the apex; the stigma and nervures deep fulvous. ♀.

Long: 27 mm.

Hab. Borneo.

Antennæ black, the scape covered with pale fulvous hair. The vertex behind and in the centre is strongly and closely punctured, and there are a few punctures on the outside of the ocelli; the upper part of the vertex is smooth, bare and furrowed in the middle; the lower part is punctured and thickly covered with fulvous hair. The clypeus is smooth, base, subtriangular and flat; its apex is flat, broadly rounded and piceous; the apex of the mandibles broadly rufous. Thorax densely covered, except on the apical slope of the median segment, with pale

golden pile and with longish fulvous hair. Mesonotum, except in the middle behind, strongly punctured: the scutellum is more closely punctured, except on the apex and in the middle at the base; the post-scutellum is closely and strongly punctured, except in the middle. The basal part of the median segment is closely, but not strongly, punctured. The second transverse cubital nervure is broadly and roundly curved outwardly below the middle. Legs black, thickly covered with fulvous hair; the tibial and tarsal spines are rufous; the calcaria pale; abdomen black; the basal three segments with violet and blue micaceous tints; the basal segments thickly covered with long pale hair; smooth; the apical fringes are pale; the hair on the apical three segments is long and black: the pile on the pygidium is black.

Comes near to *S. acutinerva*; it is a stouter built insect; its clypeus is flat, not roundly convex; its second transverse cubital nervure is broadly rounded and the abdomen wants the yellow bands.

Scolia apherema, sp. nov.

Black; the front and vertex, the eye incision and the outer orbits, orange-red; wings fuscous-violaceous. ♀.

Long: 17 mm.

Hab. Borneo.

Antennæ black; the scape and second joint smooth and shining, the flagellum opaque. Head; the front, vertex, eye incisions and the outer orbits—wide above, narrowing below—to near the bottom, orange-red. Front and vertex shining, distinctly, but not very closely, punctured, except on the hinder edge of the vertex; and somewhat thickly covered with shining fulvous pubescence. The antennal tubercles and the parts below the antennæ deep black; the clypeus smooth and shining, the rest closely and rather strongly punctured. Mandibles black, smooth. Thorax above thickly covered with stiff black hair; the apical slope of the median segment is covered with white hair and densely with silvery pubescence; the propleuræ covered with long dark, the meso- with long pale, pubescence: the metapleuræ thickly covered with silvery pile. Mesonotum strongly and closely punctured; the middle behind smooth; the

scutellum is strongly, but not very closely, punctured: the post-scutellum is more closely and regularly punctured. The basal region of the median segment is closely punctured except the basal lobes at the base. Legs black; the femora and tibiæ thickly covered with long pale, mixed sparsely with black, hair; the spines on the four front tibiæ are bright rufous, on the hinder black. Abdomen black; the second and third segments have distinct violaceous tints; the pubescence on the dorsal segments are black, mixed with pale hair; on the ventral segments the hair is longer and paler; the apex of the petiole is strongly punctured; the rest of the abdomen smooth; the segments are not distinctly fringed with hair on their apices; the stiff pile on the pygidium is black mixed with white.

Comes nearest perhaps to *S. humeralis* Sauss. which differs from it in having the wings of a deep blue-violet tint; in its pronotum being broadly rufous; in the mesonotum and scutellum not being so strongly and closely punctured, the apical halves of these being impunctate; the abdominal segments want the blue-violet tints and the abdomen is longer compared to the length of the head and thorax.

Scolia (*Discolia*) *thyatira*, sp. nov.

Black; largely tinted with violet and purple tints; the front, vertex, upper part of the occiput, a small spot below the antennæ in the middle, an oblique broad mark on either side of the top of the clypeus, the pronotum broadly above and a large broad mark narrowed and rounded behind, on either side of the base of the third segment, bright orange, the wings uniformly fuscous-violaceous ♂.

Long: 22 mm.

Hab. Borneo.

Antennæ black, the scape, shining and covered with black hair, the flagellum opaque. The entire vertex, front, and the upper part of the outer orbits, orange yellow; strongly, but not very closely, punctured, and covered rather thickly with long fulvous hair. The clypeus is more sparsely punctured and its apex is impunctate; the two orange marks are large, covered, and almost unite above; the hair on the face is black, on the clypeus pale. The hair on the thorax is dense, stiff and black; the punctuation

on the mesonotum is close, almost uniform and distinct: this is also the case with the scutellum, except on its apex, which is smooth. The post scutellum is less strongly punctured. The median segment is more violaceous in tint than the mesonotum: it is smooth and is covered rather thickly with black hair except laterally at the base. Mesopleuræ thickly covered with black hair. The wings are uniformly dark fuscous-violaceous and are without a very brilliant lustre. Legs thickly covered with black hair. Abdomen covered like the thorax and with voilet, green and blue tints and lightly iridescent; it is thickly covered with black hair except on the second and third segments where the hair is much sparser and shorter; on the base of the third segment are two broad orange marks, which are obliquely narrowed laterally. The frontal furrow is smooth and is deeper and more distinct above and below than in the middle; the orange on the front extends into the eye incisions; the two yellow marks on the clypeus vary in extent: the lateral furrows on the apex are distinct; the two orange marks on the third abdominal segment vary in size and form.

Comes near to *S. bioculata* Sauss. and *S. fulvifrons* Sauss.

Mutillidæ.

Mutilla gispa, sp. nov.

Black; the thorax and the base of the mandibles red; the third abdominal segment covered with silvery pubescence, two irregularly oval marks of silvery pubescence on the base of the second segment: the pygidium laterally covered with long silvery hair ♀.

Long: 11 mm.

Hab. Borneo.

Scape of antennæ shining, sparsely punctured and covered with white hair: the flagellum opaque, covered with a microscopic down; the terminal joint is brownish; the third joint is nearly twice the length of the fourth; the antennal tubercles rufous. Front and vertex coarsely rugosely punctured: the punctures on the front running into reticulations. Face and clypeus smooth and shining; the apex of the clypeus with a broad shallow incision. Mandibles black, rufous at the base; the apical

tooth is long and does not taper much towards the apex, which is rounded; the subapical tooth is rounded at the apex, does not project much and is not defined behind. Palpi long, dark testaceous and thickly covered with pale yellowish hair. Thorax slightly, but distinctly, narrower than the head; rounded at the base, almost transverse at the apex; it is fully twice longer than wide; its sides above irregular, not contracted; above it is coarsely rugosley punctured and sparsely covered with longish black hair; the pleuræ are smooth and shining; there is a stout curved keel in the centre of the propleuræ. Above the base of the middle coxæ is a stout keel, which extends upwards to the middle; the lower edge is less distinctly keeled. Legs black, covered sparsely with long white hair; the tibial spines are black and stout; the tarsal bright rufous; the calcaria pale. Abdomen black; the basal segment short, becoming gradually wider towards the apex, above covered with long pale hair; the basal segment is thickly covered with shorter black hair; there are two irregular oval marks of silvery pubescence on the base of the second segment, which is thickly covered with black hair, long at the base, shorter on the remainder: the third segment is covered with silvery pubescence; the basal two-thirds of the pygidium is irregularly longitudinally striated; the apical third smooth; the sides are thickly covered with long pale hair. The keel on the basal ventral segment does not reach to the middle of the segment, is stout, is rounded at the base, its apex with a vertical slope; near it the sides bear some large round punctures; above the middle is a complete curved keel with a shorter one below on the apical half. The second and following segments are thickly fringed with silvery pubescence, the epipygium is punctured; the apex is smooth and is roundly incised in the middle.

Occasional Notes.

Dialects of the Malay Peninsula.

I have been engaged for some time past in an attempt to collect and compare the various dialects of the Wild Tribes of the Peninsula and shall be much indebted to anyone who will furnish me with fresh material on the subject, with a view to its being embodied in a forthcoming publication. Any vocabularies, grammatical notes, specimens of sentences with literal (verbatim) translations, and even lists of personal names, would be welcome, if accompanied by a clear statement of (1) the name of the tribe to which they refer: (2) its location (district and state, and approximate position on the map) and, if possible, (3) a short description of its physical characteristics.

I venture to appeal to members of the Society, or their friends, who may have collected such information, but have not the leisure or the inclination to work it up themselves, to assist me in this way in the work of collating these dialects. Much valuable material remains unpublished and is ultimately lost because men, who have been at some trouble to collect it, keep it back with a view to completing it with additional matter which they eventually have not time to collect.

I am particularly in want of specimens of the aboriginal dialects of the Negri Sembilan and Pahang, but any information relating to the aborigines of the Peninsula will be most welcome.

While on the subject of dialects, may I venture to draw the attention of the members of the Society to the importance of accurately recording the various dialects of Malay which are spoken in the Peninsula. Apart from a few scrappy notes about the pronunciation of certain letters, practically nothing has been done in this department. There are now, however, in most districts of the Peninsula, Europeans well qualified by a more than adequate knowledge of standard Malay, and if each of them were to compile a record of the local peculiarities of

the dialect spoken in the particular district where he was stationed, the result would be an invaluable contribution to the scientific study of the Malayan languages. Local dialects, which were formerly neglected under the mistaken idea that they were mere corruptions of the standard or written language, are now recognized to be of great importance from the philological point of view, and in many countries they are being accurately recorded and studied. It is regrettable that in this respect we should lag so far behind the Dutch, who have by this time compiled more or less adequate records (some of them in every way admirable) of almost every language and dialect spoken in their vast section of the Archipelago. To take one instance, of which I have some slight personal knowledge: we possess an excellent Dutch dictionary of Menangkabau Malay and a goodly number of specimens in prose and verse, of that curious and interesting dialect, yet, though this same dialect, with slight variations, is spoken in Naning (Malacca) and the Negri Sembilan, where scores of Englishmen have heard it spoken, we have no adequate English record of it.

What is wanted, among other things, is an accurate account of

(1) peculiarities of intonation and accent;
(2) peculiarities of pronunciation of particular syllables, especially finals;
(3) grammatical and syntactical peculiarities, if any, *e. g.* the use of prefixes or suffixes different from those of ordinary Malay: and differences in the construction of sentences;
(4) preference for one of two synonyms where the standard Malay prefers the other;
(5) the use of words with a meaning differing from that which they have in the standard language;
(6) local words, simple and derivative, not found in the standard language;
(7) local phrases, turns of speech and idioms.

Another subject which needs working up is that of place-names, both those that appear to be Malay and such as have no meaning in Malay and are probably in some cases Aboriginal.

These latter may eventually throw considerable light on that dark subject, the condition of the Peninsula prior to the Malay immigration.

I need hardly add that though I have specially dwelt on the Malay Peninsula, as the immediate domain of the Society's scientific interests, yet I do not mean to underrate the importance of contributions relating to other Malayan countries.

C. O. Blagden.

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A Malayan Element in some of the Languages of Southern Indo-China.

BY C. O. BLAGDEN.

In a former paper I endeavoured to point out that the aboriginal dialects of the Malay Peninsula show distinct traces of an Indo-Chinese element, impressed upon them, probably at a fairly early date, by the intrusion from Southern Indo-China of a race of Mon-Annam stock speaking a language which was closely allied to that of the Peguans and Cambojans.* The object of the present paper is to introduce the readers of this Journal to what may perhaps be appropriately described as the converse phenomenon, namely, the persistence (from a still remoter era) in some parts of Southern Indo-China, of distinct relics of an independent group of Malayan dialects, underlying the now dominant Indo-Chinese languages of that region.

As might be expected, the modern representatives of this group are far from being pure Malayan tongues: they exhibit obvious traces of the Mon-Annam and other influences to which they have for many centuries been subjected, and it is by no means certain that, in their present mixed condition, they can all claim to be classified in the Malayo-Polynesian family of languages. But whether that claim, which is sometimes made for them by French scholars more familiar with the Indo-Chinese than the Malayan languages, could be substantiated or not; whether, that is to say, these mixed dialects are to be regarded

* This subject has been learnedly and (so far as the materials at his disposal permitted) exhaustively handled by the Rev. Father W. Schmidt in a recent paper "Die Sprachen der Sakei und Semang auf Malacca und ihr Verhältnis zu den Mon-Khmet-Sprachen", which appeared in Bijdragen tot de Taal-hand-en Volken-Kunde van Nederlandsch-Indië Vol. LII (Series 6, part 8) Fasc. 3-4 (The Hague, 1901).

It remains to be seen whether the author's conclusions will stand the test of the further evidence that can be adduced; but at any rate he has marshalled the evidence that was before him with admirable skill and scientific acumen.

as genuine Malayan languages overlaid with foreign accretions, or, on the other hand, as alien tongues containing a large number of old Malayan loan words, is not for the present purpose very material. In order to decide this point and to determine whether these mixed languages partake more of the Malayan or of the Mon-Annam type, a careful study of their structure and grammar would be required, but the materials for such a study are at present very deficient, and in either case these dialects even in their present state presuppose, as I intend to show, the existence of a distinct Malayan continental group established at a very remote period in the south of Indo-China.

The chief of these languages is Cham, the language of the ancient Hindu kingdom of Champa, which in medieval times occupied the country now called Annam, and in the period just preceding its fall (which occurred in A. D. 1471) had its centre on the East coast of Indo-China about lat. 14° N., though one of its earlier capitals was as far north as lat. 17.° 37′ N. This language is still spoken in a few inland villages of the Annamese province of Binh Thuan, near lat. 12° N., and by the emigrant Cham community in Camboja; the latter is now Muhammadan in its entirety, but the Chams that remain in Annam are mostly pagans. Each group has its own dialect, but apart from slight variations the language of both is the same. It is written in a complex alphabet of Indian origin: inscriptions, both in Sanskrit and in Cham, abound in Annam, and the former go back to about the 3rd century after our era.* According

* The Sanskrit inscriptions were dealt with in a paper "L'Ancien Royaume de Campa d'apres les inscriptions" by M. Abel Bergaigne in the Journal Asiatique (Paris) Jan. Feb. 1888.

The inscriptions in Cham, which have more interest for us, from the Malayan point of view, than the Sanskrit ones, have been dealt with by M. Etienne Aymonier in a paper "Première Étude sur les Inscriptions Tchames," in the same journal, Jan. Feb. 1891. The earliest known of these Cham inscriptions dates from about the beginning of the 9th century A. D.

In an inscription dated a little later, recording the dedication of two fields to pious uses, the expression used is *huma dua nan*, lit. "fields two those"; the word for God is *Yang*, the old word which survives in Malay *kayangan* and *sembahyang*. Most of the rest of the inscription is full of Sanskrit words, as indeed the whole series

to Ptolemy the metropolis of this region was Balonga. This place can be clearly identified,* on other grounds besides mere similarity of name, with Bal-Angoué, of which the ruins situated near the coast about lat. 14° N are still in existence, and which was therefore apparently the first, or at least the earliest known, as it ultimately became the last, of the Cham capitals. Its fall is narrated, curiously enough, in the Sějarah Malayu, where it is called Bal, the generic Cham word for "metropolis" or "capital."

The Chams, in fact, are the remnants of what was once a highly civilized nation: they were the furthest outpost of Indian civilization on the Asiatic continent, and their country was a borderland where for over a thousand years Indian culture struggled with and was eventually vanquished by Chinese, the latter being represented by the Annamese, who though non-Chinese in origin had become civilized under Chinese tutelage.

Such is the history of the Chams in outline: but legends carry it back even further, for the Cambojan traditions, for what they are worth, represent the Chams as having been in occupation of Camboja when the Cambojans first arrived there, some centuries before the Christian era: the immigrant Cambojans are said to have intermingled at first with the Chams but eventually to have got the upper hand and driven out their king.

Physically the Chams appear to resemble the Malay and Indo-Chinese types, being described as somewhat fairer than the former. Some of them appear to show traces of Indian and Arab blood. Their language, of which a good grammar has been published, is in its present condition a mixed language containing a relatively large number of Mon-Annam elements. Some have regarded it as a Mon-Annam language saturated with Malayan loan words, others maintain that it is a Malayan language modified by Mon-Annam influences. As will appear in the sequel, I am not sure that this may not be something

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of Cham inscriptions appear to be, the language in which they were written bearing much the same relation to the spoken Cham, as Kawi probably did to the contemporary spoken Javanese.

The series extends into the 15th century, to a few years before the fall of the kingdom.

* See J. R. A. S. (1899) 665.

like a distinction without a difference: but certain it is, at any rate, that Cham contains a very large percentage (perhaps nearly 50 per cent.) of pure Malayan words; and in this respect it seems to exceed its neighbours, the dialects to be next mentioned.

It is in the hilly country bounding Annam on the west and separating it from the valley of the Mekong River, about lat. 13° and 14° N., that these three dialects are found: they are spoken by three savage tribes called respectively Cancho, Rodè and Chréai. These tribes appear to be on much the same plane of civilization as the Orang Hutan of the South of the Malay Peninsula; their dialects are unwritten, and we owe such slight knowledge of them as we possess to the investigations of the three or four French explorers and administrators who have interested themselves in them. Practically that merely amounts to vocabularies of about 120 or 150 words of each of these dialects.* Besides these, there are other dialects in this region which are apparently more or less related to the above, and of some of which even less is known: † most of them however show decidedly more relationship with the Mon-Annam than with the Malayan family, the elements which they have in common with the latter decreasing in relative importance as one proceeds north and west from the old Cham region.

The only other dialect I propose to deal with here belongs to a different quarter altogether: it is spoken by the Selung (or Silung or Salone, as they are variously called) a sea-faring race who inhabit the numerous islands that fringe the Western Shore of Tenasserim (Lower Burma) from about lat. 13° N. to about lat. 10° N., and are marked on maps with the rather highsounding title of the Mergui Archipelago.

These people may fairly enough be styled a distant branch of the Orang Laut. Their physical type, to judge from photographs, is more or less that of a rude Malayan race, with (possibly) some admixture of other elements, (of which the Indonesian may be one, as the Selungs, or at least some of them, are

* These are given in Moura, "Le Royaume du Cambodge."

† Of the Bahnar, however, a good dictionary by Dourisboure has been published (Hong Kong, 1889). It is a Mon-Annam dialect, but contains a certain number of Malayan words.

mesaticephalic, while the true Malays tend to the *brachycephalic* type). The three wild tribes previously mentioned, I should have said, appear from descriptions and such illustrations as I have seen, to be at least in part of non-Malayan stock: some authorities have insisted much upon their Caucasian type, by which I suppose is meant that they differ considerably from the Mongoloid type of features common to both Indo-Chines and Malays.

The Selungs, whatever their race may be, are pagans in a low state of civilization, and their language is an unwritten tongue. It comprises several dialects differing considerably from one another, so that people from two islands barely eighty miles apart have some difficulty in carrying on an intelligible conversation together. Several short vocabularies* of this language have been collected at various times by different persons, and they serve to illustrate these dialectic variations: but as it is not quite clear to which dialects they respectively refer, the Selung must for our purposes be dealt with as one language. It would appear to be really a Malayan language, less mixed with other elements than are the tongues already mentioned, and its claim to be mentioned here at all rests merely on its present geographical position: but being the speech of a sea-roving race of islanders it is obvious that its position does not furnish such cogent evidence for the antiquity of Malayan elements in Indo-China as do the inland dialects previously enumerated; nor is it as closely connected with any of them as they evidently are with one another.

It may however be said to form a link in the chain between these mainland dialects and languages of the Eastern Archipelago; and that is the reason why mention is made of it here, although its existence does not really affect the main argument of this paper.

It would be merely wearisome to present a whole series of vocabularies of the five languages I have enumerated: a few words will serve to convey some idea of the nature of the Malayan elements which they contain and will exhibit the

* They are given in Anderson, "The Selungs of the Mergui Archipelago."

peculiar character of their relation to the Malayo-Polynesian family of languages quite sufficiently for the present purpose.

The numerals, which are very characteristic, are as follows:—

	Cham.	*Cancho.*	*Rodê.*	*Chréai.*	*Selung.*
One	thaa, sa	sa	sa	sa	chă, chet
Two	dvaa, dva	doa	doa	toa	twa
Three	klău	clou	to	clou	tahlow
Four	pak	pac	pac	pac	păt
Five	limœû	lema	ema	léma	lemah
Six	nam	nam	nam	nam	nam
Seven	tijuh	tuchu	cachu	tuchu	loojoo
Eight	dalapan	salapan	sapan	repan	wahlow
Nine	thalapan, salapan, samilan	doalapan	doapan	toapan	chowai
Ten	tha pluh. sa pluh	saplu	plu	plu	taplaw
Eleven	sapluh sa	saplu sa	plu sa	plu sa	taplaw-chă / taplaw-chet
Twelve	saplu dva	saplu doa	plu doa	plu toa	ta plaw-twa
Twenty	dva pluh	doa plu	doa plu	toa plu	twa plaw
Hundred	ratuh	[*Not given*]		retus	allataw
Thousand	ribău	[*Not given*]		ha repou [appăn]	

The *th-** forms in Cham belong to the Binh Thuan, the *s*-forms to the Camboja, dialect. Presumably the double forms in Selung are also dialectic variants. The spelling of Selung is the old fashioned English, that of Cham the modern scientific system†; as to the rest, they are collected by French authorities but I am not quite clear on what system they are spelt.

These words are interesting as exhibiting a numeral system which, though unquestionably and obviously Malayan, is in some

* This *th-* is the English sound in *thing*. Some dialects of Achinese also turn *s-* into *th-* in this way.

† Slightly modified by the French tendencies of the transliterator. His *e* = *e* his *œ* = a sound varying between the vowels of Fr. *cœur* and *ceu*, or the two *eu* in Fr. *leureux*. But *u* is the real *u* (Fr. *ou*); *œû* is a lengthening of *œ*.

respects clearly more archaic than that of Malay and could not, therefore, have been derived from it. In fact, even if these words were all that we knew of the dialects in question, we should be justified in saying that they constituted a distinct subgroup of languages, not directly derived from any existing Malayan group. The forms for *one*, *two*, *four*, *five* and *six* run practically through the whole Malayo-Polynesian family almost unchanged. In *four* the mainland dialects approximate most closely, perhaps, to the Bugis *ăpak* and Madurese *ĕmpak*, unless indeed the *-k*, which appears to be unpronounced in these two languages, is to be regarded merely as a device of writing, not as the remnant of a real *-k*; Selung agrees with the Javanese and Dayak *pat*. In *six* they all agree with the Javanese *nĕm* in the absence of the first syllable of the word (Malay *anam*) but retain the *a* of the second syllable like the Malay (also the Madurese *ănam*); the Achinese and Kayan Dayak form *nam* is identical.

The forms for *three* agree substantially amongst themselves and (except that some have a guttural for the initial *t-*) with the great majority of the Malayo-Polynesian family which retains the old form *tolu* or *tĕlu*; but differ from Malay, which has another word, *tiga*. The nearest approximation to the Cham Cancho and Chréai forms appears to be the Bisaya (Philippines), *tló*: compare also the Sulu * *Kâtluân* (= *Ka-tlu-an*), "thirty." For the guttural, compare Sulu *ĭklog*, Selung *k'loen*, with Tagalog *itlóg*, Malay *tĕlor*, "egg." The Rodê contraction *to* recurs in Sulu.

The forms for *seven*, on the other hand, differ from the typical Malayo-Polynesian *pitu* and agree subsantially with the Malay *tujoh*, save only that Selung puts *l-* for *t-*.

In both these cases, it is very noticeable that the dialects now under consideration agree substantially with Achinese (*tĕlhu* or *lhu* pronounced *tĕlhée* and *lhée*, "three;" and *tujuh*, "seven") and with some of the Dayak dialects of Borneo, for which the reader may refer to No. 5 of this Journal, where out of a list of eleven dialects, ten have forms of *tolu* for *three*, and eight of those ten agree with some others not included in the ten in having forms of *tujoh* for *seven*.

* Between Borneo and the Philippines.

In *eight* and *nine* there is some confusion, which may be due either to the collector or to the wild tribes themselves; possibly the latter get a little mixed when they come to the higher numbers. Anyhow, they are said to use for *eight* a form *salapan* which occurs again in Sundanese (Java) and also in Mangkasar (Macassar, of Celebes), in the latter under the form *salapang*, and there means, as it ought to mean, *nine*. Oddly enough, the Minangkabau Malays use it, interchangeably with *dulapan (dĕlapan)*, and also make it mean *eight*. Vice versa, these wild tribes use variants of the Malay and Achinese form of *eight* for *nine*. Cham, it is to be observed, uses both forms correctly, but has also another form for *nine*, viz., *Samilan*, the Malay *Sambilan* (*Sĕmbilon*), which may perhaps be merely a loan word from Malay itself.

There has been, in historical times, a Malay immigration from Sumatra (and particularly, it seems, from Minangkabau) into Camboja (where this form *Samilan* is used) and the Cham and Malay communities in that country, though distinct, are in close contact with each other, and being of one religion sometimes intermarry.

It is noticeable that Selung differs from the other dialects in having preserved, though in rather uncouth shape, the original Malayo-Polynesian forms for *eight* (*walu*) and *nine* (*siwa*).

In the forms for *ten* these dialects agree substantially with the Achinese *pĕluh*, in shortening the first syllable; this does not, apparently, occur in the Bornean dialects, which in other respects show a fairly close resemblance in their numeral systems.

For *eleven* and upwards the dialects agree amongst themselves and with some of the Bornean dialects, but differ from Malay, Achinese, Javanese, etc., in not using forms compounded with *-bĕlas* (originally *-walas*, the Malay *balas*, "to repay," with the meaning "to return," i.e. to the hand on which the counting was first began).

The Selung for "hundred" apparently has the prefix *sa-* "one" reduced to *a*, which occurs also in a Cham subdialect as *ha-*. For the *-l-* of Selung *yahloam*, Malay *jarum*, "needle."

Thus while there are here particular words agreeing, each with some different Malayan languageor group of languages,

the sum total of the numeral system of these dialects is quite characteristic in its individuality.

A similar state of things prevails in regard to many other common words, as the following specimens will suffice to show:—

	Cham.	Cancho.	Rodè.	Chréai.	Selung.
Dog:	*athău.*	*asou.*	*so.*	*so.*	*oiee, aai.*

Melano-Dayak *asau* comes nearest but the word, though not found in Malay (except in the expression *gigi asu*, "canine teeth") is very wide spread, e.g. Javanese *asu*.

Fowl:	*mcnuk.*	*menuc.*	*menuc.*	[*tus*].	*manok.* / *malynauk.*

Compare the Javanese (and almost universal Malayo-Polynesian) *manuk*.

Tiger: *rimong.* *remong.* *imong.* *lemong.* ——— (The Selung word is different, viz: *pannoo*, *punk*, which finds its analogues in aboriginal dialects of the Malay Peninsula, e.g., Těmbe' *ma'nu* (for which see No. 24 of this Journal, p. 17). The Achinese form is *rimong* like the Cham. I think there is no reason to doubt the identity of the word with the Malay *rimau*. Possibly the form *harimau* is a sort of Hobson-Jobson word, that is to say, really the old native Malayan word for "tiger" but twisted into its present form by a fanciful notion that it ought to mean "the beast of Hari" (*harimriga*, see Maxwell, Manual of Malay, p. 21). I confess that even Sir William's brilliant scholarship cannot convince me that his Tamil "male lion" derivation is the right one.

Elephant: *limarn.* *cmun.* *romon.* *lomon.* ——— (Selung has *gazah*, the Malay *gajah*, a word of Sanskrit origin). Compare the Bulud Opie (Borneo), Javanese and Lampong (Sumatra) *liman*: this word, which is not found in Malay or Achinese, is probably derived from *lima*, the old word for "hand," the application being to the end of the animal's trunk. One of the Sanskrit names for the elephant (*hastin*) has a similar derivation; and compare also his Latin epithet *anguimanus*, "having a serpent for a hand."

	Cham.	Cancho.	Rodè.	Chérai.	Selung.
Plantain:	*patei.*	*potey.*	*umtoi.*	*phumpetey.*	———

(Selung has *pechang*, the Malay *pisang*.) With these forms compare the Dusun *pùntie*, Tagbenua *punti*, Bulud Opie *pûteh*, Kian (? Kayan) Dayak *pătèh* (all of Borneo), Sumbawa *punti*, Mangkasar *unti*, Malagasy *untsi*, Fijian *vudi*: not found in Malay, Javanese or (I believe) Achinese; but it is the old original Malayo-Polynesian word. *Phum* is the Malay *pohun*, "tree," Cham *phun*.

Rice:	*brah.*	*bréa.*	*brai.*	*pras.*	*pallah.* / *pla.*

Malay *bĕras*; I find in a Bugis vocabulary printed in the Arabic character at Singapore, *bărâ'*; Achinese *bĕrĕs* (apparently pronounced *brŏeh*, final *-s* in Achinese being as a rule pronounced *-h* as in Minangkabau Malay, where the word is *barèh*; in the Naning (Malacca) pronunciation, *borèh*). This word is a good instance of the rule (first formulated by the late Dr. H. N. Van der Tuuk in his "Outlines of a Grammar of the Malagasy Language," 1865) that "when the Malay and Batak equivalent word has *r* and the Tagal or Bisaya has *g*, both the Kawi and Javanese have no consonant." * The Batak form here is *boras* Tagalog *bigás*, Bisaya *boyas*, Kawi *wwas*, which last contracts to Javanese *wos*, while Balinese has *baas*. It will be noticed that Cham and its neighbours here agree most closely with the Sumatran and South Celebes type and differ entirely from the Javan and Philippine. Selung rather stands alone, as in many other words. But Selung *-l-* corresponds in some other cases to Malay *-r-* e.g. *mata-aloi* (= *matahari*), "sun;" *yahloam* (= *jarum*) "needle."

Rice (in husk) is in Cham *padai*: Malay *padi*, Achinese *padé*, Javanese *pari*, Batak *pagé*, Bisaya *palai*. Here again, Cham agrees, as regards consonants, with Malay and Achinese, but it differs here from Batak as well as from the others. †

* This is often called "Van der Tuuk's first rule."

† These consonantal changes are regular and exemplify Van der Tuuk's second rule; see below, *s. v.* "nose."

Ox, cow: *tamor. lemo. imo. romo. l'mu*: Malay *lĕmbu*, in Achinese the same, and also *lĕmo.*

Rain: *hajan. ujan. hayan. yan.* {*kujan.* *kuian.*
Malay *hujan:* but Batak and Javanese *udan**, Tagalog and Bisaya *olan.* Selung *k-* represents Malay *h-* in *ketam* (= *hitam*), "black" and a few other words.

Root: in Cham *ugha, agha* (in accordance with the peculiarity referred to below): this is not, apparently the Malay *akar* but *urat*, "Sinew." In form it is nearer to the Formosan *ugat*; Tagalog and Bisaya *ogát* than to any other forms. Batak in this word agrees with Malay.

In a sub-dialect of Cham of which specimens are given by Morice in an article entitled "Les Tiams et les Stiengs" in the "Revue de Linguistique" Vol. VII, vii, pp. 359-370, *r-* is often re-placed by *g-* e.g. *agopao* (= *saribu*) a "thousand": *hagaton* (= *saratus*), "a hundred." In Tagalog these words appear as *libo* and *gatós* respectively.

Tongue: in Cham *dilah, dalah* (both being used); approaching nearer to the Tagalog *dila*, Bisaya *dila*, than to the Malay and Achinese *lidah.* Batak also has *dila:* here, therefore, Cham agrees closely with Batak and the Philippine languages but differs from Malay and Achinese.

Belly: {*téan.* *tyan.*} *téan. téan. kajéan. k'lan.*
Bisaya, Iranun and Dusun *tian*, Sulu *tiân. Tian* is given in some Malay dictionaries as a Javanese loan word meaning "belly (of a pregnant woman)." In Achinese *tiyĕn* means "fœtus," *mĕtiyĕn* "to be pregnant"; in Cham *mœtéan* means "pregnancy," *boh téan* (literally "fruit of the belly," Malay *buah*, Javanese *woh*, "fruit") means "family."

Hand: *tangin. tengam. cangan. tangin. lengan.*
Malay *tangan*, Dusun *lângan*, Dusun of Kimanis *longon.* For the Selung *l-* = Malay *t-*, compare *loojoo* (= *tujoh*), "seven."

* Van der Tuuk's third rule: "when a *j* of Balinese and Malay is *d* in Batak, the Javanese and Kawi both also have *d*."

	Cham.	Cancho.	Rodè.	Chérai.	Selung.
Nose:	*adung.*	[*chnu*].	*dung.*	*dung.*	*{yoong. {yong.*

Malay and Achinese have *hidung*. Cham uses both *adung* and *idung*. Compare the Tidung (Borneo) *adung*, Dusun of Kimanis *ădung*. Javanese and most of the Bornean dialects replace this *d* by *r*; the Philippine languages (and in this word Madurese also) have *-l-* here; Batak has *-g-*. The importance of this particular set of consonantal correspondences was also first pointed out by the late Dr. H. N. van der Tuuk. They constitute his second rule:—"When the Malay and Balinese *d* of equivalent words is represented by *l* in Bisaya or Tagal, both the Javanese and Kawi have *r*." *Chnu* is probably Cambojan.

Fire:	*apréi.* *apuĕi.* *apui.*	*apui.*	*pui.*	*puoi.*	*{appói. {apoi. {apoee.*

Malay *api*, but Achinese and several Dayak dialects, etc., have *apui*.

Water:	*iă,* *eay.*	*ea.*	*ea.*	*ja.*	*{awĕn. {awaen.*

Malay *ayĕr*, Achinese *iyĕr*, Madurese *aeng*, etc.

Stone:	*batău.*	*pétou.*	*bato.*	*potou.*	*batoe.*

Malay *batu*, the Achinese equivalent is written in the same way but pronounced *batée*.

The few words here given suffice to show that these dialects have peculiar points of relationship with several widely separated Malayan groups of languages and could not have been derived from any one of them. Their affinities appear to be most marked with Achinese, as is shown especially by the fact that in common with that language (and quite the opposite to Malay), they tend to throw the accent on the last syllable, which is consequently often strengthened to a diphthong, at the expense of the first, which is weakened and sometimes entirely suppressed: Compare *plah*, "ten" with the Achinese *pĕluh* and contrast the Malay *puloh*: similarly compare the forms, in

Cham, Achinese and Malay respectively, **thun*, *tĕhun*, *tahun*, "year"; **dhan*, *dĕhĕn*, *dahan*, "bough"; *ngan*, *ngon*, *dĕngan*, "with;" *dok*, *duk*, *duduk*, "remain, dwell, sit"; and *mætai*, *maté*, *mati*, "dead." Selung has *matai*, which form also occurs in Bornean dialects as *matei*.

It is probably owing to the same tendency to weaken the first syllable, that Cham has *hajan* for *hujan*, "rain," *akan* for *ikan*, "fish," *adung* for *hidung*, "nose," *balau* for *bulu*, "hair," and the like: and here it goes further in this direction than Achinese or any other Malayan language that I am aware of, although this vowel change appears also (but more rarely in some Bornean dialects, e.g. Tidung *adung*, "nose," Biadju Dayak *balau*, Lawangan *balu*, Siang *warlo* † [sic], "hair."

It will of course be understood that the words here given have been expressly chosen with a view to exhibiting the Malayan element in these dialects, and that alien, especially Mon-Annam forms have been deliberately avoided. The Malayan element is strongest in the substantives, but is also represented in some of the verbs and adjectives, e.g.

	Cham.	Cancho.	Rodê.	Chréai.
Buy:	*blĕi.*	*bloi.*	*bloi.*	*bloi.*

Malay *bĕli*, Achinese, *bloi.*

Sell: *pablĕi* (in Cham: the rest are different): Achinese *publoi.*

Give:	*brĕi.*	*brey.*	*broi.*	*proi.*

Malay *bĕri*, Achinese *bri.*

Descend:	*trun.*	*trunh.*	*trun.*	[*tumau.*]

Malay *turun*, Achinese *trun.*

White: *patih* (Cham): *potayak*, *patuik* (Selung): Malay *puteh.*

Drunk: *mæbuk* (Cham): Malay *mabok.*

New: *barŭc* (Cham): Malay *bāharu.*

Unripe: *mætah* (Cham): Malay *mĕntah.*‡

* This is a different *th-* from the other: this *th-* and *dh-* are true aspirates.

† I take these examples from C. den Hamer's Proeve van eener Verglikende Woordenlijst van zes in de Z. O. Afd. v. Borneo voorkomende Taaltakken.

‡ For the present purpose it is not necessary to pursue this comparison further. Suffice it to say that the Malayan element can be traced (at least in Cham and to some extent in Selung, there being no

The main object of this paper being merely to point out the existence of Malayo-Polynesian words in these languages and not to determine the difficult question of their right to be classified as genuine members of that family, I shall pass somewhat lightly over their grammatical characteristics of which indeed, except as regards Cham, little is as yet known. Cham forms its derivative words, like the Malayan, but unfortunately also like the Southern Mon-Annam languages, with prefixes and infixes: The common ones in Cham are the prefixes: *pa*, *mæ-*, *ta-* or *da-* and infixes: *-an-*, *-næ-* and *-am-* or *-mæ-*. Most of these reappear, in more or less similar forms, with much the same force, in Achinese; but also in Cambojan, where they are very freely used, and to some extent in Peguan.* Suffixes, corresponding to the Malay *-kan* and *-an*

Prefixes.	*Achinese.*	*Cham.*	*Khmer.*	*Mon.*
Verbs of action: causal or merely transitive	pĕ-, pu-	pa-	p-, ph-	p-, ph-, b-
Verbs, generally intransitive ...	mĕ-, mu-	mæ-	?	mă-
Infixes.				
Verbs of state, intransitive ...	-ĕm-	-mœ-	?	-m-
Substantives	?	-mœ-	-m-, -amn-	-m-
Substantives	-ĕn-	-an-	-n-, -an-	[-an- ?]

In some other cases, where the forms agree, the meanings appear to differ somewhat.

do not appear to be in use at the present time either in Cham, Achinese, Cambojan or Peguan; but if the derivation given above for *limœn* (*liman*) from *lima* is right, they must have existed formerly to some extent in Cham.

The Selung dialect forms verbs by prefixing *me-* as in *metoyam*, "to smell" (Malay *chium*), *na-* as in *na-baut*, "to make" (Malay *buat*), *naleat*, "to look" (Malay *lihat*), *nadŏk*, "to sit" (Malay *dudok*, Achinese *duk*, Cham *dok*); also, apparently, by nasalizing the initial consonant, as in *nalone*, "to sleep" (Malay *tidor*) and *nakout* "to fear" (Malay *takut*). But

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data for the other dialects) through most of the parts of speech, but the non-Malayan element is also, apparently, present in them.

* A few instances of this general correspondence must suffice: there are of course many differences in detail.

this last may possibly be due to the phonetic decay of a prefix of the form *man-* or *mĕn-* (the Malay *mĕ-*, *mĕng-*, etc.): for a word like *mangai*, "to cry" seems to presuppose an earlier *manangai* (Malay *tangis*, *mĕnangis*) and *mawah*, "to laugh" an earlier *manawah* (Malay *tĕr-tawa*). The loss of a medial *-n-* seems more probable than that of a *-t-*: it may be, however, that the Selung in these words as in "seven" had replaced the *t* by *l*. In that case these forms probably exemplify the prefix *me-* above.

Selung has the suffix *-kan* e.g. in the word *makkăn* (for *ma-bahkan*, *ăm-bahkan* or *mĕmbahkan*, from *bah*, to "bring," Malay *bawa*).

The ideological order of these languages is unknown to me, except that in Cham (as in the Mon-Annam languages again) it appears to agree substantially with the Malay order: the attributive adjective and the genitive follow the principal noun, the object follows and the subject precedes the verb; but in Selung the object precedes the verb, which is very strange, unless it is due to the sentences having been collected through the medium of a Burmese interpreter, in speaking to whom the Selungs may have cast their words into the Burmese order. It is curious that Andamanese exhibits the same phenomenon: but there is no evidence that the Selungs are in any way connected with the Andaman islanders: both in physique and in language the two races are quite distinct from one another.

I have already indicated the conclusion to which a necessarily rather superficial comparison of these dialects seems to me to point; I regard them, or at least all of them except Selung, as proof positive of the establishment on the mainland of Southern Indo-China of a Malayan sub-family which must date its separate existence from a period so remote as to be coeval with the differentiation and dispersal of the existing insular language groups of at least the Western part of the Malayan Archipelago, and which formed something like a link between the Sumatra, Bornean and Philippine groups.

I think it is worth adding that the southern Mon-Annam languages, which so closely resemble the Malayan in certain of their structural forms, though by far the greater part of their vocabulary is radically different and non-Malayan, owe this

resemblance, in my opinion, to the fact of their having developed on what I believe was originally a Malayan soil. The true explanation of the peculiarities which they share in common with the Malayo-Polynesian family is, I believe, that they have been formed by the synthesis of a language introduced by alien immigrants from the north with the Malayan speech of a people who then already occupied Southern Indo-China The northern invaders must have absorbed and assimilated these primitive Malayo-Polynesians and imposed upon them their alien language, which in its turn has been twisted, in the mouths of their mixed descendants, into something of a Malayo-Polynesian form, by a process that has been aptly called "inverse attraction."

The result of such an introduction of a strange tongue is, as a rule, that it becomes modified or recast into some form that comes natural to the people upon whom it is imposed: this may be illustrated by such well known cases as the Pidgin English, of the China ports, Negro English, or the Malay of many Chinese, Tamils and Europeans.

In such cases the mere vocabulary, though foreign to the speaker, is learnt readily enough; but he cannot help speaking his new tongue in the manner of his old one. He pronounces the new words in the way that comes easiest to him and utters them in what is to him the natural order, though that may not be the order proper to the language as spoken by those whose original speech it was. If it was natural to him to use prefixes and infixes in his old language, I imagine he would be apt to apply them to his acquired tongue in the same way and for the same purposes. This, to my mind, is the explanation of the curious fact that in Cambojan and Peguan we find these modes of formation, which are so characteristic of the Malayo-Polynesian family, while the difference of the material elements of language, i.e. the words themselves, prevents us from admitting an original kinship between the Mon-Annam and the Malayan families of speech.

I am afraid that this idea of the formal elements of language surviving, while the native vocabulary is gradually being superseded by foreign words, may remind some people of the persistence of the grin after the disappearance of the Cheshire

cat. But the real analogy is to be found in those petrifactions where every cell and fibre of the original wood or other substance are in course of time accurately reproduced by the stony deposit that replaces them. To drop figures of speech, which, however apt, can never be conclusive, when one considers that the Malayan languages readily adopt foreign words and instinctively fit them up with Malayan prefixes and suffixes, one can almost see the beginnings of such a process as I have indicated: words like *ka-raja-an*, *bĕr-akal* or even *di-rĕport-kan* (which last can be heard any day when a Malay police officer reads from his Station report book in a Police Court) are instances taken at random, where a Sanskrit, Arabic or English loan word has been subjected to this treatment.

One has only to carry the idea out to its logical conclusion and imagine a Malayan language gradually allowing its native vocabulary to be superseded, more or less completely, by foreign loan words, and the result would be much the same as what we now find in southern Indo-China. If the process were arrested half-way, a fairly evenly mixed vocabulary would be formed, like that of Cham; a more advanced stage of change would result in something like Cambojan; while a thorough application of the same principle might end in producing a language like Peguan, where only a very small percentage of words is to be found which show any signs of kinship with the Malayan family. Nevertheless the ideological order of these languages, that is to say the order of words in a sentence, is substantially the same as in the Malayan languages* and the same system of prefixes and infixes (though not, apparently, of suffixes) still survives.

On the other hand a strong tendency is noticeable, of which it has been shown that even Achinese (Malayan language) exhibited the beginnings, to contract disyllabic words into monosyllables or at least into quasi-monosyllables, in which one of the two syllables is almost suppressed. There are also other

* There is reason to believe that in this respect the Mon-Annam languages did not differ originally from the Malayan.

peculiarities which distinguish the Mon-Annam from the Malayan group, e.g., a preference for hard sounds * (surds) and the occurrence of true aspirated consonants: these latter characteristics may be due to the non-Malayan element in these languages.

The hypothesis here put forward would account for the remarkable resemblance in structure and formal elements between the Malayan and the Mon-Annam languages, a resemblance which, so far as I know, no one has yet satisfactorily explained. † But of course it must remain a mere hypothesis until these languages have been thoroughly studied and compared with one another.

This much, however, is certain: one Mon-Annam language which cannot be accused of having been developed on Malayan soil, namely the Annamese, which grew up on the borders of Kwang Si, within the Chinese sphere of influence, does not exhibit these phenomena, but follows the Chinese system of tones, though it has not adopted the Chinese ideological order. I take it that the differences between Peguan and Cambojan on the one side and Annamese on the other are the measure of the difference between a Chinese and a Malayan environment.

Whether, however, this suggested explanation be the true one or not, there remains the fact that in Peguan, and still more in Cambojan, there are a fair number of words (too many to be due to accidental coincidence) which correspond in form with Malayan words of similar meanings. As already stated, they are generally more or less contracted or mutilated, by the weakening or entire loss of one syllable, while the Malayan languages retain them in their fuller disyllabic forms. That being the case, the presumption is that they are genuine Malayan words; and this presumption is strengthened when any of

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* Clearly, however, it is at a relatively modern date that the Mon-Annam languages have changed some of their sonants into surds: for in many cases (especially in many of the Indian and some of the Malayan loan-words) they still appear as sonants in the written language. Conversely Cambojan pronounces some surds as sonants.

† Mr. Himly in his paper referred to below, throws out a hint that some such explanation is possible, but does not enlarge upon it.

them are found to occur again in some distant island dialect of the Malayan family.

I propose to give a few instances to show the forms which such words assume in Cambojan and Peguan, but before doing so, I may as well point out that Indian loan-words, as to the origin and derivation of which there can be no doubt, undergo a similar mutilation in the Southern Indo-Chinese languages so that an analysis of the changes exhibited by these Indian words will serve as a guide in identifying the Malayan words to be found in those languages, which are often hardly recognizable without some such help.

The following are examples of words of Indian origin common to Malay and these two languages: I give the Malay, rather than the Sanskrit form, because the former is more familiar to those who know Malay.

Malay.	*Cambojan.*	*Peguan.*
Kala	... kāl	... kūla.
Kĕchapi	... chāpey [chapĕy]	... ——
Guru	... grūw [krû] ...	... ——
Chandra	... chand [chān] ...	... ——
Jambu	... jåmbūw [chŏmpū	... ——
Dewata	dew-ta [tévoda] deb-ta [tépoda]	dewatan [tewătau].
Dosa	... dōs [tôus] ...	... duh [tuh].
Nagara	... nagar [nokor]	... ——
Naga	... nāg [néak] ...	... nāk [naik].
Puasa	... puos [buos] ...	... ——
Bangsa	wangs [vong] pangs [pong] ...	wang [weang] wongsa.
Muka	... mukkh [mŭkh]	... muk.
Raja	... rāj [réach] ...	... rājā [reachea].
Satwa	... satw [sāt] ...	... sat [sât].
Sutra	... sūt [sâut] ...	... sut.

The following list shews some of the similar changes which Malayan words suffer, viz.

I. Suppression or weakening of the first syllable:—

Malay.	*Cambojan.*	*Peguan.*
Kayu	jhĕć [chœ̂u]	... chhu [tsu]
Kijang	k-tān [kĕdan]	... ——
Katup	k tāp [kĕdap]	... ——
Garam	krām [kram]	... ——
Jawa	jwā [chvéa]	... ——
Tarum	trâm [trōm]	... ——
Pusat	phchêt	... ——
Perak*	prāk [prāk]	... ——
Bĕsi* ...	——	Pāsoa.
Sarong ...	srōm	... ——

II. Loss of initial consonant:—

Chin chin ...	ânchién	... kāchin.
Tĕbu	ainbau [ámpou]	... bau.
Tabong	ainbang [ampong]	... ——
Daching	anjing [ánching]	... ——

III. Loss of first syllable:—

Tumbok	pok [bok]	... ——
Abang	pōng [bōng]	.. ——
Lĕtak	tāk [dāk]	... ——
Kĕring	ring ...	... ——
Esok	sâêk ...	... ——

*[Note] Achinese bĕsoi, "iron." It is perhaps worth noticing that the Cambojan word for *silver*, like the Peguan for *iron*, is Malayan, while the Cambojan for *iron*, viz., *tēk* [*dêk*] is common to it and Chinese. The Cambojan word for *gold* is *mās* [*mćas*]; the same as the Malay *mas, āmas*; but this is believed to be of Indian origin. For *tin* the Peguans use the expression *pāsoa dāk* [*pāsoa daik*], literally "water iron," alluding presumably to the alluvial formations where tin ore is got by washing river sand, while the Cambojans call it *Samna pāhăng* [*Săman pahăng*], from which, as *samna* appears properly to mean "lead," I conjecture that the Cambojans first got their tin from Pahang, for the word *pāhăng* does not seem to have any meaning in their language, so far as can be ascertained from the Dictionary. Similarly in some of the Western languages (e.g. Arabic and also Hindustani, I believe) tin is called by a name *al-kalā'i* derived from Kālāh, a place on the Western shore of the Peninsula probably identical with Kĕdah.

IV. Loss of second syllable :—

Pĕchah	...	pĕk [bêk]	.. pākaw [pāko].
Patah	...	Pāk [bak]	... puit [pat].
Buka	...	pêĕk [bôk]	... pâk.
Mata	...	——	mat [mât, mot].
Tanda	...	tān [dan]	... ——
Tolak	...	tol [dol]	... ——
Pakai	...	bāk [peak]	... buik [puk].

The Cambojan and Peguan words have been transliterated, to the best of my ability, from the written languages: where the pronunciation is different, this is indicated by a second form in square brackets, following in the case of Cambojan, M. Aymonier's spelling and in the case of Peguan the indications given by Haswell, adapted to the ordinary modern system of romanization.

This list could be considerably lengthened, specially as regards Cambojan, if space permitted: but I think it is enough * to show that there is a field of research waiting for any Malay scholar who has a fancy for hunting up Malayan words in these languages. It would however be a great mistake to suppose that the bulk of the vocabulary of Peguan or Cambojan can be accounted for in this way: the contrary is the fact, and at first sight any Malay student looking through a dictionary of either of these tongues would be struck with their non-Malayan aspect. It is by neglecting the essential relationship which exists between Peguan and Cambojan † and ignoring the

*In presenting a list which merely compares a few words in Peguan and Cambojan with what I believe to be the corresponding words in Malay, without taking into account the other Mon-Annam dialects and the other languages of the Malayan family, I am aware that I am offending against one of the primary canons of comparative philology. But my present object being to make out merely such a *prima facie* case as will justify further investigation in this direction, I have thought it superfluous to bring in the corroborative evidence that can be supplied from the other languages. I hope some day to deal with this matter more fully and systematically.

† It will interest Straits readers to know that this was first noticed by our Straits authority, J. R. Logan. It has since been conclusively proved by Forbes in his "Languages of Further India."

wide differences in lexicographical material between the latter and the Malayan languages, that some authorities have been misled into denying the existence of a Mon-Annam family and asserting that Cambojan should be classified as a member of the Malayan group.

So far as it goes, this list of words serves to illustrate the subject of this paper by giving another instance of the traces of a Malayan influence in Indo-China, which must be of very ancient date, and which is obviously an important element to be considered in relation to the unsolved problem of the origin of the Malayan races.

Many considerations point to the conclusion that at least some part of the ancestry of those races* is of continental Asiatic origin: there are anthropological reasons, which I am unable to deal with, but which have been summed up roughly (and not very accurately) in the phrase "Mongoloid type;" ethnographical considerations, such as were dwelt upon by the late Sir Henry Yule † and others, specially a curious agreement between the races of the Archipelago and those of Indo-China in a considerable number of points of detail regarding customs and usages (a kind of evidence, which though very weak if depending merely on one or two points of agreement, is in its nature cumulative and gains strength in an increased ratio as additional points are discovered); and, finally, there is the linguistic evidence, the investigation of which is, however, involved in many preliminary difficulties. It is to be feared, for instance, that the late Mr. J. R. Logan's achievements in this direction are not a safe basis for further enquiries to start from. On the other hand Professor Kern,‡ by a comparison of

* I refer here more particularly to the true Malayan races inhabiting the western half of the Indian Archipelago, to whom alone the anthropological argument applies. How it is that the totally distinct stocks known as Papuan, Polynesian, Micronesian, etc., come to speak languages that cannot be severed from the Malayan family, is another problem, also at present awaiting solution. There seems, however, no doubt that it is the case, in spite of the difficulty of finding an explanation for it.

† Journal of the Anthropological Institute, 1880.

‡ In the paper to which a reference will be found below, the most conclusive, perhaps, of these words are the names for sugar-cane,

a considerable number of names of plants, animals and the like, which run (more or less) through the whole range of Malayo-Polynesian languages from Madagascar to Hawaii and from Formosa to New Zealand, has shown that the speakers (whoever they were) of the mother tongue from which these innumerable languages were evolved, were a seafaring people, of some moderate degree of civilization, (they were acquainted with the use of iron), who at the stage preceding the differentiation of these languages (but not necessarily originally) inhabited a long coastline of some good-sized country situated within the tropics, somewhere in the western half of the vast region over which these languages now extend. He points to the South-Eastern coast of Indo-China as the country that fits in best with this conclusion; and without going into details, lays some stress on the considerable Malayan element that is to be found in the existing languages of that region, which fact, as he observes, in view of the relative unimportance of the small Malayan communities to be found there in modern times, can only be explained by the hypothesis that they formerly constituted a much more numerous and powerful factor there than they do in our own day.

This last point it has been my endeavour to illustrate in the present paper.

It may be convenient if I summarize the conclusions to which the considerations here brought together appear to me to lead:—

(1) The Malayan element in Cham and its cognate dialects was not borrowed from any other Malayan language or group of languages. It has been separated from the western insular groups for as many centuries, as they have been from one another, and has become differentiated from them as they have amongst themselves.

(2) The Southern Mon-Annam languages and Cham are at once Malayan and non-Malayan: largely Malayan in structural formation, mixed but predominantly non-Malayan in vocabulary, they are probably the result of an intimate mixture between

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banana, rice (in husk and husked), shark, prawn, sea-turtle, buffalo and crocodile: but there are a good many more besides.

Malayan and alien tongues. The Malayan element is strongest in the southeast, weakening progressively towards the north and west.

(3) At a remote age, before the introduction of the alien element just referred to, probably the whole coast of southern Indo-China from the Irrawady to the borders of Tongking, and certainly the eastern part of it from Cape St. James to the neighbourhood of Hué, was more or less occupied by communities speaking a pure Malayan language, possibly already slightly differentiated into dialects.

(4) It was probably from this region at a time when it was still purely Malayan, that the various emigrations took place, which ultimately carried dialects of that language to the distant islands in which they are now spoken.

I am content to rest this last proposition on the grounds put forward by Professor Kern in the essay already referred to; the other three appear to me to follow, though not all with the same degree of certainty, from the linguistic evidence of which some specimens have here been brought together.

Since writing the above, I have seen in the T'oung Pao for March, 1901 (Series II, Vol. 2, No. 1, p. 86) a review by M. Gustave Schlegel of a recent Siamese grammar. In noticing this work (which appears to be the best Siamese grammar hitherto published) after pointing out, what has been pointed out before, notably by the late M. Terrien de la Couperie, that Siamese contains a very large percentage * of words common to it and Chinese (especially, the numerals † which are, up to a certain point, pure Chinese loan words) and also a considerable number of Sanskrit and other Indian words, the eminent Chinese Professor of Leyden hazards the view that the residuum of Siamese will be found to be a Malayan language, and supports this thesis by a few words which no doubt are Malayan but may very well be loan words like the Indian ones; everything that the venerable professor writes is worthy of consideration, but

* De la Couperie puts it as high as 33⅓ per cent: "Languages of China before the Chinese" pp. 59-60.

† Not however, "one" and "two."

with all deference, I venture to say that this is indeed a bold theory. His chief argument, apparently, apart from the aforesaid Malay loan wards, is that Fu-nan (or Pu-nam), the old name for the country now called Siam, is capable of being explained by a Siamese derivation which M. Schlegel invents for it: unfortunately all monosyllabic languages lend themselves only too easily to hypothetical derivations of that kind; and that its people, in the early centuries of the Christian era, are described by Chinese chroniclers as being "ugly and black" with "curled hair," resembling, the Professor himself says, the Semangs. On the strength of this he assumes the Siamese to be Malayan. Everyone who has been to the Far East should know, and M. Schlegel can hardly have forgotten, that the Siamese are several shades fairer and the Semangs several shades darker than the average Malay complexion: and that neither Siamese nor Malays have curled or curly hair. His argument compels M. Schlegel to deny the historically certain fact that the Thai, that is the present Siamese, are comparatively recent arrivals from the interior of Northern Indo-China; and he entirely overlooks the essential unity of their language with that of the Laos, Shans, etc., right away to the Khamti on the eastern border of Assam and a string of tribes in southwestern China. If the Siamese spoken to-day at Bangkok is at bottom a Malayan language, so must be the languages of all these northern tribes, for they are substantially the same and cannot be severed from one another. That appears to me to be an exceedingly large conclusion to draw from a few Malay loan words to be found in modern Siamese, and I am convinced that it will be repudiated both by Siamese and Malay Scholars with tolerable unanimity.

Of course the possibility that there is a Malayan element in the blood of the modern Siamese of the South is not thereby excluded: that there should be such an element is an almost necessary consequence if the main argument of the foregoing paper has anything in it. But apart from modern intermixture which the difference of religions keeps at a minimum, it can only have come in at second hand through the Peguan or Cambojan inhabitants who occupied Siam before the Thai conquered it. That, however, is a very different matter from the

hazardous assertion that Siamese is a Malayan language, an assertion which requires far more cogent evidence to justify it than M. Schlegel has supplied in the article to which I refer.

It is hardly necessary for me to add that this paper is merely intended to draw the attention of the readers of this Journal to the subject; so far as the greater part of it is concerned, no claim is made for originality, and it is in the main merely a restatement of what has been set forth elsewhere in fuller form by others. My excuse for offering it to the Society is that some of the readers of this Journal may not have had access to the existing literature on the subject. At the risk of appearing egotistical, I desire to put on record that at the time my former paper was published, I had not heard of Professor Kuhn's admirable essay entitled "Beiträge Zur Sprachen Kunde Hinterindiens." In it most of my conclusions were anticipated, and, if I had known of its existence, my paper would not have appeared, without at least some reference to it. The occasion for this personal explanation, which ought perhaps to have been made sooner, is a remark by Dr. Luering in No. 35 of this Journal.

I append a list of the principal authorities consulted:—

AYMONIER, Grammaire de la langue Chame; Les Tchames et leurs Religions (Revue de l'Histoire des Religions, 1891); The History of Tchampa (Imperial and Asiatic Quarterly Review, July 1893, and Transactions of the Ninth Congress of Orientalists, London, 1893); Vocabulaire Cambodgien-Français; Dictionnaire Khmêr-Français;

VAN LANGEN, Atjehsche Taal (Handleiding; Woordenboek);

HASWELL, Grammatical Notes and Vocabulary of the Peguan Language;

STEVENS, Vocabulary of English and Peguan;

KERN, De Fidjitaal: Taalkundige gegevens ter bepaling van het Stamland der Maleisch-Polynesische Volken (Verslagen en Mededeelingen der Koniklijken Akademie van Wetenschappen, Afd. Letterkunde, Amsterdam, 1889).

MOURA, Le Royaume du Cambodge;

ANDERSON, The Selungs of the Mergui Archipelago;

KUHN, Beiträge zur Sprachenkunde Hinterindiens (Sitzungsberichte der Philosophisch-, Philologisch- und Historischen classe der Königlichen Akademie der Wissenschaften; Munich, 1889);

HIMBY, Bemerkungen über die Wortbildung des Mon (*ibid*); Ueber den Wörterschatz der Tscham-Sprache (*ibid.*), 1890.

NIEMANN, Bijdrage tot de Kennis van der Verhouding van het Tjam tot de Talen van Indonesie (Bijdragen tot de Taal-, Landen Volkenkunde van Nederlandsch Indie, Leyden, 1891.)

BRANDES, Bijdrage tot de Vergelijkende Klankleer der Westersche Afdeeling van de Maleisch-Polynesische Taalfamilie.

VAN DER TUUK, Outlines of a Grammar of the Malagasy Language (Reprinted, from the Journal of the Royal Asiatic Society, in Vol. I of the Second Series of Essays Relating to Indo-China, for the Straits Branch).

A Vocabulary of the Jakuns of Batu Pahat, Johore, together with some remarks on their customs and peculiarities.

By A. D. Machado.

At the headwaters of the Sembrong, the Bekok and the Simpang Kiri in the interior of Johore, three large streams which, draining one into the other, form lower down the Batu Pahat River, are to be found scattered families of Jakuns. These people live by agriculture, are employed by the Chinese pepper and gambier cultivators in clearing jungle for them, and furnish the Malays through barter, their stock of jungle produce. Years of contact with the Chinaman have robbed them of much of their primitiveness. So great is their assimilation to the Chinaman, that when cadging a bowlful of rice from him, they have been often seen manipulating a pair of chopsticks with a dexterity unequalled by the Chinaman himself. They now profess an abhorrence for monkeys, snakes, lizards and similar delicacies, and it is sometimes amusing to behold their studied look of consternation at any one suggesting the possibility of anything so loathsome forming part of their daily menu. Yet the Malays declare that in the privacy of their own homes, they will devour anything, from a snail to an elephant. They do not regard with disfavour the giving of their daughters in marriage to Chinese planters, such unions usually assuring to them and their relations some measure of certainty of a regular supply of food. They are thus a somewhat mixed people to-day. In general appearance they are not unlike up-country Malays. There is still however that peculiar lustre in their eyes, an appearance of independence and yet of timidity, an indefinable something in fact, which to a practiced observer, at once proclaims them their primitive origin and their probable connexion with the other wild tribes further north in the peninsula. They

do not call themselves Jakuns, that word being a term of opprobrium if applied to them within their hearing. Curiously enough, the Sakais also resent the application of the word Sakai to them, and like the Sakais again, they call themselves *Orang Ulu*, up-country people. The Malays in their dealings with the Jakuns, call them *Pa angkat* (adopted father) *Ma angkat* (adopted mother) *adik angkat* (adopted younger brother) and so on as the case may be. This pleases them hugely, though not to the extent of inducing them to part with their stock any cheaper or in greater quantity. For all that, they are very much harrassed and robbed by the Malays, in particular by those who have some authority over them. In my journeys into the interior of Batu Pahat, I have often had patiently to listen to the complaints of these men against their Malay oppressors, many of undoubted genuineness, without however having the power to render any relief.

It may not perhaps be generally known that the Jakuns practice the rite of circumcision, but in a way peculiar to themselves. They do not, like the Mohammedans, remove the whole skin, but merely part the upper folds of the prepuce by a longitudinal cut or incision, causing the rest to drop into a bunch below. Asked as to the reason for this peculiar rite, the oldest man present related to me the following legend. Very many years ago, when the whole country belonged to them and they were under the rule of a great Batin (King of their own, as great as the Sultan of Johore,) this great Batin had a wife who for a long time remained childless. At length, a male child was born to them, who after thriving for some time sickened and was on the point of death. On consulting a *Pawang* (Diviner or Sorcerer) who happened in this case to have been a Mohammedan Malay, he declared that the only means of saving the youth's life was by circumscision. To this the great Batin demurred but vowed that if his child recovered, he would be circumscised. He got well and the operation was in due time performed but in order that he might not thereby be held to have embraced the Mohammedan faith, this peculiar style was adopted, the fiat having in the meantime gone forth that all male Jakun children were in future to undergo this operation in the manner indicated above, which explains the existence of this peculiar

custom to-day. This custom is utterly unknown to the northern Sakais who appear to dread the operation, so much so that many Pahang Sakais have told me that but for this one operation, they would have embraced the Mohammedan faith. Another reason why a Sakai will not become a Mohammedan is that he will be obliged to eschew such delicacies as he from time to time picks up in the jungle, in particular the bamboo rat (*Rhizoneys*) which is to him the most toothsome and delicate of foods!

These Batu Pahat Jakuns told me that in days of old, they possessed a very extensive vocabulary of their own. All that now remains of this once extensive vocabulary are a few words, which they still use interspersed with Malay and which are transcribed below. Even these few remaining words, the rising generation of Jakuns do not appear inclined to use, so that in a short time, their once extensive language will be a thing of the past. I should add that a great number of these words have appeared in one of the earlier issues of the Journal collected by Lieut. Kelsall, R. E., from the Endau Jakuns, while a few seem peculiar to the Batu Pahat people.

List of Jakun Words at present in use among the Jakuns of Batu Pahat.

Now, klak.
Day after to morrow, duâk'.
Morning, lom. ("Lom" in Siamese means air.)
Thunder, pâtēh. ("Patēh" is "Slave" in Malay.)
Lightning, gintal.
Tiger, jerokee.
You, atok, hee. (Heh is Sakai for you.)
Boy, kôlôp. (In Perak "kulup" also means boy among Malays, while in Pahang, the same word means, among Pahang Malays, male organ of generation.)
Girl, dai-ying (Siamese for woman is Pu ying)
Father, bai.
Aunt, amai.
Uncle, wâh.
Unmarried man, pengantin.g.
" girl. dai-ang.

Cheek, pipi.
Chin, dago.
Forehead, kening.
Eyebrow, bulu halis.
Widower, balu.
Widow, indong balu.
Divorced man, silai.
Divorced woman, indong silai.
Cold, sidék.
Father of first born child, p'miot.
Mother „ „ „ „ indong miot
Porcupine, sebuntu.
Gibbon, tawók.
Dog, koyok.
Durian fruit (*Durio Zibechinus* L.), tuang
Tampui (*Baccaurea Malayana*), berket.
Papaya (*Carica Papaya*), kuntaia.
Sweet potato, tilak.
Don't know, bê-nâ-hûk.
Finished, bek.
Man, b'orang.
Woman, oyang.
Father of dead child, mantai.
Mother „ „ „ indong mantai.
Want, endák.
Don't want, n'gnin.
To procreate, m'nuju.
Female organ, kache.
Drink, jo'ho.
Thirst, chekat.
Tired, kâbo.
Head of father or mother-in-law, hombubu.
Forehead, k'ning.
Heel, tumbit.
Mouth, bibir.
Jungle, debri.
Ant, m'ret.
Elephant, pechem
Mosquito, rêngit.

Pig, jokot.
Rhinoceros, s'nkrat.
Come, kiah.
Friend, teman.
Knee, to-ut.
Frog, bihong, or chikong or B'bap.
To kill, kleng.
Weak, beh rot or beh alah.
Firestick, lârâk,
Firewood, Ungun api or chel-hér.
Not got, póhôs
Rainbow, bohuta or kawat.
Blow pipe, temiang. (Temiang is Malay for that particular species of bamboo from which Blow Pipes are made, the *Bamboosa Wrayi.*)
River bank, t'rbis.
Angry, t'keng.
No, bêh.
Go, jôk.
Spider, t'wowoh.
Woodpecker, t'rlom.
Leprosy, p'ngundim or barak.
Korap, (a kind of ringworm common among all jungle men, likewise among Malays and Siamese who dwell in the interior) Losonq.

On the Parthenogenetic Breeding of EURYCNEMA HERCULANEA, Charpentier.

BY R. HANITSCH, PH. D.,

CURATOR OF THE RAFFLES MUSEUM, SINGAPORE.

Although I have already given some account of the breeding of the huge Phasmid insect, since identified as *Eurycnema herculanea*, Charpentier, in the Annual Reports of the Raffles Library and Museum for 1897 and 1898, it seems desirable to put it on record in a more connected form.

About January 1897 Mr. L. A. Fernandis, Taxidermist in the Raffles Museum, received a living female of this species, but as it had passed through several hands, its place of origin could not be traced. Possibly it may have come from Java. He kept it alive, feeding it on guava leaves (*Pisidium guyava*, L.), and in February it began to lay eggs. He kindly presented me with a number of those eggs, most of which hatched during April and May of that year, but one not till August, and the last one in the middle of September. As soon as the young ones were hatched, they applied themselves very vigorously to the consumption of guava leaves, and grew so quickly that the first one out was fully developed on August 11th, casting its last skin on that date, i. e., more than a month before its last sister egg was hatched. During growth they cast off their skin several times without any great effort, only rarely losing a leg in the process, until the last cast, when many of them lost several legs, one even as many as five. Naturally these were then helpless in feeding themselves, not being able to cling on to the guava leaves, and they soon died. But the individuals which were successful afforded an interesting sight when the last skin was cast. Up to this they had been stick-like in appearance (Malay name "Bilalang Ranting," Stick Insect), without wings, of dark brown colour in the earlier stages

and turning into grey in the later stages. Now they suddenly appeared in a glistening new green skin, with long wings, and the body seemingly almost double its former diameter. All specimens were female, and a few weeks after they had reached the adult stage, they began to swell up and lay eggs, the first of them being laid on September 16th. None of the females had ever come into contact with a male insect, having been carefully kept in a large airy case consisting of glass and perforated zinc, exhibited in the entrance hall of the Raffles Museum. Eggs were continually being laid by the sister insects up to February 1898, the insects dying about two or three weeks after they had deposited the eggs. Of the eggs laid during the last four months of 1897 and the first two months of 1898, a careful account was kept. Every morning I inspected the case, removed the eggs which had been laid during the past twenty-four hours, and placed the eggs laid on different days in separate boxes, duly dated. The first young ones of this generation appeared in March and the last in August, requiring for their development from 165 to more than 240 days of which great divergence in time I cannot give any explanation. Most of them, however, were hatched between the 195th and 212th days, the maximum number being hatched on the 205th day. The accompanying table shows the proportions of eggs hatched on different days. This generation was rather weakly, only a few reached maturity, most of them dying off when shedding their skin two or three stages before maturity. The first of them reached the adult stage on August 10th, 1898, and never having come into contact with any male, began to lay eggs on September 15th. These eggs did not develop, and none of the other individuals of this generation laid any eggs.

The reason why the eggs of the last generation did not develop was very probably in consequence of their artificial surroundings. If I had been able to keep the insects in more natural conditions and to devote more care to their feeding, I feel sure I would have been able to rear a few more parthenogenetic generations.

This appears to be the first instance of Parthenogenesis observed amongst Orthoptera, and there are now only three

orders of insects left in which this mode of propagation has not yet been described, viz., Coleoptera, Strepsiptera, and Aptera. In Hymenoptera Parthenogenesis occurs amongst the Tenthredinidæ or Saw Flies, Cynipidæ or Gall Flies, Chalcididæ, and certain Bees and Wasps. Amongst Lepidoptera there is perhaps only the one well-established case of *Solenobia*, and amongst Diptera that of *Chironomus*, amongst Thysanoptera the case of *Thrips*, and amongst Neuroptera a doubtful case of one of the Caddis Flies, *Apatania*. More common again are well-established cases of Parthenogenesis amongst Hemiptera, viz., in the Aphidæ or Plant-Lice, and Coccidæ or Scale Insects.

Description of the adult female: The total length of the largest specimen, preserved dry, is 230 mm. (about 9 inches), but all the measurements given below are taken from a very perfect specimen preserved in spirit, measuring 204 mm. (about 8 inches), the total length in both cases being exclusive of the antennæ, but inclusive of the ovipositor.

The head is oval and smooth, 13 mm. long, with three very distinct ocelli, the antennæ being 27 mm. in length and consisting of 26 joints. The prothorax is corrugated, without spines, and only 11 mm. in length. The mesothorax is 39 mm. long and spined. On its dorsal surface there are about sixteen spines arranged in two irregular rows of eight each, laterally about eight spines on either side, and ventrally two irregular rows of about six spines each. The metathorax, 16 mm. long, is smooth dorsally, but provided with a few blunt spines laterally and ventrally.

All the abdominal segments are smooth. The first segment measures 12 mm., the second, third, fourth and fifth 14 mm. each, the sixth 15 mm., the seventh 13 mm., the eighth 10 mm., the ninth and tenth 7 mm. each. The ovipositor is large and boat shaped, measuring 39 mm. and projecting beyond the last segment by 19 mm. The styles are 12 mm. long: they are narrow flat plates with a dorsal vertical ridge, appearing therefore ⊥ shaped in transverse section.

The first pair of legs measures 112 mm., the second 90 mm., the third 122 mm. The femora of all legs bear spines arranged in three rows, but the tibiæ of the first pair of legs are almost smooth, whilst those of the second pair are more

spiny and those of the last pair still more so. The animal has the power of reproducing legs lost during the process of casting of the skin, especially in the earlier stages, but in my specimens the new legs never grew up to the size of the normal legs of the opposite side.

The wing covers measure 39 mm., the wings themselves 77 mm., reaching down to the end of the fifth segment.

The eggs are oval and smooth, of dark brown colour, measuring 5 by 4 mm., surmounted by an almost spherical capitulum, 1.5 mm. in diameter. These eggs were figured by Dr. D. Sharp, F. R. S., of Cambridge, in his "Account of the Phasmidæ, with Notes on the Eggs." in Willey's "Zoological Results," part IX, fig. 39, under the name of *Cyphocrania hanitschi*, n.n., and the author says that they are remarkable for the large size of the capitulum. Later on, however, he identified the species as *Eurycnema herculanea*, Charpentier.

Malay Plant Names.

By H. N. Ridley and C. Curtis.

In Journal No. 30 a list was published of Malay names of plants with their equivalents in Latin and English. It has been considered by various persons that it would be useful to have the names in Latin-Malay, and Mr. Curtis has compiled this from the original work. This also gives an opportunity of adding names since obtained, and of making various corrections in identification and spelling. Dr. Clercq, who is much interested in this study of native plant names, has criticised the original list, and added a number of names and suggestions, which are incorporated herewith. One or two words have been added from Clifford and Swettenham's Dictionary, but many of the plant names therein are unidentified with the plants, and so useless for this purpose, and some are not Malay Peninsula words, to which this list has been confined.

Scientific Names.	*Malay Names.*
Abrus precatorius, L. ... ... (*Leguminosæ*).	Akar belimbing. Akar saga betina.
Abutilon indicum, L. ... ... (*Malvaceæ*).	Kambong lobo. Bunga kisar. Malbar.
Acacia pseudo intsia, Willd. ... (*Leguminosæ*).	Akar kapok. Kayap.
„ pennata, Willd. (Var pluricapitata). ...	Akar kayu manis.
„ Farnesiana, Willd. ..	Lasana.
Acalypha indica. ... ... (*Urticaceæ*).	Rumput lis-lis.
Acanthus ebracteatus, Wall. ... (*Acanthaceæ*).	Jeruju. Jerujah. Gurujuh laut.
Acorus calamus, L. ... ... (*Aroideæ*).	Jeringu. Deringu.

Acriopsis javanica, Reinw. (*Orchideæ*). ...	Sakat bawang. Sakat batu kapiam.
Achras Sapota, L. (*Sapotaceæ*).	Chiku.
Acrostichum aureum, L. (*Filices*). ...	Larat.
Acronychia Porteri, Wall. (*Rutaceæ*). ...	Katiak. Bimau hutan. Melaman.
A. laurifolia, Bl.	Gambadak. Rejang.
Actinodaphne sp. (*Laurineæ*).	Medang kuning. M. kunyit.
Actinorrhytis Calapparia. (*Palmæ*). ...	Pinang Sendawa. P. hantu. P. Penawar.
Adenosma coeruleum, Br. (*Scrophularineæ*). ...	Magun jantan. Bapulut. Gumbok. Timbah tasek. Tasek-tasek.
„ capitatum, Benth. ...	Tasek-tasek. Ruku hitam. Talan. Kuching-kuching.
Adenostemma viscosa, Forst. (*Compositæ*). ...	Rumput pasir. Sumbong gajah.
Adenanthera pavonina, L. (*Leguminosæ*). ...	Saga. Kanduri batang.
Adenosacme longifolia, Wall. (*Rubiaceæ*). ...	Nasi-nasi bukit.
Adina rubescens, Hemsl. (*Rubiaceæ*). ...	Murombong. Peropong. Berubong.
Adinandra dumosa, Jack. (*Ternstræmiaceæ*). ...	Poko gula. Tiup-tiup. Medang petutu. Medang api-api.
„ sp.	Tubo.
„ sp.	Mungol.
Aegiceras majus, Gaertn. (*Myrsineæ*). ...	Teruntum. Kukulang Laut.
Aeschynanthus radicans, Jack. (*Gesneriaceæ*).	Akar Rambeh daun. Akar berunus.
Aegle Marmelos. (*Rutaceæ*).	Bila.

Aganosma marginata, Don. (*Apocynaceæ*).	Sakat limah. (Pahang).
Ageratum conyzoides, L. (*Compositæ*).	Tahi ayam. Tombok-tombok jantan. Sianggit.
Aglaonema angustifolium, N. E. Br. (*Aroideæ*)	Sumpuh bulan. Sumpuh kring. Penggehé sagut.
„ marantifolium, Schott....	Birah ayer.
„ minus, Hk. f.	Mata hudang. Salimpat Ayer. Senjuang hutan. Mata Bisol.
„ oblongifolium, Schott. ...	Lidah gajah.
Aglaia argentea, King. (*Meliaceæ*).	Modu.
„ Griffithii, Kurz. ...	Balun hijau.
„ odorata, Lour.	Belangkas. Chulan.
„ odoratissima, Bl. ...	Sulubat jantan. Tumilang. Belangkas hutan. Rambutan Pachat Jantan.
„ glabriflora, Hiern. ...	Pasak bras-bras. Mulupas. Pasak Linga, Pasak Merah.
„ Tenuicaulis, Hiern. ...	Kasip bukit.
„ Diepenhorstii. ...	Tada Ikan.
Ageloea vestita, Wall.	Kaching-kaching. Kang-kuchang. Akar rusarusa. Telor bujak.
Agrostistachys longifolia, Benth. (*Euphorbiaceæ*)	Julong-julong.
Agrostophyllum glumaceum, Hk. f. (*Orchideæ*).	Bunga sakat.
Alchornea villosa, Muell. (*Euphorbiaceæ*).	Rambahan bukit. Rami hutan. Rami bukit.
Aleurites moluccana, L. (*Euphorbiaceæ*).	Kamiri. Buah keras.
Alocasia longiloba, Miq. (*Aroideæ*).	Keladi rimau. Keladi ular.
„ macrorhiza, Schott. ...	Keladi sebaring. Keladi. Birah negri.

Allomorphia exigua, Bl. (*Melastomaceæ*).	...	Pakan rimbau. Senduduk gajah. Senduduk hutan. Panghong. Kerakup rimau. Kaduduk gajah. Endebi.
„ Griffithii, Hk. f.	...	Kapo-kapo. Kurukap rimau. Tutup bumi rimbah.
Allophyllus cobbe, L. (*Sapindaceæ*).	...	Terentang bukit. Tumbit kayu.
Aloe ferox, Haw. (*Liliaceæ*).	...	Lidah buaya.
Alpinia conchigera, Griff. (*Scitamineæ*)	...	Lengkuas ranting. Kelamoyiang. Jurunang.
„ involucrata, Griff.	...	Kantan hutan. Puah putih. Gingin.
„ galanga, L.	...	Lengkwas. Murawang.
„ Rafflesiana, Wall.	...	Pua mengkuang. Tepus kijoi.
Alstonia scholaris, Br. (*Apocynaceæ*).	...	Getah pulai. Pulai. Rejang.
„ macrophylla, Wall.	...	Medang tai kerbau. Buta-buta darat. Tembusu paya. Chendai petri. Buburas.
„ spathulata, Bl.	...	Rajana.
Allium cepa, L. (*Liliaceæ*).	...	Bramban.
Alsodeia echinocarpa, Korth. (*Violaceæ*).	...	Aho-lumut. Juta-juta. Lalada. Lelada. Sibilek. Segumpa betina. Medang terutau.
„ Kunstleriana, King.	...	Sigoh. Marajan minko. Sigoniah.
„ membranacea, King.	...	Melor angin.
„ lanceolata, Wall.	...	Ina kechil.
Alternanthera sessilis, Br. (*Amaranthaceæ*).	...	Akar rumput. Kelama hijau. Bayam pasir. Bayam tana. Kerak-kerak paya. Kerumak bukit paya.
Alseodaphne semicarpifolia, Hk. f. (*Laurineæ*).		Medang lebar daun.

Alseodaphne umbelliflora, Hk. f.	Medang ketanahan. M. loso Belangkas hutan.
Alyxia stellata, Roem. ... (*Apocynaceæ*).	Ampalas hari. Milor.
„ lucida, Wall.	Ampalas hari. Mempelas Hari. Pulasari.
„ pilosa. Hook. fil. ..	Ampalas wangi.
Amaranthus caudatus, L. ... (*Amaranthaceæ*).	Bayam selaseh.
„ gangeticus, L.	Bayam merah.
„ retroflexus, L.	Bayam duri.
„ viridis, L.	Bayam monyet. Bayam putih.
„ spinosus, L.	Bayam duri.
„ spp.	Bayam.
Ampelocissus sp. ... ... (*Ampelideæ*).	Akar chabang tujoh.
„ cinnamomea.	Akar puding rimbah.
Amorphophallus variabilis Bl.... (*Aroideæ*).	Kumbang brankie.
„ prainiana, Hook. f. ...	Likir Likir ular.
Amygdalus persicus ... (*Rosaceæ*).	Kenari wolanda.
Anadendron montanum, Schott. (*Aroideæ*).	Akar asam tebing darat. Akar tebing agu. Akar Murian sumbong. Sugunja. A. chabai hutan.
A. latifolium, Hook. fil. ...	Akar surundang.
Anacardium occidentale, L. ... (*Anacardiaceæ*).	Gajus. Jambu monyet. Kaju.
Anaxagorea Scortechinii, King. (*Anonaceæ*).	Pali monyet.
Ananasa sativa, L. ... (*Bromeliaceæ*).	Nanas.
Ancistrocladus penangianus, Wall. (*Dipterocarpeæ*).	Akar Julong hitam.
Aneilema nudiflora, Br ... (*Commelinaceæ*).	Rumput Tapak burong. R. Lidah lumbu. R. Kurunit. R. Sarang tupai.

Anaectochilus Reinwardtii, Bl. (*Orchideæ*).	...	Bunga tulis.
Anisoptera Curtisii, King. (*Dipterocarpeæ*).	...	Rengkong
,, glabra, King.	...	Mersawah merah.
,, costata, Korth.	...	Mersawah ular.
Anona muricata, L. (*Anonaceæ*).	...	Srikaya blanda. Nona blanda (Sour sop).
,, reticulata, L.	...	Nona kapri. (Bullock-heart)
,, squamosa, L.	...	Nona. Sri kayu. (Custard-apple).
Anplectrum glaucum, Triana (*Melastomaceæ*).	...	Akar dumah bukit. Akar seduduk. Sendudok Rimbah.
,, divaricatum, Triana	...	Akar kamunting. Kamunting bukit. Chambai hantu (Malacca).
,, polyanthum, Clarke	...	Akar jambah surai.
Anisophylleia disticha, Hk. f. (*Rhizophoreæ*).	...	Kanchil.
,, apetala, Scort.	...	Dalik limau manis. Medang burunit.
,, Griffithii, Oliv.	...	Kumpas dadeh.
Andropogon intermedius, Bl. (*Gramineæ*).	...	Rumput pijit.
,, muricatus, L.	...	Akar wangi. Kus-kus.
,, schoenanthus, L.		Serey.
Antrophyum reticulatum (*Filiceæ*).	...	Salimpar.
Anthistiria arguens, Willd. (*Gramineæ*)	...	Rumput sarang pipit.
,, gigantea, Cav.	...	Rumput riang-riang.
Anisogonium esculentum, Presl. (*Filices*).		Paku benar. Paku tanjong.
Antidesma alatum, Hk. f. (*Euphorbiaceæ*).	...	Peruan hitam. Berunai Barek.
,, bunias, Muell. ...	...	Bras-bras hitam. Lundo. Mata punai. Buni. Buneh.

Antidesma cuspidatum, Muell ...	Gami. Gamo. Kenidei punai. Nah sepat. Pataling pagu. P. tugo. Mugagon.
„ fallax, Muell.	Gunchian gajah.
„ Ghaesembilla, Gaert. ...	Gunchak. Kasumba, Balong ayam.
„ microcalyx, Hk. f. ...	Bras-bras merah.
„ leucocladon, Hk. f. ...	Barek. Sakellet.
„ Moritzii, Muell. ...	Geruseh putih.
„ salicifolius.	Wampanu (Johor).
„ velutinum, Bl.	Berubah rimba. Lupong jantan. Guche gajah. Mempunai bukit.
„ sp.	Jantan tioh. Sutapoh Bukit.
Aporosa aurea, Hk. f. ... ... (*Euphorbiaceæ*).	Gading betina. Mubagon. Mumbong. Sebasah hitam. Rambai chuchut. Tambon chuchut. Sebasah minyak. Sebasah nipis kulit. Gading Betina.
„ Benthamiana, Hk. f. ...	Kasai. Marabuloh. Kelempeti.
„ Maingayi, Hk. f. ...	Tampoi pachat. Agas-agas. Sulumsui. Lampai.
„ ficifolia Baill.	Pulin Bukit. Sebasah jantan. Pulangga Paya. Nipis kulit betina. Bras-bras.
„ microcalyx, Hk. ...	Buburas padi. Jujamo. Pelangi. Bras-bras merah.
„ microsphæra, Hk. f. ...	Sukam merah.
„ nervosa, Hk. f. ...	Jinjenta.
„ nigricans, Hk. f. ...	Banuan.
„ Prainiana, Hk. f. ...	Bras-bras hutan. Petaling tandok. Chamantong gagah. Sutapoh. Masekam Putih.
„ stellifera, Hk. f. ...	Damak-damak paya. Nipis kulit putih.

Aporosa ficifolia, Hk. f.	...	Pulangga paya. Sebasah jantan.
Apostasia nuda, Wall. .. (*Orchideæ*).	...	Kenching pelandok. Pulumpas budak.
Aphania paucijuga, King. (*Sapindaceæ*).	...	Kelat julong putih. Kelat tulong. Mumjilai.
Aquilaria hirta, Ridl. ...	...	Chandan.
Aquilaria malaccense. ... (*Thymeleaceæ*).	...	Gaharu. Karas. Karas gaharu. Tui karas. Kalambak.
Aralia Thomsonii, Seem. (*Araliaceæ*).	...	Dulang-dulang.
Arachis hypogæa, L. ... (*Leguminoæ*).	...	Kachang China. K. Goreng. K. Tanah.
Aralidium pinnatifidum, Miq. (*Araliaceæ*).	...	Selubat. Tampong tulong. Balai. Tingal balai. Sabalat. Lempeda buaya.
Archytea Vahlii, Choisy. (*Ternstræmiaceæ*).	...	Riang-riang.
Ardisia colorata, Roxb. (*Myrsineæ*)	...	Mantua pelandok. Naulinauli. Munsial. Marabuloh. Mumboloh. Jerok putih. Mantulong. Maranting.
,,		
,, crenata, Roxb. ...	...	Mata pelandok. Lingguni.
,, humilis, Vahl.	...	Lutus.
,, lanceolata, Roxb.	...	Sembaring. Murambong.
,, odontophylla, Wall.	...	Sumpuh lumpo. Pasal.
,, oxyphylla, Clarke.	...	Bujong samalam bukit. Tumuras. Chato.
,, villosa, Roxb.	...	Mata pelandok gajah. Salunta orang tinggi. Se-goreh.
,, sp.		Munijau.
Areca catechu, L. ... (*Palmæ*)	...	Pinang, Kachu.
Arenga Westerhouti, Griff. (*Palmæ*).	...	Langkup.
,, saccharifera, L.	...	Kabung. Enau.
Aristolochia Roxburghiana, Bl. (*Aristolochiaceæ*).		Akar ara. Ketola hutan.

Artocarpus incisa, L. (*Urticaceæ*).	...	Sukun. Kulur. Kelur.
,, integrifolia, L.	...	Nangka.
,, Gomeziana, Wall.	...	Tampang. Tampang tulong Tampang nasi. T ampang burong. Tampan · bulat.
,, Lakoocha, Roxb.	...	Tampang manis. Ta pang ambon.
,, lanceifolius, Rox.	...	Nangka pipit. Keledang
,, Kunstleri, King.	...	Getah terap.
,, Lowii, King.	..	Miku.
,, rigidus, Bl.	...	Tampuneh. Monkey jack.
,, Maingayi, King.	...	Champedak ayer.
,, polyphema, Persoon.	...	Champedak. Bongkong (Perak).
,, n. sp.		Tukul.
Artemisia vulgaris, L. (*Compositæ*).	...	Baru china.
Artanema sesamoides, Wall.	...	Kelulut gajah. Seluang mudik. Sesawi pasir.
Argostemma elatostemma, Hk. f. (*Rubiaceæ*).		Sumpuh kring.
Arthrophyllum diversifolium, Bl. (*Araliaceæ*).		Mempunai bukit. Jolok hantu. Segan bedahan. Apuil. Bedahan jantan.
,, pinnatum, Clarke.		Minta anak.
Arytera littoralis, Miq. (*Sapindaceæ*).	...	Kalintek Jamuk. Kulalayo hitam.
Asparagus officinalis, B. (*Liliaceæ*).	...	Separu kras.
Aspidium lenzianum, Hk. f. (*Filices*).	...	Paku gading.
,, polymorphum, Wall.	...	P. kikir.
,, cicutarium, Sw.	...	P. tembaga.
,, Singaporianum	...	P. murak. Biawak. Meroyan papan.
Asclepias curassavica, L. (*Asclepiadeæ*).	...	Bunga mas. Malukut paya.

Asystasia intrusa, Bl. (*Acanthaceæ*).	...	Pengurak,
Aspidopterys concava, Juss. (*Malpighiaceæ*)	...	Sedapat. Sampo paya.
Atalantia monophylla, De C. (*Rutaceæ*).	...	Empenai (Pahang).
„ Roxburghiana, Hk. f.	...	Limau pagar.
Averrhoa bilimbi, L. (*Geraniaceæ*).	...	Belimbing.
„ carambola, L.	...	Belimbing caramboia, manis. B. batu.
Avicennia officinalis, L. (*Verbenaceæ*).	...	Api-api.
Baccaurea brevipes, Hk. f. (*Euphorbiaceæ*).	...	Karaes (Selangor) Poko mawas. Mata Ayam. Rambai Bukit. R. Ayam Rantau. R. Hutan. Tajam Moleh. Setambun Lilin.
B. bracteata, Muell.	...	Tampoi K'ra.
B. Kunstleri, Hook. f.	...	Rambai hutan.
B. macrophylla, Hk. f.	...	Tampoi Tunga. T. Tungnau.
B. malayana, Hk. f.	...	Tampoi.
B. Motleyana, Hk. f.	...	Rambai. Rambeh.
polyneura, Hook. f.	...	Ginteh merah.
B. parviflora, Muell.	...	Rambai Hutan. Setambun.
B. symplocoides, Hk. f.	...	Kumpa Manang.
B. Wallichii, Hk. f.	...	Rambai Hutan. Setambun Betina. Ginteh Merah. Lolai paya.
Backea frutescens, L. (*Myrtaceæ*).	...	Daun Chuchor Atap.
Bambusa Blumeana, Sch. (*Gramineæ*).	...	Buluh Duri. The spiny bamboo.
B. nana, Roxb.	...	Buluh China. B. Perindi. (Wray).
B. Ridleyi, Gamble	...	Akar Buluh.
B. Tuldoides, Munro	...	Buluh Balai
B. vulgaris, var.	...	Aur Gading. Buluh Pan (Wray).

B. Wrayii, Stapf. ...	Buluh Bersumpitan. B. Temiang.
Balanocarpus anomala, King ... (*Dipterocarpeæ*).	Malaut
B. penangianus, King. ...	Damar Hitam.
B. maximus, King. ..	Chengai. Chengal. Penak.
Balanostreblus ilicifolius, Kurz. (*Urticaceæ*).	Limau Lelang Antan.
Barclaya (Motleyana, Hk. f. ... (*Nympheaceæ*).	Daun Kalapa.
Barleria prionitis, L. ... (*Acanthaceæ*).	Bunga Landak.
Barringtonia macrostachya, Wall. ... ... (*Myrtaceæ*).	Putat hutan. Putat Bukit putih.
B. Scortechinii, King ...	Putat Gajah.
B. sumatrana, Miq. ...	Putat Darat. Putat Gajah.
B. fusiformis, King ..	Putat Padi.
B. spicata, Bl.	Juri-Juri.
Bassia Motleyana, Clarke ... (*Sapotaceæ*).	Maiang.
B. sp.	Gugating.
Bauhinia bidentata, Jack. ... (*Leguminosæ*).	Katup-Katup.
B. integrifolia, Rox. ...	Kang Katok (Selangor). Dau. Akar Dadaup (Pahang).
B. Kingii, Prain.	Akar suloh.
B. Hullettii, Prain. ...	Akar tapa kudah antan.
Benincasa cerifera, Sav. ... (*Cucurbitaceæ*).	(Wax Gourd), Kundor. K. China. K Jawa, varieties.
Bidens pilosa, B. ... (*Compositæ*).	Rumput Juala.
Biophytum adiantoides, Wt. ... (*Geraniaceæ*).	Payong Ali.
Bixa orellana, L. ... ... (*Bixineæ*).	Kusumba. Kunyit Jawa
Blainvillea latifolia, Ad. C. ... (*Compositæ*).	Rumput Babi. Katumbit Padang. Tutop Bumi Paya. Salamani.

Blechnum orientale, L. (*Filices*).	Paku Ikan. P. Ubil. P. Ular.
Blumea balsamifera, De. C. (*Compositæ*).	Chapa. Chapu. Sembong Sumbong.
B. lacera, De. C.	Lumai Hitam.
Boehmeria nivea, Hk. f. (*Urticaceæ*).	Rami-Hami. Ramin.
Bonnaya veronicæfolia, Spr. (*Scrophularineæ*).	Kerak-Kerak. Jantan Merah. Sampu Chachang.
Borassus flabellifer, L. (*Palmæ*).	Lontar. Tah (Telubang).
Boschia Griffithii, Nees. (*Malvaceæ*).	Durian-Durian. Dendurian. Durian Haji. Dada Ruan. (Johor).
Bouea macrophylla, Griff. (*Anacardiaceæ*).	Kundangan.
B. microphylla, Griff.	Ruminiya. Rumia.
Bragantia corymbosa, Griff. (*Aristolochiaceæ*).	Akar Surai. A. Julong Bukit. Changi Ular. Chumbai Ular.
Brassia oleracea, L. ... ... (*Cruciferæ*).	Kobis. (The cabbage).
B. nigra, L.	Sawi. Sesawi. Sayur. (Mustard).
Breynia coronata, Hk. f. (*Euphorbiaceæ*).	Hujan Panas. Rumang Panas. Chuma Padang. (Kedah).
B. reclinata, Hk. f.	Hujan Panas. Peringit. Sumbor.
B. rhamnoides, Muell.	Suruyian.
Bridelia pustulata, Hk. f. (*Euphorbiaceæ*).	Kenidei Hutan. K. Gajah. Bubongkal.
B. stipularis, Hk. f. ...	Kenidei Babi.
B. tomentosa, Bl. ...	Kenidei. K. Jantan. Nidei.
B. sps.	Nidei. Kenidei.
Brownlowia lanceolata, Benth.	Durian Laut.
Brucea sumatrana, Wall. (*Simarubeæ*).	Cherek Jantan. Embalau. E. Padang. E. Betina. Hampedu Bruang. Lada Pahit (Pahang).

Brugueria carophylloides, Bl. (*Rhizophoreæ*).	Bakau Putih.
B. gymnorhiza, Lam. ...	Tumu.
B. parviflora, W. & A. ...	Lenggadi.
B. sp.	Bungkup. (Johor).
Bryophyllum calycinum, Salisb. (*Crassulaceæ*).	Tumbu Daun. Sadingin. (Malacca) Karanchong (Pahang).
Buchanania acuminata, Turcz. (*Anacardiaceæ*).	Otak Tudang. Kutak Hudang. (Johor). Katawa Hudang. Temohong. Gulawai.
B. lucida, Turcz.	Kelompang Kras. (Kedah).
Burmannia coelestis, Don. ... (*Burmanniaceæ*).	Rumpot Sisik Naga.
Byttneria Maingayi, Hk. f. ... (*Tiliaceæ*).	Akar Batu. A. Kachubong.
B. uncinata, Mast.	Sugi Jantan.
Cesalpinia pulcherrima, Rox. ... (*Leguminosæ*).	Chana (Favre).
C. sappan, L.	Sepang.
Cæsulia axillaris, L. ... (*Compositæ*).	Chinkro, Kangkong kerbau.
Cajanus indicus. L. ... (*Leguminosæ*).	Kachang kayu.
Calamus castaneus, Griff. ... (*Palmæ*).	Atap Chuchur. Rotan Chuchur.
C. aquatilis, Ridl. ...	Rotan ayer.
C. Lobbianus, Becc. ...	Rotan Manana.
C. didymophyllus, Becc. ...	Rotan Getah. R. Hudang.
C. Diepenhorstii, Muell. ...	Rotan sago. R. chichi.
C. insignis, Griff. ...	Rotan Batu.
C. Javensis, Bl. ...	Rotan Lilin. R. Sundek (Perak).
C. ornatus, Griff. ...	Rotan kumbang. R. Sega
C. oxleyanus, Griff. ...	Badak. Rotan Pujare. (Griffith).
C. scipionum, Lour. ...	Rotan Semambu (Malacca Cane). Rotan Rajah.

Calanthe rubens, Ridl. (*Orchideæ*).	...	Haliya Enggang (Lankawi).
C. veratrifolia, Lindl. and other species.	...	Lumbah.
Callicarpa arborea, Rox. (*Verbenaceæ*).	...	Ambong-ambong Putih. Kata kran.
C. cana, L.	...	Tampang Besih Putih.
C. lanata, Griff. . .	...	Balik Angin Laut. Chulak. Tuloh Putih.
C. longifolia, Lam. ...	...	Tampang Besih. Tampoi. Besih. Tampo Besih.
Calophyllum inophyllum, L. (*Guttiferæ*).	...	Bintangor Bukit, B. Bunga. Penaga. Pudih (Malacca).
C. macrocarpum, Hk. f.	...	Bintangor Rimbah.
C. pulcherrimum, Wall.	...	Bintangor Batu. B. Besar. B. Bukit.
C. Wallichiana, Pl. ...	...	Bintangor Merah.
C. spectabile, Willd. ...	...	Bintangor Bunut.
Calotropis gigantea, Br. (*Asclepiadeæ*).	...	Beduri. Kemengu.
C. procera, Br. ...	...	Lambega.
Campnospermum auriculata, Hk. f. ... ... (*Anacardiaceæ*).	..	Terentang.
C. oxyrrhachis, Engl.	...	Mulumut.
Canarium commune, L. (*Burseraceæ*).	...	Kenari.
C. Kadondon, Benn. ...	...	Kadongdong Krut. K. Mata Hari. Gigit Buntai.
C. laxum, Benn. ...	...	Rau.
C. nitidum, Benn. ...	...	Dongdong. Kadongdong. K. Hutan.
C. pilosum, Benn. ...	...	Kadongdong Hutan.
C. rufum, Benn. ...	...	Kadongdong Bulan. Kerat Telampok. K. Tulonjok. Sungol Hutan. Sangol Hutan.
C. secundum, Benn. ...	...	Damar Kijai. Kasumba. Kasumbi.

C. sps. ... ... Blau (Johor) Rota (Johor).
Cananga odorata, L. ... ... Kananga. Kenanga.
(*Anonaceæ*).
Canangium Scortechinii, King. Kasidang (Malacca).
(*Anonaceæ*).
Canavalia ensiformis var gladiata. ... ... Kachang Parang.
(*Leguminosæ*).
C. obtusifolia, De C. ... . Kachang Rang-rang. Kachang hantu.
Canna edulis, L. ... .. Pisang Sebiak.
(*Scitamineæ*).
C. indica, L. ... . Sebeh. (Favre).
Cannabis sativa, L. ... ... Ganja. Gunja.
(*Urticaceæ*).
Cansjera Rheedii, W. and A. ... Bittot. Chemperai. Chimperai.
(*Olacineæ*).
Canthium confertum, Korth. ... Kamuning Jantan Hutan. Mata Keli Jantan.
(*Rubiaceæ*).
C. didymum, Rox. ... ... Butulang.
C. glabrum. Bl. ... ... Mungkoi. Sabusuh Betina.
C. horridum. Bl. ... ... Bulang Gajah. B. Kechil. B. Hitam. Bulang Tikus.
C. oliganthum, Miq. ... ... Akar Pelandok.
C. sp. ... ... Akar Kuku Baning.
C. sp. ... ... Akar Lempedu Borong. Kulurai. Surumat.
C. sp. ... ... Gading. Surumat.
Capsicum annuum, L. ... ... Chabai. Lada Merah.
(*Solanaceæ*).
C. bicolor, Jacq. ... ... Chabai selasah (Clifford).
C. frutescens, L. ... ... Chabai Achong. C. Sebrang.
C. fastigiatum, Bl. ... ... C. Rawit.
Carapa moluccana, Lam. ... Nireh.
(*Meliaceæ*).
Carallia integerrima, Dec. ... Bong-bong. Merpoin. Janggut Keli. Kusinga.
(*Rhizophoreæ*).

Cardiopteris lobata, Br. ... Gambah Putih. (Pahang).
(*Olacineæ*).
Cardiospermum Halicacabum, L. Peria Bulan. Akar Uban Kayu.
(*Sapindaceæ*).
Carex cryptostachys, Hance. ... Rumput Ringgin.
(*Cyperaceæ*).
Carica papaya, L. ... ... Betik. B. Belulang. B. Bubor.
(*Papayaceæ*).
Carissa Karandas, L. ... ... Kerandang.
(*Apocynaceæ*).
Carum Carui, L. ... ... Jintan. (Carraway seed. Imported).
(*Umbelliferæ*).
Caryota mitis, Lour. ... ... Bredin (Province Wellesley) Tukus.
(*Palmeæ*).
Casearia Lobbiana, Turcz. ... Medang Kirisa.
(*Samydaceæ*).
Cassia alata, L. ... ... Daun Kurap. Glenggang.
(*Leguminosæ*).
C. augustifolia, Vahl.... ... Sena. S. Maki.
C. fistula, L. ... ... Biraksa. Bereksa.
C. javanica, L. ... ... Dulang.
C. nodosa, Ham. ... ... Busok-Busok. Sibusuk. Turukop Bumi.
C. occidentalis, L. ... ... Kachang Kota.
C. Siamea, Lam. ... ... Jua. Jual. Guah Hitam (Johor).
C. tomentosa, L. ... ... Sinteng.
C. obtusifolia, L. .. ... Glenggang Kechil. G. Padang.
Castanopsis Hulletti, King. ... Berangan Papan.
(*Cupuliferæ*).
C. hystrix, De C. ... ... Kata Bileh. Sebilek.
C. javanica, Den. ... ... Berangan Duri. B. Gajah.
C. nephelioides. ... ... Resak
Casuarina equisetifolia, Forst. Ru. Kayu Ru. Ru Laut. Aru.
(*Casuarineæ*).
Cedrela febrifuga, Bl. ... ... Suntang Putih.
(*Meliaceæ*).

Celastrus monospermus, Roxb. (*Celastrineæ*).	Gurugun. Akar Serapoh.
Celosia cristata, L. ... ... (*Amarantaceæ*).	Bayam Ekor Kuching.
Centotheca lappacea, Beau. ... (*Gramineæ*).	Rumput Silat Kain.
Ceratolobus Kingiana, Becc. ... (*Palmeæ*).	Rotan Kipas.
Cerbera lactaria, Ham. ... (*Apocynaceæ*).	Babuta. Buta-Buta. Pong-Pong (Selangor).
C. odollam, L.	Babuta. Buta-Buta. Pompong (Pinang) Bintan. Bintaro.
Cephaelis Griffithii, Hk. f. ... (*Rubiaceæ*).	Chempaka Bukit Pupulut Hutan. Sabiak Gajah.
Ceriops Candolleana, Arn. ... (*Rhizophoreæ*).	Tengah. (Bark used for tanning).
Chœtocarpus castanocarpus ... (*Euphorbiaceæ*).	Bedi (Pinang).
Chailletia deflexifolia, Turcz. ... (*Chailletiaceæ*).	Akar Pah Kuda. A. Sarang Punai. A. Tugor Pontianak.
C. Griffithii, Hk. f.	Kurupoh Bukit. Kurutot. Akar Puleh Kambing. A. Puleh Angin.
C. sp.	Angos (Kedah).
Chamœcladon angustifolium, Schott. ... ... (*Aroideæ*).	Bakung Ayer Kaati (Johor).
C. Griffithii, Hk. f.	Asam Tikus. Kumayang, Kelamoyiang Padi.
Champereia Griffithii, Hk. f. ...	Chemperai. Chimperai.
Chasalia curviflora, Miq. ... (*Rubiaceæ*).	Buah Bras. Gading Galok. Jarum Hitam. Gandarusa Jantan. Pecha Piring Hitam Kamiri. Piu-Piu. Pecha Priok Putih.
C. c. var. angustifolia. ...	Sumpoh Sumut. Tubang.
Cheilanthes tenuifolia, Sw. ... (*Filices*).	Paku Resam. Padi. Paku Resam Lumut.

Chilocarpus Maingayii, Hk. f.... (*Apocynaceæ*).	Gunum.
Chonemorpha macrophylla. ... (*Apocynaceæ*).	Gegrip Merah.
Chisocheton divergens, Bl. ... (*Meliaceæ*).	Garontong Tengah.
C. penduliflorus, Bl.	Medang Kasungko. Sanggol Lutong Hitam.
C. sp.	Sadapu.
Chloranthus officinalis, Bl. ... (*Chloranthaceæ*).	Sambon Paya, Sumban Paya.
Chrysophyllum Roxburghii, Don. (*Sapotaceæ*).	Kayu Malukut. Poko Pulut-Pulut.
Cibotium Barometz. ... ... (*Filices*).	Penawar Jambi.
Cicca acidissima. ... ... (*Euphorbiaceæ*).	Chamin-Chamin.
Cinnamomum camphora, L. ... (*Laurineæ*).	Kapur Tohori (Japan camphor.
C. culit lawan, Nees. ...	Lawang. Kulit Lawang.
C. iners, Bl.	Singga Betina. Kayu Manis.
C. mollissima, Bl.	Pialu. (Johor). Tegah. Tegoh. (Favre).
C. nitidum, Bl.	Lelang.
C. parthenoxylum, Miess. ...	Chinta. Medang Kemana. Kayu Gadis. Kulit Lawa. Mula Hitam.
C. Zeylanicum, L.	Kayu Manis. (Cinnamon).
C. sp. (Pahang).	Tejă.
Cissampelos Pareira, L. ... (*Menispermaceæ*).	Mumpanang. Lumkang. Gasing-Gasing. Gegasing.
Citrus acida, Rox. ... ... (*Rutaceæ*).	(Common Lime). Limau Kedangsa. L. Kapas. L. Kasturi L. Kerbau. L. Nipis. L. Perut. L. Susu.
C. aurantium, L.	(Orange) Limau manis. Wangkang (Chinese us).
C. a. var. Bigardia (Favre)....	(Bitter Orange) Limau Gede.

C. decumana, L.	(Pomelo) Limau Kedangsa. (Favre) L. Abong, L. Batawi: L. Besar (Favre).
C. d. var.	(Wild Pomelo) Limau Hantu. (Pahang, Malacca).
C. medica.	(Citron) Limau Bali (Favre).
Clausena excavata, Burm. ... (*Rutaceæ*).	Chenama (Pinang). Cherek Hitam.
Clavaria sps. (Fungis). ...	Chendawan Samangkok.
Cœtanthus hirsutulus, Hk. f. ... (*Euphorbiaceæ*).	Kurudas Bukit. Simpoh Ayer. Tongmogu.
C. lœvis, Hk. f.	Jarak Pipit, Kurumak Hutan.
C. nitidus, Hk. f.	Sabasah Batu.
C. sp.	Surangkiang.
Clerodendron deflexum, Wall.... (*Verbenaceæ*).	Cherit Hutan. Lidah Kerbau. L. Kerbau Betina. Sumpu Kuhao. Sembong Hutan Jantan. Picha Priok Hitam. Sakacha Lima.
C. disparifolium, Bl.	Guriam (S. Ujong). Lampang Badak. Lelampang Badak. Tudong Ruman. Sempian Petri. Sembang. Lulangring Budan. Seliguri. S. Betina.
C. fallax, L.	Orawari Rungkup.
C. fragrans, Vent.	Rabu Kumbang.
C. inerme, Gaertn.	Pawan.
C. nutans, L.	Mali-mali Bukit. Piango. Unting-unting. Meroyan Kabut.
C. paniculatum, L.	Penkilai.
C. siphonanthus, Br.	Gunja-ganja. Penatoh.
Cl. serratum, Spreng.	Lampin Budak.
C. villosum, Bl.	Chapah. Champening. Kasap. Tapak Kerbau. Picha Priok Babi.
Clinogyne dichotoma, Salisb. ... (*Scitamineæ*).	Bemban Ayer.

C. grandis, Benth.	Bemban Gajah. Tongkat Setau.
Clitoria cajanifolia, Benth. (*Leguminosæ*). ...	Beluntas Padi (Malacca). Rumput Sabusuk. R. Turi.
C. ternatea, L.	Bunga Biru. Kachang Telang.
Cleome viscosa, L. (*Cruciferæ*).	Kuteping. (Malacca).
Cnestis ramiflora, Griff. (*Connaraceæ*). ...	Akar Gasing-Gasing. A. Padang. Semilat Merah. S. Papan. S. Padang. Akar Perjep.
Cnesmone Javanica, Bl. (*Euphorbiaceæ*). ...	Jelatang Badak.
Cocos nucifera. (*Palmeæ*).	Kalapa. Niyur.
Codaeum variegatum, Bl. (*Euphorbiaceæ*). ...	Puding. Adal-adal (Javanese)
Cœlodiscus montanum, Muell. (*Euphorbiaceæ*). ...	Gelam Bukit.
Cœlogyne Rochussenii, DeVr. (*Orchideæ*).	Sakat Tulong Ular.
Cœlostegia Griffithii, Most. (*Malvaceæ*). ...	Pungai. Punggai. Ha-Ha.
Coffea arabica. (*Rubiaceæ*).	Kopie.
C. liberica, Hiern.	Kopie. Kahwa.
Coix lachryma, L. (*Gramineæ*).	Jilei Batu. J. Pulut (the dark colored variety)
Coleus Blumii, Benth. (*Labiateæ*). ...	Ati-Ati.
Colocasia antiquorum, Schott (*Aroideæ*). ...	Birah Keladi. Keladi Telor. K. China. K. Hudang.
Combretum extensum, Rox. (*Combretaceæ*). ...	Sarudang Betina.
C. sundaicum, Miq.	Akar Gegambar.
C. trifoliatum, Vent.	Akar Sung-Sung. Harus.
Commersonia echinata, Forst. (*Tiliaceæ*). ...	Durian Tupai. Chenara.

Commelyna benghalensis, L. ... (*Commelynaceæ*).	Mayiam.
C. nudiflora, L.	Rumput aur. Kukupo.
Connaropsis monophylla, Pl. ... (*Geraniaceæ*).	Belimbing Besi. B. Bulat. B. Hutan. B. Keris. B. Kra. B. Penjuru. B Pipit.
C. sp.	Kupoi. Pupoi.
Connarus ferrugineus, Jack. ... (*Connaraceæ*).	Bunga Burutta. Akar Pulau. Hantu. A. Sukelet. A. Merah. A. Sanderap.
C. gibbosus, Wall.	Akar Tulang Padang. Namo.
C. grandis, Jack.	Akar Tulang Padang.
C. semidecandrus, Jack. ...	Akar Tukor.
Conocephalus amœnus, King. ... (*Urticaceæ*).	Ara Jankang.
C. Scortechinii, Hk. f. ...	Akar Umu (Johor).
C. suaveolens, Bl.	Akar Tentawan.
C. subtrinervis, Miq. ...	Landong Padi. Akar Sandang Padi. A. Sasaram.
Coptosepalta flavescens, Korth. (*Rubiaceæ*).	Akar Sabusuh.
C. griffithii, Hk. f.	Akar Bunga Milor Hutan. Situlang (Pahang) Sumpu Puchut.
Corchorus acutangulus, Lam. ... (*Tiliaceæ*).	Rumput Baya Roasa
C. capsularis, L.	Sunarong Betina.
Cordyline terminalis, Kunth. ... (*Liliaceæ*).	Andong. A. Hijau. A. Merah. Jejuang (Singapore) Lenjuang Merah.
Coriandrum sativum ... ... (*Umbelliferæ*).	Katumbar. (Coriander seed).
Corymborchis veratrifolia, Thouars. ... ... (*Orchideæ*).	Lulumbah Paya.
Coscinium Blumeanum, Miers. ... (*Menispermaceæ*).	Akar Mengkunyit.
C. fenestratum, Coleb. ...	Kugit-Kugit Babi Tol. (Vaughan Stephens).

Cosmos caudatus, H. B. K. ... (*Compositæ*).	Ulan Rajah.
Costus speciosus, L. ... ... (*Scitamineæ*).	Sitawa. Satawa. Tawa-Tawa Antar.
Cratoxylon polyanthum, Korth. ... ... (*Hypericineæ*).	Drum (Penang) Mempat-Mempat Hutan. Lunchui.
C. arborescens, Bl.	Geronggang. Geronggong. Penaga Hitam (Johor).
C. formosum, Benth.	Mempapit. Mempat Hutan. Mempetis. Sepadas Bunga (Jack).
Crinum asiaticum, L. .. ... (*Amaryllideæ*).	Bakung. Bawang Hutan. Bunga Tembaga Suasa. Landap. Silandap. Selandap (Favre).
Crocus sativus, L. ... ... (*Irideæ*).	Kumkumah (Pollen of C. sativus imported). Saffron.
Crotolaria alata, Hamilt. ... (*Leguminosæ*).	Kachang Hantu Darat.
C. retusa, L.	Giring Landak.
C. striata, De C.	Giring-Giring. Guring-Guring. Rang-Rang.
C. verrucosa, L.	Gigeling. G. Jantan.
Croton argyratus, Bl. ... ... (*Euphorbiaceæ*).	Chendrai Gajah. Cherit. Budak Mungke Senanchong. Summungke. Sumangso. Hamba Rajah (Penang).
C. caudatus, Geisl.	Ara Lumut. Akar Tuko Takal. Pauh-Pauh. Peringat Kating.
C. Griffithii, Hk. f.	Gulumbong Hantu. Lidai Api. Marai. Tumpang. Tumpang Bliong. Siangus. Kayu Meruan.
C. oblongifolius, Rox. ...	Chalang Paya.
C. sublyratus, Kurz.	Balik Angin Bukit.
C. Tiglium, L.	Bua Chengkian.

Crataeva macrocarpa. King. ... (*Capparideæ*).	Kadat. Kelambai (Malacca). Kulumbai.
C. religiosa var Narvala. ...	Bulan Ayer.
C. sp.	Bulan Betul.
Crypteronia Griffithii. Hk. f. ... (*Lythraceæ*).	Sumpu Telinga Badak.
C. pubescens, Bl.	Bekwoi. Babi Buah.
C. paniculata	Rupal.
Cryptocarya cœsia, Bl.... ... (*Laurineæ*).	Kayu Grisik. Medang Lasa. Rangan.
C. ferrea, Bl.	Langirtan Kwas. Mumpat Jantan.
C. Griffithiana, Wight. ...	Medang Buaya. M. Mantu. Rambahan Bukit. Sigun. Simpoh Bukit. Tubo Buah.
C. impressa, Miq.	Kayu Kunyit. Kichie. Medang Nau. Menjuat.
C. sp.	Manamak.
Cryptocarpus Griffithianum. Wight. ... ... (*Laurineæ*).	Dring (Johor) Laiang
Cryptocoryne cordata, Griff. ... (*Aroideæ*).	Ati-Ati Paya.
Ctenolophon parvifolius. Oliv.... (*Olacineæ*).	Kelat Hitam. Kunus. K. Bruang. Mata Kelat Bangkal. B. Paya.
Cucumis sativus, L. ... ... (*Cucurbitaceæ*).	Timun China (Cucumber) ...
Cucurbita pepo, L. ... ... (*Cucurbitaceæ*).	(Pumpkin) Labu Ayer. L. Manis. L. Pringgi, varieties.
C. maxima, Duchesne. ...	(Gourd) Labu.
Cumpassia Malaccensis, Maingay. ... ... (*Leguminosæ*).	Kempas.
C. parvifolia, Prain.	Sialang, Tualang.
Cuminum Cyminum, L. ... (*Umbelliferæ*)	Jintan Putih. (Cumin seed).

Cupania Lessertiana, Camb. (*Sapindaceæ*). ...	Ludai Bulan. Medang Serai. Perepat Bukit. Tasai (Malacca).
C. pallidula, Hiern.	Kelilayan Putih. Nilau.
C. pleuropteris, Hiern. ...	Sempayan Ulur (Malacca).
C. pubescens, Radlk.	Sugi (Maingay).
Curculigo recurvatu, Dry. (*Hypoxideæ*) ...	Lumbah Merah.
C sumatrana, Rox.	Lumbah. L. Rimbah. Kalapa Puyuh. Linsubah (Pahang)
Curanga amara, Juss. (*Scrophularineæ*). ...	Labang. Gelumah Susu.
Curcuma longa, L. ... ... (*Scitamineæ*).	(Turmeric) Kunyit-Kunyit. Temu Kunyit.
C. Zedoaria, Roscoe. ...	Temu Lawas. (White Turmeric).
Cyathea Brunonis, Wall. (*Filiceæ*). ...	Paku Gajah Paya. P. Hitam. Paya. P. Pahat. P. Selama.
Cyathula prostrata, Bl. (*Amarantaceæ*). ...	Angkop Merah. Bayam Rusa. Rumput Jarang-Jarang. Kelulut Merah. Senjarang.
Cycas Rumphii, Miq. ... ... (*Cycadeæ*).	Bogah (P. W.) Paku Aji. P. Laut. Saba and Tiyung (Favre).
Cyclea Arnotti, Miers. ... ... (*Menispermaceæ*).	Akar Rempenang (Selangor) Trongkuman (Lankawi).
Cyathostema Scortechinii, King. (*Anonaceæ*).	Akar Mupisang.
Cyclostemon longifolius, Bl. ... (*Euphorbiaceæ*).	Gelugur Salah.
Cynanchium sp. ... ... (*Asclepiadeæ*).	Akar Rambut Chambe.
Cynometra cauliflora, L. ... (*Leguminosæ*).	Nam-Nam. Puki Anjing.
C. polyandra, Rox.	Malangkan. Bulangkan. Katong.
Cyperus compressus, L. .. (*Cyperaceæ*).	Rumput Tiga Sari.
C. distans, Br.	Rumput Wangi.

C. haspan, L. ... ... Rumput Biblis Jantan. R. Sumbo.
C. iria, L. ... ... Rumput Suloh Belalang.
C. pilosus, Rottb. .. ... Rumput Para-Para (Malacca)
C. procerus, Rottb. ... ... Rumput Munsiang. R. Man seyang.
C. pumila, Vahl. ... ... Rumput Saman.
C. rigidulus. ... ... Rumput Chukor Kerbau.
C. venustus, Br. ... ... Peparu.
Cypripedium barbatum, Lindl.... Bunga Kasut.
(*Orchideæ*).
Cyrtandromea megaphylla, Hems. ... ... Sumpu Munahan. Supujit Bukit.
(*Gesneriaceæ*).
Cyrtosperma lasioides, Griff. ... Birah Hutan. Keladi Pari. Gli-Gli.
(*Aroideæ*).
Cyrtostachys lacca, Scheff. ... Pinang Rajah.
(*Palmeæ*).
Dacrydium elatum, Wall. ... Ru Bukit.
(*Coniferæ*).
Daemonorops calicarpus, Griff. Rotan Chuchur minyak.
(*Palmeæ*).
D. crinitus, Bl. ... ... R. Chin-Chin. ...
D. Draco, L. ... ... Jerenang. Rotan Jerenang.
D. geniculatus, Mart. ... Rotan Kerai. R. Kamunting. R. Chin-Chin. R. Gulang. R. Tunggal.
D. grandis, Mart. ... ... R. Semambu. R. Sunang. R. Chrysa (Griffith).
D. hystrix, Mart. ... ... Rotan Buah. R. Sabut.
D. leptopus, Mart. ... R. Bakau, R. Muruseh.
D. longipes, Mart. ... ... Rotan Machap. R. Sepah. R. Chuchor.
D. micracanthus, Griff. ... Rotan Tahi Ayam.
D. propinquus, Becc. ... ... Rotan Bakau. R. Jerenang. (Malacca).
D. verticillaris, Mart. ... R. Chin-Chin, R. Gulang.
Dalbergia Junghuhnii, Benth.... Saga Paya.
(*Leguminosæ*).

Daldinia vernicosa, Cesati. (*Fungi*).	... Jumput-Jumput.
Dammara orientalis, Lam. (*Coniferæ*).	... Damar Minyak.
Daphniphyllum laurinum, Bl... (*Laurineæ*).	Chicha. Jinjarong Jantan. Mempit Padang. Serapoh. Rupah. Ruas-Ruas Jantan.
Datura metel, L. and D. fastuosa, L.	... Kachabong. Kachubong.
Decaspermum paniculatum, Kurz. (*Myrtaceæ*).	... Kelintat Kring. K. Nyamok. Kelapit Nyamok. (Singapore) Empoyan Padang. Kelentat Padang. Kamuning Batu. Kelat Paya. Salah Nama.
Dehaasia sp. (*Laurineæ*).	... Pekan.
D. sp.	Bulonggo.
D. sp.	Gajah. Gajus Hutan.
Delima sarmentosa, L. ... (*Dilleniaceæ*).	... Ampalas Tikus.
Dendrocalamus flagelifer, Munro (*Palmeæ*).	Buluh Betong Perih.
D. strictus, Nees.	Buluh Brang.
D. strictus, Ham.	Buluh Batu. B. Tampat.
Dendrobium conostalix, Reich. f. (*Orchideæ*).	Rumput Rajah Sari.
D. crumenatum Sw.	Anggrek Merpati.
D. pumilum, Rox.	Sakat Kulumbai.
Dentella repens, Forst.... (*Rubiaceæ*).	... Bunga Karang.
Derris elliptica, Benth... (*Leguminosæ*).	... Tubah.
D. Maingayana, Hk. f.	... Akar Tubah-Tubah. A. Pah Kedah.
D. thyrsiflora, Benth.	... Akar Tulang Bukit: A Berumbat.
D. uliginosa, Benth. ...	... Akar Ketuil.

Desmodium heterophyllum, De C. ... ... (*Leguminosæ*).	Omba-Omba (Singapore). Akar Sisik Niga. A. Telinga Tikus.
D. latifolium, Wall.	Kamani Babi. Katah. Serengam.
D. parvifolium, Bak.	Akar Seliguri.
D. polycarpum, De C. ...	Kachang Kayu Betina. Kalumbar. (Pahang). Rumput Kerbau Drapah. Katumbar.
D. umbellatum, De C. ...	Petai Belalang.
Dialum laurinum, Baker ... (*Leguminosæ*).	Kranji Papan.
D. Maingayii, Baker	Keranji Burong. Mumpanjor.
D. platysepalum, Baker ...	Keranji Tembaga. K. Papan.
D. patens, Baker	Keranji Umbut. Sepan. (Malacca).
Dianella ensifolia, Red. ... (*Liliaceæ*).	Meroyan Bungke. Satigit. Siak-Siak Jantan.
Dichopsis gutta, Benth. ... (*Sapotaceæ*).	Taban. Teban. Getah Taban Merah. Getah Percha. Percha.
D. pustulata, Clarke	Getah Taban Chaia.
D. sp.	Simpor (Perak).
D. obovata, Clarke	Getah Taban Putih. Belian Wangie.
Dictyophora campanulata, Nees. (*Fungi*).	Chendawan Telakong.
Didymocarpus, atrosanguinea,... Ridl. ... ... (*Gesneriaceæ*).	Meroyan Nibut.
D. crinita, Jack.	Sumbong Merah. Tummu.
D. reptans, Jack.	Tummu Kechil. (Jack is the authority for these two last names which are doubtful).
Dillenia indica, L. ... ... (*Dilleniaceæ*).	Simpoh. Simpuh. Chimpuh.

Dioclea reflexa, Hk. f. ... ... (*Leguminosæ*).	Kachang Laut (Pahang).
Dioscorea alata, Rox. ... ... (*Dioscoreaceæ*).	Ubi Nasi.
D. daemonum, Rox.	Gadong. Gadung.
D. glabra, Rox.	Janggut Kulonak. Akar Kakop. A. Mawas. A. Munujan.
D. laurifolia, Wall.	Akar Kamahang. A. Surunting.
D. oppositifolia, Bl.	Akar Keminiyan Hantu. Akar Klana.
D. pentaphylla, L.	Ubi Pasir, U. Jabbet. (Vaughan Stevens. (?Chiabet).
D. pyrifolia, Korth.	Akar Gulongo. A. Keminiyan Paya.
D. sp.	Akar Nana.
Diospyros discolor, Willd. ... (*Ebenaceæ*).	Buah Manteiga. Pisang kaki (Penang).
D. argentea, Griff.	Bedil Lalat. Buluh-Buluh.
D. hirsuta, var. lucida, Wall...	Taring Pelandok. Sengkawas Hitam Mati.
D. lucida, Hiern.	Koguel. Kayu Arang. Lang-Kgadi.
D. oblonga, Wall.	Sumoi. (Pinang.)
D. sp.	Siangan Jantan.
D. sp. near embryopteris. ...	Mentubo. (Malacca.)
Dipterocarpus crinitus, Dyer ... (*Dipterocarpeæ*).	Minyak Keruing. M. Keruing Buluh. Gombang.
D. Hasseltii, Bl.	Minyak Keruing.
D. Kerrii, King	Keruing Chaia.
D. oblongifolius, Bl.	Nerrum. (Pahang.) Meran.
D. pterygocalyx, Scheff. ...	Keruing Dadek. K. Buku.
Diplanthera bancana, Scheff. ... (*Bignoniaceæ*).	Chenderu.
Diplazium sorzogonense, Presl. ... ... (*Filices*).	Paku Kijang. P. Rusa.
D. tomentosa, Hk.	Paku Binit.

Dipodium pictum, Rchb. fil. (*Orchideæ*).	Wa-Wa. (V. Stephens.)
Diplospora sp. ... ... (*Rubiaceæ*).	Uloh-Uloh.
D. sp.	Chinduru. Sugai Petaling.
Dischidia albida, Griff. (*Asclepiadeæ*).	Akar Sabernas.
D. collyris, Wall.	Petis (Johore).
D. Rafflesiana, Wall. ...	Akar Kul. A. Bano.
Dissochaeta bracteata, Bl. (*Melastomaceæ*).	Akar Meroyan Sejuk.
D. celebica, Bl.	Meroyan Jantan. M. Paya. Mumpoyan Paya.
D. punctulata, Hk. f. ...	Meroyan Busuk. Akar Sendudok.
Dolichandrone Rheedii, Seem. (*Bignoniaceæ*).	Kulo.
Dolichos lab-lab, L. ... ... (*Leguminosæ*).	Kachang Jariji. K. Karkaras. K. Kunyit. Karkaras.
Dracaena breviflora, Ridl. (*Liliaceæ*).	Pumaton. (Selangore).
D. congesta, Ridl.	Juang-juang Bukit.
D. ternifolia, Rox.	Sanjuan Bukit.
D. angustifolia, Wall. ...	Chamau. Chemau.
D. Maingayii, Baker. ...	Chamau. Chemau.
Dracontomelum mangiferum, Bl. (*Anacardiaceæ*).	Sakai. Sangkuang. Changkuang.
Drepananthus cauliflorus, Hk. f. (*Anonaceæ*).	Antoi Putih.
D. pruniferus, Hk. f. ...	Antoi itam.
Dryobalanops camphora, Gaertn (*Dipterocarpeæ*).	Kapur Barus.
Drymoglossum piloselloides. ... (*Filices*).	Sakat Ribu-ribu.
Duabanga sonneratioides, Ham. (*Lythraceæ*).	Kudada. Berumbong Bukit.
Durio oxleyanus, Mast. ... (*Malvaceæ*).	Durian Daun. Kuripal. (Johor).
D. testitudinarium, Becc. ...	Durian Tanah. D. Burong.

D. zibethinus, L.	Durian.
Dyera costulata, Hk. f. (*Apocynaceæ*). ...	Jelutong. J. Pipit. Getah Jelutong.
D. Maingayii, Hk. f.	Same names as D. costulata.
Dysoxylon acutangulum, King. (*Meliaceæ*).	Pasak Lingga.
D. angustifolium, King. ...	Kamanjong. (Pahang). Dosono. (Pahang).
D. cauliflorum, Hiern. ...	Balun Hijau. Guatak. Kuleun. Jarong.
D. macrothyrsum, Miq. ...	Kasip Hutan. Kombel. (Malacca).
D. sp.	Rongga.
Dysophylla auricularia, Bl. (*Labiatæ*). ...	Ekor Kuching.
Ebermaiera angustifolia, Anders. (*Acanthaceæ*).	Kerak Rimbah. Kumoja Batu.
E. Griffithiana, Anders. ...	Ambong Bukit.
E. setigera, Nees.	Serawan Kubang.
Eclipta alba, L.... ... ... (*Compositæ*).	Rumput Beu. Kurumak Jantan.
Elateriospermum Tapos, Miq. ...	P'rah.
Elæocarpus Hullettii, King. (*Tiliaceæ*). ...	Darumun Pipit.
E. integra, Wall.	Medang or Mendong Pepilakan. M. Tandjong.
E. Jackianus, Wall.	Jatek-Jatek. Jentek-Jentek.
E. Mastersii, Hk. f.	Chemanton Merah. Lempedu Burong. Medang Asam. M. Lansor. M. Suggueh. Perah Paya.
E. obtusus, Bl.	Medang Kawan. M. Paya. M. Tanah.
E. paniculatus, Wall. ...	Darumun Hitam. Mendong Musang. Tingar Belukar.
E. parvifolius, Wall. ...	Jambu Kelawar. J. Kelat Lawar Putih. Medang Api. M. Pipit. Mendong Kelawar. Munsaga, Paroh.

E. pedunculatus, Wall. ... Darumun Padi.
E. polystachyus, Wall. ... Darumun (Malacca). Darumun Babi.
E. robustus, Rox. ... ... Barong. Kunkunan Jantan. Obah. Sito. Sopi.
E. salicifolius, King. ... ... Darumun Padi.
E. spp. ... ... Darumun Juromong. Mendong-mendong.
E. stipularis, Bl. ... .. Darumun Pelandok. Medang Tijo. Paroh. Ungank. Pulai Pipit.
Ellipeia nervosa, Hk. f. (*Anonaceæ*). ... Kenchong.
Elephantopus scaber, L. (*Compositæ*). ... Tutop Bumi.
Eleusine coracana, L. ... ... Sambau.
(*Gramineæ*).
Embelia amentacea, C. B. C. ... Akar Malukut.
(*Myrsineæ*).
E. coriacea var. ... ... Akar Sakarito (Pahang).
E. Limpanii, Scheff. ... Akar Dulang-Dulang. Akar Dudulang.
E. ribes, Burm. ... ... Akar Sulu Karang.
Emilia sonchifolia, De C. (*Compositæ*). ... Katumbit Jantan. Setumbah Merah.
Endospermum Malaccense, Arg. ... ... M. Medang Klabu. Sendok-Sendok.
(*Euphorbiaceæ*).
Enhalus acoroides, Zoll. (*Hydrocharideæ*). ... Deringu. Jeringu Laut.
Entada scandens, L. ... ... Akar Beluru.
(*Leguminosæ*).
Epipremnum giganteum, Schott. ... ... Ringut.
(*Aroideæ*).
Epiprinus malaccensis. (*Euphorbiaceæ*). ... Bantun Hitam.
E. Malayanus, Griff. ... ... Balong Hijau. Kasumba. Chendra. Chendui. Munot.

Eria pellipes, Lindl. ... ... (*Orchideæ*).	Angrek Gading Gajah. (Malacca).
Erianthemum album, Nees. ... (*Acanthaceæ*).	Kumoja Hutan.
E. malaccense. C. B. C. ...	Gurah Bukit. Kamoyan. Melor Hutan. Pecha Priok Biru. Suluang Mudah. Tampan Putri.
Erigeron linifolius, Willd. ... (*Compositæ*).	Sari Bulan (S. Ujong).
Eriocaulon sexangulare, L. ... (*Eriocaulæ*).	Kumpai Bunang. Rumput Butang. R. Suasa.
E. truncatum, Ham. ...	Rumput Duria.
Eriodendron anfractuosum. ... (*Malvaceæ*).	Kabok. Kapok. Kaboh.
Erioglossum edule, Bl. ... (*Sapindaceæ*).	Kelat Jantan. K. Layu Hutan. Kulit Layu. Mertajam. Rambutan Hutan.
Erismanthes obliqua, Wall. ... (*Euphorbiaceæ*).	Kusep Kuludu. Murai Batu.
Erycibe angulata, King. ... (*Convolvulaceæ*).	Akar Tampang Ari. Rumput Ular Ari.
E. malaccense, Wall. ...	Akar Sakijang.
E. Princei, Wall.	Akar Jambol Siol. A. Ulan Jantan. Perut Kerbau. P. Kijang. Akar Sakijang.
E. sp.	Serawan.
Eryngium fœtidum, L. ... (*Umbelliferæ*).	Kulumbar.
Erythrina spp. ... ... (*Leguminosæ*).	Dadap. Dedap.
E. stricta, Rox.	Chengkring.
Erythroxylon burmanicum, Griff. ... ... (*Lineæ*).	Beluntas Bukit. Chinta Mula. Medang Wangi. M. Lagundi.
Eugenia acuminatissima, Kurz. (*Myrtaceæ*).	Kelat Api. K. Asam. K. Belian. K. Lapis.
E. anisosepala, Duthie ...	Kelat Putih Bukit.

E.	aquea, Burm.	...	Jambu Ayer. Jambu Ayer Mawar.
E.	brachiata, Rox.	...	Krean Lada
E.	caryophylla, Wight.	...	Chinkeh. Chinkah. Chingke.
E.	chloroleuca, Duthie	...	Kelat Putih. K. jantan.
E.	conglomerata, Duthie.	...	Salembat. Sulimbat.
E.	cymosa, Lam.	...	Kelat Jantan. K. Penaga.
E.	densiflora, De C.	...	Kelat Putih Bukit. Jambu Ayer Mawar Autan or Hutan.
E.	filiformis, Wall.	...	Kelat Api. K. Belian. K. Lapis. Gising. Kelat Jambu Ayer.
E.	Goodenovii, King	...	Kelat Putih
E.	grandis, Wight	...	Jambu Ayer Laut. Krean Batu (Penang).
E.	grata, Wall.	...	Gelam Tikus, (Penang).
E.	Griffithii, Duthie	...	Kelat Bising. Medang Telor.
E.	inophylla, Rox.	...	Samak Paya. G'lam Tikus.
E.	jambolana, L.	...	Jambelan. Jiwat. Salam.
E.	jambos, L.	...	Jambu Mawar.
E.	lepidocarpa, Wall.	...	Samak Tebrau. S. Ular.
E.	lineata, Bl.	...	Katcham (Johor) Kelat Lapis. K. Merah. K. Putih. Kelapit Nyamok. Tupo Lalat.
E.	macrocarpa, Rox.	...	Jambu Ayer Hutan. J. Bukit. Kelat Jambu. K. Bruang.
E.	claviflora, Roxb.	...	Bangko. Sedong.
E.	malaccensis, L.	...	Jambu Bol. J. Susu.
E.	nitida, Duthie.	...	Palung.
E.	papillosa	...	Samak Bukit.
E.	pendens, Duthie	...	Kelat Besar. Jelongong.
E.	pseudosubtillis, King	...	Krian.
E.	punctulata, King.	...	Kelat Penaga, Kelat Kobo. Jambu chili. Jiwat padi.
E.	pustulata, Duthie.	...	Gelam Tikus. (Singapore).
E.	pyrifolia, Wall.	...	Kelat Lapis. K. Putih. Samak Darat.

E. polyantha.	Kelat Merah.
E. spp.	Beti Paya. Biawak Rimbah Brac. (Johor).
E subdecussata, Wall. ...	Kelat Belian. K. Kobu. Samak Pulut. Kelat Asam.
E. valdevenosa, Duthie ...	Kelat Bunga.
E. venulosa, Wall.	Kelat Jambu Ayer. K. Putra.
E. zeylanica, L.	Beti. Merkasih. Nasi-Nasi. Kelat Nasi-Nasi.
Eugeissona triste, Griff. (*Palmeæ*). ...	Bertam.
Eulophia graminea, Lindl. (*Orchideæ*). ...	Kaling Lilin (Johor).
Euphorbia atoto, Forst. (*Euphorbiaceæ*). ...	Jelutong Laut (Singapore).
E. pilulifera, L.	Ambin Jantan. Ara Tanah. Kulusom. Kurumak Susu. Gelang Susu.
E. neriifolia, L.	Sudu-Sudu, Sesudu.
E. thymifolia, L.	Segan Padang.
Eurya acuminata, L. ... ... (*Ternstroemeaceæ*).	Betutu. Jirak. Bunga Kelantang. Malukut Jantan. Medang Malukut Jantan. Ranek Daun. Jirak. Maribut. Pagar Anak (Penang).
Eurycles amboinensis. .. ... (*Amaryllideæ*)	Daun Sapenoh.
Eurycoma latifolia, Jack. ... (*Simarubeæ*).	Bedaru Pahit. B. Putih. B. Merah. Penawar Pahit. Sempedu Pahit.
E. longifolia, Jack.	Duak. Juak. Tongkat Baginda (Penang) Lempedu Pahit. Bidara Pahit.
Eusideroxylon Schwagerii, Teysin. ... ... (*Laurineæ*).	Belian.
Euthemis leucocarpa, Jack. ... (*Ochnaceæ*).	Pelawan Beruk. Tambo.

Evodia latifolia, De C. (*Rutaceæ*).	...	Leban Pelandok. L. Nasi. L. Jantan. Pauh-Pauh Betina. Serapoh Jantan.
E. Roxburghiana, Bth.	...	Kiandang. Meserah Jantan. Pauh-Pauh. Pauh-Pauh Paya. Rudomo. Kayu Asam. Stengah Burong. Tengah Burong.
E. spp.	...	Sinintot (Johor).
Fagræa auriculata. (*Loyaniaceæ*).	...	Peler Musang.
F. fastigiata, Bl.	...	Malibera (Selangore) Malibeiro. (Malacca).
F. fragrans, Rox.	...	Tembusu. Tamusu.
F. Maingayii, Clarke	...	Lambusu.
F. morindæfolia, Bl.	...	Dada Kura (Selangore). Lambusu Paya. Mengkudu Badak.
F. racemosa, Jack.	...	Lidah Rusa. Pakan Paya. Rumpo-Rumpo. Sapuli (Pahang) Serawas. S. Paya. Suruas. Setebal. Tengok Biawak.
Ferula Narthex. (*Umbelliferæ*).	...	(Asafœtida) Anggu. Inggu.
Fibraurea chloroleuca, Miers. (*Menispermaceæ*).	...	Akar Kuning. A. Kinching Kerbau.
Ficus acamptophylla, Miq. (*Urticaceæ*).	...	Ara Buruteh.
F. alba, Reinw.	...	Ara Perak. Chumantong. (S. Ujong). Kelumpung Burong. K. Ayer. K. Jantan. Supudih Jantan.
F. altissima, Bl.	...	Ara Juluteh.
F. annulata, Bl.	...	Ara Kumbangan. A. Kubang. Kubangan.
F. aurantiaca, Griff.	...	Akar Pala-Pala. A. Tengok Biawak Hitam.
F. apiocarpa, Miq.	...	Akar Halua.

F.	Benjamina, L.	Beringin. Warengin. Waringen.
F.	Binnendykii, King. ...	Ara Akar.
F.	chartacea, Wall.	Buah Sungei (Selangor). Kelumpang Mata Punai. Rami Hutan.
F.	consociata, Bl.	Akar Piango Hutan. (Pahang). Getah Tahan Remba, (Malacca).
F.	diversifolia, Bl.	Api Telinga Gajah.
F.	dubia, Wall.	Ara Gajah. Ara Kuap.
F.	glabella, Bl.	Ara Nasi.
F.	globosa, Bl.	Ara Kelawak. A. Paya. Pulo Bijoh. Tuloh Bijoh.
F.	indica, L.	Ara Tampo Pinang. A. Tandok.
F.	microstoma, Wall. ...	Ara Kechil.
F.	Miquelii, King.	Ara Batu. Kelumpung. K. Gajah. K. Bukit. Akar Beringen.
F.	pisifera, Wall.	Ara Lidah Rimau. A. Suburuteh. A. Supude. A. Supude Paya.
F.	retusa, L.	Ara Jejawi.
F.	ribes, Reinw.	Alumut.
F.	religiosa, L.	Bodi. Budi.
F.	rhododendrifolia	Dodol. Ara Jejawi. Jawi-Jawi. Jejawi. Membatu Laiang.
F.	Roxburghii, Wall. ...	Kelebok (Selangore).
Ficus,	sp.	Akar Susu Putri.
F.	subulata, Bl.	Kelumpung Agas. Lupong Merah.
F.	urophylla, Wall.	Akar Buntat Ular. Supudeh. Supideh.
F.	vasculosa, Wall.	Tampang Burong.
F.	villosa, Bl.	Ara Akar Buloh. A. Sepadi.
F.	xylophylla, Wall.	Ara Daun Lebar.

Fimbristylis asperrima, Vahl. ... (*Cyperaceæ*).	Rumput Bawang R. Pulut. R. Siamet.
F. diphylla, Rottb.	Rumput Peroh. R. Purun Batu.
F. globulosa, Benth.	Rumput Sandong.
F. miliacea, Benth.	Rumput Tahi Kerbau.
F. pauciflora, Benth	Rumput Girah.
Flagellaria indica, L. ... ... (*Flagellariæ*).	Rotan Ayer. R. binni.
Flemingia congesta, Rox. ... (*Leguminosæ*).	Seringan Jantan.
Flacourteæ cataphracta, Rox.... (*Bixineæ*).	Rukam.
Fleurya interrupta, Gaud. ... (*Urticaceæ*).	Jelatang Ayam.
Floscopa scandens, Lour, ... (*Commelinaceæ*).	Kangkong Ayer.
Forrestia Griffithii, Clarke. ... (*Commelinaceæ*).	Setawa Jantan. S. Hutan. Sumpoh Landak.
F. mollis, Hassk.	Tawaga, (Penang).
F. spp....	Setawa. Satawa.
Freycinetia angustifolia, Bl. ... (*Pandaneæ*).	Nanchong Besih (Penang). Rotan Musang. Akar Ular.
Fuirena glomerata, L. ... (*Cyperaceæ*).	Rumput Buku Buloh. R. Kelulut. R. Lidah Menkerang.
Gahnia javanica ... ... (*Cyperaceæ*).	Serei bukit.
Galearia affinis, Bl. ... ... (*Euphorbiaceæ*).	Rambai Pontianak.
G. phlebocarpa, Br.	Rambai Daun. Ubak.
G. subulata, Muell.	Penurun Lutong. (Johore).
Garcinia Andersonii, Hk. f. ... (*Guttiferæ*).	Kandis Gajah.
G. atroviridis, Griff.	Asam Gelugur.
G. dulcis, Kurz.	Mundu.
G. eugeniaefolia, Wall. ...	Tentulang Merah.
G. Hombroniana, Prain. ...	Manggis Hutan.
G. Mangostana, L.	Manggis. Mustah (Legeh).

G. nigro-lineata, Bl. ... ... Kandis Tulang-Tulang.
G. Praineana, King. ... ... Chekow. Chupu. Cherapu.
G. Spp. ... ... Geteh Hudang (Johore) Sirit Budak (Johore) Barus. Binkiring.
Gardenia carinata, Thw. (*Rubiaceæ*). ... Randa.
G. Griffithii, Hk. f. ... ... Champaka Hutan.
G. florida L. ... ... Bunga Susu. Bunga China.
G. tentaculata, Hk. f. ... Kachubong Paya. Kapayung Ayer.
G. tubifera, Wall. ... ... Delima Hutan Jambu Batu Hutan. Koping Ayer (Selangor) Kapayang Ipas.
Gelonium bifarium, Rox. (*Euphorbiaceæ*). ... Lampon Hitam. Limau-Limau. Ruas-Ruas.
G. multiflorum, A. Juss. ... Punai Mengantok (Penang).
Geophila reniformis, Don. (*Rubiaceæ*). ... Akar Pantat Beruk. Pegaga Ular. Pegaga Tikus.
Gigantochloa heterostachya, Munro. ... ... Buloh Tilan.
G. Kurzii, Gamble. ... ... Buluh Plang.
G. latispiculata, Munro. ... Buluh Tilan Minyak.
G. Scortechinii, Gamble. ... Buluh Raya.
G. Wrayii, Gamble. ... ... Buluh Plang.
Gironniera nervosa, Bl. (*Urticaceæ*). ... Ampas Tebu. Medang Ampas Tebu. M. Hitam. M. Kasap.
G. parvifolia, Pl. ... ... Ampas Tebu. Medang Ampas Tebu. M. Kasap. Sagading.
G. subaequalis, Pl. ... ... Medang Bulanak. M. Bulapo.
Gleichenia linearis (*Filices*). ... ... Bengkawang, Resam. Paku Resam.
Globba spp. ... ... (*Scitamineæ*). Haliya Hutan. Meroyan Tingal.
Glochidion brunneum, Hk. f. (*Euphorbiaceæ*). ... Kenidei Paya. Ranang. Ubah Merah. U. Paya.

G. desmocarpum, Hk. f. ...	Ubah Hitam.
G. hirsutum, Muell.	Kornum.
G. insulare, Muell.	Terasai Manis.
G. leiostylum, Kurz. ...	Lunuranop. Ubah Kechil.
G. microbotrys, Hk. f. ...	Ubah Paya.
G. nanogynum, Hk. f. ...	Semak Suai.
G. obscurum, Bl.	Chermei Antan.
G. sericeum, Hk. f. ...	Hujan Panas puteh. Kenedei Bukit. Sindarong.
G. superbum, Baill.	Gurumong Jantan. G. Betina. Rosok Temagnu (Singapore) Timah Bangan.
Gluta elegans, Hook. f. (*Anacardiaceæ*). ...	Kerbau Jalang (Selangor).
Glycosmis sapindoides, Liudl. (*Rutaceæ*). ...	Buluntoh Burong. Cherit Morai Pulong. Simambu Hutan (Lankawi).
Gnetum Brunonianum, Griff. (*Gnetaceæ*).	Akar Dagun Putih. Ekor Balangkas. Pantat Ulat. Sugi-Sugi.
G. edule, Bl.	Blay Kechil. B. Merah.
G. funiculare, Bl.	A. Dagun. A. Mantadu. A. Putat. A. Sebuseh Paya. A. Saburus. A. Tutubo.
G. gnemon, L.	Buah Manino. (Pinang) Maningo.
G. neglectum Bl.	Akar Jullah. A. Perut Tembu. A. Sacherit Hitam. A. Seraput Jantan. Selampah (Selangor).
Gomphandra lanceolata, King.	Chemperai Batu. Lamlas Gurang Jantan. Kasturi Jantan. Mungilang Api. Meruseh Hitam.
G. pinangiana, Wall.	Lempedu Jawa. Lilan Hitam.
Gomphostemma crinitum, Wall. (*Labiatæ*)	Munjulong Bukit.
Gomphia Hookeri, Pl. ... ... (*Ochnaceæ*)	Kasi (Johor) Tampoi Paya.

G. sumatrana, Pl. ... ... Liba. Luis. Mata Ketam Batu. Murmagong. Siburu. Janggot Keli. Kelat Ampedu Jawa.

Goniothalamus giganteus, Hk. f. (*Anonaceæ*) Galang Hutan.

G. macrophyllus, Hk. f. ... Bongsoi. Sajur Wah.

G. malayanus, Hk. f. ... ... Mupisang.

G. Prainanus, King. ... ... Banitan.

G. sp. ... ... Kobak Bassu.

G. Tapis, Miq. ... ... Galai.

Goniocaryum longeracemosum, King. ... ... (*Olacineæ*) Ruai Gajah. Sigam. Toioh (Singapore).

Gordonia excelsa, Bl. ... ... (*Ternstroemiacea*) Pagar Anak Jantan. Kelat Assam.

Gossypium herbaceum, L. ... (*Malvaceæ*) Kapas. K. Taun. K. Huma. K. Muri. K. Benggala. (Favre's names for varieties).

Gouania macrocarpa. ... ... (*Rhamneæ*) Sibueh.

Gracilaria lichenoides, J. Ag. ... (*Algæ*). Agar-Agar.

Grammatophyllum speciosum, ... (*Orchideæ*) Bunga Bidadari. B. Putri.

Greenia Jackii, W. & A. (*Rubiaceæ*) Lada Burong Besar. Landas Paya. Lundas Paya. Sikam Bulan.

Grewia fibrocarpa, Mast. ... (*Tiliaceæ*) Chendrai. C. Hutan. C. Rimbah Damak. C. Asam.

G. globulifera, Mast. ... ... Damak-Damak Buluh. Damak Merah. Sabut-Sabut.

G. laevigata, Vahl. ... ... Sempelas Lidah Kuching.

G. Miqueliana, Kurtz. ... ... Chenderai Paya. Malabu (Johore).

G. paniculata, Rox. ... ... Chenderai. C. Hutan.

G. umbellata, L. ... ... Chenderai. Akar Sekapu. A. Kapialu. Sempelas Lidah Kuching. (S. Ujong)

Tongkat Ali.

Guilandina bonduc, L. ... Bondok. Akar Kilichi
(*Leguminosæ*)

Gymnema acuminatum, Wall. ... Akar Sibueh Api.
(*Asclepiadeæ*)

Gymnopetalum cochinchinense, Sipam (Lankawi).
(*Cucurbitaceæ*)

Gynocthodes coriacea, Miq. ... Akar Lempedu Tanah. Akar Mali.
(*Rubiaceæ*)

G. sublanceolata, Miq. ... Akar Lampai Hitam (Malacca).

Gynotroches axillaris, Miq. ... Janggut Keli. Mata Keli Membuluh. M. Kechil.

Gynura sarmentosa, Dec. ... Akar Sabiak.
(*Compositæ*)

Haemaria discolor, Lindl. ... Baldu Merah. Daun Lau.
(*Orchideæ*)

Haeteria obliqua, Bl. ... ... Tumbah Hutan.
(*Orchideæ*)

Harmandia Kunstleri, King. ... Mempudu Tanah.
(*Olacineæ*)

Hedychium longicornutum, Hk.f. Ubat Chaching.
(*Scitamineæ*)

Hedyotis auricularia, L. ... Kenikah Batu. Kerukoh Batu.
(*Rubiaceæ*)

H. capitellata, Wall. ... ... Anga Besi. Keminyan Hantu. Akar Lidah Jin. Sampu Keladi. Sutnibut. Keresek Pisang (Selangor).

H. congesta, Br. ... ... Lidah Jin, Sampu Puchut (Malacca).

H. glabra, Br. ... ... Rumput Chenkring. R. Chinkering. R. Sebueh Jantan. R. Sipitum (Pahang). R. Srigala.

H. pinifolia, Wall. ... ... Rumput Biring.

H. vestita, Br. ... ... Lingugat. Tokong Balu.

Helicia attenuata, Bl. ... ... Golang Paya. Gurang Bukit.
(*Proteaceæ*).

H. excelsa, Bl. ... ... Mata Kaok. Medang Obu.
H. petiolaris, Benth. ... Gong (Johore).
H. robusta, Wall. ... ... Medang Keladi. M. Laiang. Putat Paya. P. Tepi.
Helicteres isora, L. .. ... Chabei Pintal. C. Tali (Singapore). Kayu Ulas.
(*Sterculiaceæ*).
Heliotropium indicum, L. ... Rumput Olek. Seri Bumi.
(*Borragineæ*).
Hemigraphis affinis, Nees. ... Langundi Pasir.
(*Acanthaceæ*).
H. confinis, Ander. Dilam. Nilam Jantan. Ruku Jantan.
Hemigyrosa longifolia, Heirn. Penupoh.
(*Sapindaceæ*).
Henslovia Lobbiana, A. D. C. Api-Api. Benalu. Bendalu-Bendalu. Benelu. Akar Satubal. A Sumpah-Ulat. Telingan Kra.
(*Santalaceæ*).
Heptapleurum heterophyllum, Seem. ... . Akar Chabang Lima.
(*Araliaceæ*).
H. subulatum, Seem. ... Kayu Mentas. Kukau. Akar Pusat Budak.
H. venulosa, Seem. ... ... Sepuku. Teluta Jantan.
Hernandia sonora, L. ... ... Buah Keras Laut.
(*Laurineæ*).
Herpestes monniera, L. ... Bremi.
(*Scropularineæ*).
Heriteria littoralis, L. ... ... Atun Laut. Bayur Laut. Dungun. Peler Kambing.
(*Sterculiaceæ*)
Heynea trijuga, Rox. ... ... Duak. Juak.
(*Meliaceæ*).
Hibiscus abelmoschus, L. ... Kapas Hantu. K. Hutan.
(*Malvaceæ*).
H. esculentus, L. ... ... Kachang Bendi. K. Lindir.
H. floccosus, Mast. ... ... Kapas Kapas (Malacca). Petutu. Unchang (P. W.)
H. macrophyllus, Rox. ... Tutok.
H. mutabilis, L. ... ... Baru Landak.

H. rosa-sinensis, L.	Bunga Raya.
H. surattensis, L.	Asam Susor.
H. tiliaceus, L.	Baru. Ambaru. Waru. Baru Laut. Dedap Laut.
Hippocratea Cumingi, Laws. ... (*Malpighiaceæ*).	Gambir Ayer.
Hiptage sericea, Hk. f. ...	Akar Dedalu Bukit (Malacca). A. Kirai. A. Kulupus. A. Papina. Sarunchi (Johore).
Hodgsonia heteroclita, Hk. f. (*Cucurbitaceæ*).	Akar Papayong.
Homalium propinquum, Clarke.	Pantat Ulat Putih.
Homalium foetidum, Benth. ...	Ayer Anjing. Mensara Puteh (Johore).
H. frutescens, King	Anjing Ayer.
H. grandiflorum. Benth. ...	Kayu Batu.
H. longifolium, Benth.	Panasan. Pauh Kijang Jantan.
H. Griffithianum, Kurz. ...	Lagundi Laut (Kedah).
Homalomena coerulescens, Jungh. ... ... (*Aroideæ*).	Keladi Moyiang. Kemoyang. Kelamoyiang.
Homalomena rostrata, Griff. ... (*Aroideæ*).	Keladi Moyang. Kemoyang. Kelamoyiang. Lumbah Paya.
H. velutina, Hk. f.	Puah Bukit.
Homalanthus populifolius, Gray (*Euphorbiaceæ*).	Ludai Padi. Moya (S. Ujong). Mahang Makan Pelandok.
Hopea globosa, Brandis. ... (*Dipterocarpeæ*).	Damar Mata Kuching (Perak).
H. Griffithiana, Dyer ...	Meranti Puteh.
H. intermedia, King	Jangkang (Penang). Meranti (Johore). Merawan. M. Kunyit. Mengarawan
H. Mengarawan, Bl. ...	Merawan. M. Kunyit. Jangel.
Hoya caudata, Hk. f. ... ... (*Asclepiadeæ*).	Akar Supah.

H. coronaria, Bl. ... ... Akar Setebal.
H. diversifolia, Bl. ... ... Akar Sarapat. Susudu Bukit.
Hullettia dumosa, King ... Sunto Bukit.
(*Urticaceæ*).
Hunteria corymbosa, Rox. ... Gading (Penang).
(*Apocynaceæ*).
Hydnocarpus castaneus. Hk. f. Alai Batu.
(*Bixineæ*).
H. sp. ... ... Akar Keranji.
Hydnophytum formicarium, Jack. ... ... Kepala Berok. Padal Itek. Senala Api Laut.
(*Rubiaceæ*).
Hydrocera triflora, W. & A. ... Inai Paya. Tampinah.
(*Geraniaceæ*).
Hydrocotyle asiatica, L. ... Pegaga.
(*Umbelliferæ*).
Hygrophila salicifolia, Nees. ... Chukal (Malacca). Kurumak Rusa. Maman Babi.
(*Acanthaceæ*).
Hygrophora punicea, Fr. ... Chendawan Telinga Tiong.
(*Fungi*).
Hyptis brevipes, Poir. ... ... Sari Ingank. S. Hutan. S. Enggang.
(*Labiatæ*).
H. suaveolens, Poir. .. ... Malbar Hutan. Sapulut (Singapore). Selasih Hutan.

Iguanaur polymorpha, Becc. ... Kelasak. Sapidan.
(*Palmeæ*).
I. sp. ... ... Teruno.
Ilex cymosa, Bl. ... ... Musirah Bukit. M. Putih. Timah-Timah. Titimah.
(*Ilicineæ*).
I. macrophylla, Wall. ... Medang Tulok (Pinang). Timah-Timah Bulan. T. Gading.

Illicum anisatum, L. ... ... (Aniseed). Adas Manis.
(*Magnoliaceæ*).
Illigera appendiculata, Bl. ... Maralapit.
(*Combretaceæ*).
Impatiens Griffithii, Hk. f. ... Inai Bukit.
(*Geraniaceæ*).

Imperata cylindrica, Beauv. (*Gramineæ*).	...	Lalang.
I. exaltata, Brngn. ...	...	Lalang Jawa.
Indigofera tinctoria, L. (*Leguminosæ*).	...	Nila. Tarum.
Inocarpus edule, Forst. (*Leguminosæ*).	...	Gayam.
Iodes velutina, King ... (*Olacineæ*).	...	Akar China Bukit. A Sulupit.
Ipomœa angustifolia, Jacq. (*Convolvulaceæ*).	..	Kangkong Pasir. Akar Kurumak.
I. aquatica, Forst.	...	Kangkong.
I. cymosa, Roem. ...	...	Akar Ulan.
I. digitata, L. ...	...	Kangkong Laut. Akar Lana (Penang).
I. peltata, Miq. ...	...	Kangkong Bukit. Ulam Gajah.
I. pes-capræ, Roth. ...	...	Tapak Kuda.
I. uniflora, R. & S. ...	...	Lidah Patong. Ulam Putih.
I. quamoclit, L. ...	...	Bunga Jawa.
Irvingia malayana, Hk. f. (*Simarubeæ*).	...	Pauh Kijang. Merlang.
Ischaemum muticum, L. (*Gramineæ*).	...	Rumput Ekor Chari. R. Tembaga.
Ixonanthes icosandra, Jack. (*Lineæ*).	...	Langgundi Bunga. Buah Tui.
I. obovata, Hk. f. ...	...	Pagar Anak. P. A. Merah. P. A. Hitam. P. A. Betina. Sankau Merah.
I. reticulata, Jack. ...	...	Jinjagong. Sakit Hudang (Malacca). Pagar Anak.
Ixora amœna, Wall. (*Rubiaceæ*).	...	Siantan Jantan. S. Hutan.
Ixora coccinea, Br. ...	...	Jarum-Jarum Merah.
I. fulgens, Roxb. ...	...	Kramat Hujan. Pechah Priok.
I. grandiflora, Zoll.	...	Sampu Tikus, Segading Jantan, Trubol.
I. nigricans, Br. ...	...	Supati

I. opaca, Br. ... ... Jambol Siol. Mumjilai Hutan.

I. parviflora, Vahl. ... ... Kelat Tandok. Kupayiang Ayer. Padijang.

I. pendula, Jack. ... ... Saratong Padi (Johore). Tabong Bunga.

I. spp. cultivated forms ... Bunga China.

Jackia ornata, Wall. ... ... Sintulang.
(*Rubiaceæ*).

Jasminum bifarium, Wall. ... Kukulang Paya. Pakan. Hutan. P. Jantan. P. Betina. Sumpoh. Pukan.
(*Oleaceæ*).

J. Griffithii, Clarke ... ... Kumkumah Hutan. Akar Melor Hutan.

J. Sambac, Ait. ... ... Melati. Malati. Malor. Melor.

J. smilacifolium, Griff. ... Kenching Kambing. Akar Lumut Sial Munahon.

Jatropha curcas, L. ... ... Jarak Blanda.
(*Euphorbiaceæ*).

Jussieua suffruticosa, L. ... Bujang Semalam. Lakom Ayer. Pujong Malam.
(*Onagraceæ*).

Justicia gandarusa, L. ... Gandarusa. Gendarusa. Kisi-Kisi (Selangore).
(*Acanthaceæ*).

J. sp. ... ... Sibiak (Malacca).

Kœmpferia Galanga, L. ... Chekur. Kenchur.
(*Scitamineæ*).

Kayea ferruginea, Pierre ... Sumbawang.
(*Guttiferæ*).

K. grandis, King ... ... Bunuai. Penaga Paya.

Kibara coriacea, Endl. ... Kutang tandok. Pakan Jantan. Setubah Paya.
(*Monimiaceæ*).

Kibessa galeata, Cogn. ... Lagis Hutan Pukua.
(*Melastomaceæ*).

K. simplex, Korth. ... ... Kelat Menaun. Mahubi. Munahon. Menaun. Sial Menaun. Sangkap Jantan. Sigumbong Paya. Srian-Putih. Naun.

Kopsia sp. ... ... Bangku.
(*Apocynaceæ*).

Kurrimia paniculata, Wall. (*Celastrineæ*).	Benak. Biko-Biko. Bunak.
K. pulcherrima	Boko-Boko. Medang Gidap.
Kyllingia brevifolia, Rottb. (*Cyperaceæ*).	Rumput Kanching Baju Hutan.
K. monocephala, Vahl. ...	Rumput Tuki.
Labisia pothoina, Lind. (*Myrsineæ*).	Berangkas Hutan. Mata Plandok Rimbah.
Lagenaria vulgaris, Ser. (*Cucurbitaceæ*).	Labu Jantong. L. Ayer Putih. L. Kendi.
Lagerstrœmia floribunda, Jack. (*Lythraceæ*).	Bongok. Bongor. Bongoh.
L. Flos-Regina, Retz. ...	Bongok Raya. Sebugo.
L. hexaptera, Miq.	Bongok Balong. Mapot (Malacca).
L. sp.	Bongkok Malukut.
L. sp.	Bongkok Susor.
Lasia spinosa, Thw. (*Aroideæ*).	Gli-Gli. Bekil.
Lansium domesticum, Jack. var. Duku. (*Meliaceæ*).	Langsat. Langsad. Lansat. Lansah. Duku.
Lantana Camara, L. (*Verbenaceæ*).	Bunga Pagar. Tahi Ayam.
Laportea crenulata, Forst. (*Urticaceæ*). ...	Jelatang. Daun Gatal. Rumpai.
Lasianthus adpressus, Hk. f. (*Rubiaceæ*). ...	Sebong Hutan.
L. Jackianus, Hk. f. ...	Ayam-Ayam.
L. sp.	Binchi.
L. sp.	Meroyan Batu.
L. sps.	Jarka. Lankam.
L. Wallichii, Wight.	Buah Chabang Baju.
L. Wightianus, Hk. f. ..	Buntat Bahong. Daun Sekuntot.
Lawsonia alba, Lam. (*Lythraceæ*).	Hina. Hinai. Inai.

Lecananthus erubescens, Jack. (*Rubiaceæ*).	Ambun Akar. Akar Dato Rajah (Johore). Akar Susor Paya (Malacca).
Leea æquatica, L. ... ... (*Ampelideæ*).	Jolok-Jolok.
L. gigantea, Griff.	Gireng.
Leea sambucina, Willd. ... (*Ampelideæ*).	Jarak Laut. Jolok-Jolok. Tumbo Daun Bukit.
L. sp.	Toi.
Lentinus exilis ... ... (*Fungi*).	Chendawang Batang.
Leonurus sibiricus, L. ... ... (*Labiatæ*).	Tebing Aga, Seranting.
Lepidagathis hyalina, Nees. ... (*Acanthaceæ*).	Kuntul Rimbah.
L. longifolia, Wight. ...	Peluroh. Serga. Seruntu.
Leptaspis urceolata, Br. ... (*Gramineæ*).	Tampo Kulang. Getah Puyuh. T. Gulang. Glang.
Leptonychia glabra, Willd. ... (*Sterculiaceæ*).	Tingao.
Leptospermum amboinense, Bl. (*Myrtaceæ*).	Gelam Bukit.
Lettsomia Maingayi, Clarke ... (*Convolvulaceæ*).	Akar Butang Bunga. A. Kelupos. A. Sumulut. A. Sumuntat. Tentarong Terong-Terong.
L. peguense, Clarke	Akar Tapak Rusa. A. Tumiang. A. Ulan Bukit.
L. rubicunda, Clarke ...	Akar Saga Moleh.
Leucas zeylanica, Br. ... ... (*Labiatæ*).	Katumbit.
Leuconotis eugeniæfolia, De C. (*Apocynaceæ*).	Akar Garah. A. Gegrip Sundek.
Leucopogon Malayanus, Jack. (*Apocynaceæ*).	Mentada.
Leucostegia parvula, Wall. ... (*Filices*).	Paku Lumut Batu
Licuala acutifida, Mart. ... (*Palmeæ*).	Palas Tikus.

L. glabra, Griff.	Palas Padi. P. Gunong.
L. longipes, Griff.	Palas Batu.
L. paludosa, Griff.	Palas.
L. pusilla, Becc.	Gurcheng. Palas Rewang.
Limacia cuspidata, Hk. f. ... (*Menispermaceæ*).	Akar Minyak.
L. oblonga, Miers.	Akar China.
L. triandra, Miers.	Akar Kunyit-Kunyit. A. Kusin.
Limnophila conferta, Benth. ... (*Scrophularineæ*).	Bremi Hutan.
Limnophila villosa, Benth. ... (*Scrophularineæ*).	Kerak Nasi Putih. Sabueh Batu. Sibueh Batu.
Lindera malaccensis, Hk. f. ... (*Laurineæ*).	Medang Paya. Serapu Putih.
L. sp.	Medang Perauas.
Lindsaya scandens, Hk. f. ... (*Filices*).	Paku Dudok Bukit
Linostoma pauciflora, Griff. ... (*Thymeleaceæ*).	Babora.
L. scandens, Griff.	Akar Kapang.
Litsea amara, Bl. ... ... (*Laurineæ*).	Medang Buluko. M. Moyang.
L. lancifolia, Rox.	Medang Kechawi. M. Tampo.
L. myristicæfolia, Wall. ...	Medang Bunga. M. Kelayer. M. Tai Ayam.
L. nitida, Rox.	Medang Kelor.
L. polyantha, Juss.	Bangang. Medang Busuk.
L. sp. near panamonja, Hamm.	Medang Katuko.
L. sp.	Bobokor (Selangor).
L. zeylanica, Nees.	Medang Saluang.
Livistona cochinchinensis, Mart. (*Palmeæ*).	Serdang.
L. Kingii, Hk. f.	Kepau (Selangor).
Luvunga scandens, Ham. ... (*Rutaceæ*).	Akar Keping (Johore).
Lophatherum gracile, Beauv. ... (*Gramineæ*).	Rumput Jarang. R. Kerubut. R. Kelurat.

Lophiocarpus guyanensis, Rich. (*Alismaceæ*).	Kelipoh Padang.
Lophopetalum fimbriatum, Wight. ... ... (*Celastrineæ*).	Krabu. Medang Asam.
L. pallidum, Laws.	Kroi.
Loranthus ampullaceus, Rox. ... (*Loranthaceæ*).	Dudalu. Menalu. Sanalu Api-Api Jantan.
L. crassus, Hk. f.	Benalu Api.
L. ferrugineus, Miq.	Benalu Api.
L. formosus, Bl.	Gilan (Johore).
L. grandifrons, King... ...	Mendalu Besar.
L. pentandrus, L.	Lulor Api-Api. Sanalu Api. Sulor Api Jantan.
Loranthus pentapetalus, Rox.... (*Loranthaceæ*).	Mendalu Api.
L. sps.	Api-Api.
Lowia longiflora, Scort. ... (*Scitamineæ*).	Lobak Hutan.
Luffa aegyptica, L. ... ... (*Cucurbitaceæ*).	Petola Manis.
L. cylindrica, Roem.	Ketola Manis.
Lumnitzera coccinea, Wight. ...	Api-Api.
Lycopodium cernuum ... ... (*Lycopodiaceæ*).	Rumput Sarani.
Lygodium dichotomum, ... (*Filices*).	Akar Sidin.
L. pinnatifidum	Akar Darai Paya. Ribu-Ribu Gajah.
L. scandens	Ribu-Ribu.
Maba buxifolia, Pers. ... ... (*Ebenaceæ*).	Kayu Arang.
Macaranga Hullettii, King ... (*Euphorbiaceæ*).	Mahang Bulan. M. Serendit.
M. hypoleuca, Muell. ...	Mahang Putih.
M. Javanica, Muell.	Mahang Bayan. M. Api. M. Lok. Selaru. Sugu-Sugu.
M. Lowii, King	Gireseh Padi. Rami Betina.

M. megalophylla, Muell. ..	Chia Kubit. Kubin. Kuban. Sapedas. Bank.
M. populifolia, Muell. ...	Balik Angin Putih. Pulau. Pipi.
M. tanarius, Muell.	Inchong (Pinang). Kundo.
M. spp. ... ... (*Myrsineæ*).	Mahang.
Mallotus, Caput-Medusæ, Hk. f. (*Euphorbiaceæ*).	Medang Jurnus.
M. cochinchinensis, Muell. ...	Balik Angin.
M. floribundus, Muell. ...	Sekubing Ayer.
M. Griffithianus, Hk. f. ...	Marpoh. Murpoh. Pulut-Pulut Bukit. Setampin (Selangore).
M. lancifolius, Hk. f. ...	Ludai Jantan. Medang Jarak.
M. macrostachys, Muell. ...	Balik Kuning. Duleh Merah. Berumbong.
M. penangensis, Muell. ...	Pulut-Pulut Poko.
M. Porterianus, Muell. ...	Pulut-Pulut Hutan.
M. repandus, Muell.	Akar Chiarek Putih.
M. subpeltatus, Muell. ...	Jarak Gajah. J. Hutan.
Mapania bancana, Miq. (*Cyperaceæ*). ...	Rumput Giring-Giring. R. Supidang. R. Surat Belukar.
M. humilis, Naves	Siak-Siak Rimbah.
M. hypolytroides, Clarke ...	Pandan Biru.
M. palustris, Benth.	Mengkuang. M. tudong. Lobo.
Mangifera coesia, Jack. (*Anacardiaceæ*). ...	Binjai.
M. foetida, L.	Bachang. Machang. Ambachang. Kambachang. Machang Batu.
M. indica, L.	Mampelam. Ampelam. Hampelam.
M. kemanga, Bl.	Kemanga.
M. Maingayii, Hk. f. ...	Sepum.

M. oblongifolium, Hk. f. .. Kuwini (Maingay).
M. odorata, Griff. ... .. Kuwini.
M. sp. ... ... Para (Johore).
M. sp. ... ... Bachang Hutan.
M. sp. ... ... Kijai.
Marasmius gordipes .. ... Chindawan Rombut Ali. (*Fungi*).
Mariscus albescens, Gaud. (*Cyperaceæ*). ... Rumput Bumbut.
M. pennatus, Clarke ... ... Rumput Sulengsin. R. Surai.
M. umbellatus, Clarke ... Janggut Baong. Rumput Pinang.
Marlea ebenacea, Clarke (*Cornaceæ*). ... Lidah Kerbau Putih. Lidah-Lidah Kayu. Puchut Kuning.
M. nobilis, Clarke ... ... Sutubal.
Marumia verrucosa, Miq. (*Melastomaceæ*). ... Akar Kamunting (Johore). A. Salan Hutan. A. Sendudok.
Marsdenia tinctoria, Br. (*Asclepiadeæ*). ... Akar Tarum.
M. sp. ... . Tarumbo (Pahang).
Matthæa latifolia, Perk. ... Lumso.
Medinilla Hasseltii, Bl. (*Melastomaceæ*). ... Asam Lokan Putih. Lokan Putih. L. Jantan. Akar Nubal (S. Ujong).
Melanochyla auriculata, Hk. f. (*Anacardiaceæ*). Mumpian.
M. angustifolia, Hk. f. ... Rapat Bukit.
M. Maingayi, Hk. f. ... Chengal Batu Bukit.
Mezzettia Herveyana, Oliv. (*Anonaceæ*). ... Mengkudang.
Melaleuca leucadendron, L. (*Myrtaceæ*). ... Gelam. Kayu Putih.
Melastoma malabathricum, L. (*Melastomaceæ*). Sendudok. Sendudu. Kedudok. Birurong Hitam (Clifford). Probably not Malay.
M. decemfida, Wall. ... ... Sendudok Putih.

Melochia corchorifolia, L. (*Sterculiaceæ*).	...	Lumah Ketam.
Melodinus orientalis, Bl. (*Apocynaceæ*).	...	Getah Ujol.
Melodorum fulgens, Hk. f. (*Anonaceæ*).	...	Akar Larat. A. Lerek. A. Lerit. A. Kep.
M. hypoglaucum, Hk. f.	...	Akar Larak Merah.
M. latifolium, Hk. f.	...	Akar Pisang-Pisang Buldo.
M. manubriatum, Hk. f.	...	Akar Jankang. A. Kenching.
M. pisocarpum, Hk. f.	...	Akar Jinteh.
M. prismaticum, Hk. f.	...	Akar Pisang-Pisang Bukit.
Meliosma nitida, Bl. (*Sabiaceæ*).	...	Medang Siri.
Meliosma, sp.	...	Medang Berhulu.
M. sp.	...	Mengading.
Melothria affinis, King. (*Cucurbitaceæ*).	...	Akar Kundor Tikus.
M. marginata	...	Timun Tikus.
M. sp.	...	Akar Muntinum Pipit.
Memecylon acuminatum, Sm. (*Melastomaceæ*).	...	Magas.
M. caloneuron, Miq.	...	Kayu kapas. Api-Api Bukit.
M. coeruleum, Jack.	...	Api-Api Hutan. Dalek Jambu. Pantat Ulat. (Malacca). Sinonia.
M. edule, Rox.	...	Dalek Ayer. Dulek Putih.
M. garcinioides, Bl.	...	Bangas. Jenitan. Liis. Bangas Merah.
M. heteropleurum, Bl.	...	Jambu Baning. Kuku Baning.
M. Hulletti, King	...	Jambu Kalada.
M. lævigatum, Bl.	...	Dalek Tembaga.
M. multiflorum King.	...	Kuku Baning.
M. myrsinoides, Bl.	...	Bala. Dalek Putih. Kuku Baning. Kayu Nipis Kulit.
M. oleæfolium, Bl.	...	Dulek Putih.
M. oligoneuron, Miq.	...	Sial Munahon.
M. dichotomum, Clarke	...	Dalek Ayer. Delima Burong. Bagas Putih.

M. spp.	Dalek. Delek. Delak.
Mezoneuron sumatranum, Wall. (*Leguminosæ*).	Akar Darah Blut. A. Kelechi Remba.
M. leptopoda, Oliv.	Perah.
Melanorrhea Curtisii, Oliv. ... (*Anacardiaceæ*).	Rengas. Merah, Kluang.
M. Wallichii, Hk. f. ...	Rengas. R. Manau.
Mesua ferrea, L. ... ... (*Guttiferæ*).	Matopus (Penang) Penaga Kunyit. P. Lilin. P. Putih. P. Saga. Tapis.
M. lepidota	Jambu Dulek.
Michelia champaca, L. ... (*Magnoliaceæ*).	Champaka. Chempaka.
Microdesmis casearifolia, Pl. ... (*Euphorbiaceæ*).	Buah Chatang. Kenidei Badak.
Micromelum hirsutum, Oliv. ... (*Rutaceæ*).	Chenana (Pahang).
Micromelum pubescens, Bl. ...	Cherek Putih. Kurnan. Saga Kayu. Titimah Betina (Malacca).
Micropora Curtisii, Hk. f. ... (*Laurineæ*).	Medang Kaki Liong. M. Salayun. M. Tuloh. M. Tandok (Pahang).
Microstemon velutinum, Engl. (*Anacardiaceæ*).	Shinghe.
Microstylis congesta, Lindl. ... (*Orchideæ*).	Sigundo Hutan.
Mikania scandens, Vahl. ... (*Compositæ*).	Akar Ulam Tikus. A. Churoma. A. Lupang.
Millettia atropurpurea, Benth. (*Leguminosæ*).	Tulang Dang. Chicha. Girah Paya.
M. eriantha, Benth. ...	Akar Koyah. A. Kuaya. A. Kuayah. A. Pera.
M. sericea, W. & A. ...	Akar Nambu Jantan. A. Mumbol (Malacca).
Miquelia caudata, King. ... (*Olacineæ*).	Selowung.
Mimosa pudica, L. ... ... (*Leguminosæ*).	Samalu (Singapore).

Mimusops elengi, L. ... ... (*Sapotaceæ*).	Bunga Tanjong.
Mitragyne speciosa, Korth. ... (*Rubiaceæ*).	Biak.
Mitrephora macrophylla, Oliv. (*Anonaceæ*).	Prusat.
M. Maingayii, Hk. f. ...	Maribut Daun Besar (Penang).
M. reticulata, Hk. f. ...	Ringei-jerenang.
Metroxylon Rumphii, Mart. and M. Sagus. ... ... (*Palmeæ*).	Sagu. Rembia. Gumbia. Gombir
Modecca singaporiana, Mast. (*Passifloreæ*).	Akar Gelumpong. A. Lupok. A. Lempedu Gajah. A. Laut. A. Merapoh. Kulipunang (S. Ujong).
Moesa ramentacea, ADC. ... (*Myrsineæ*).	Akar Mumbolah. Bakaras. Gegambir Jantan. Kampor. Selutang (Johore). Tulang Hutan. Belangkas Hutan.
M. Indica, L.	Kasih Hutan.
Mollugo stricta, L. ... ... (*Ficoideæ*).	Rumput Belangkas.
Monochoria hastaefolia, L. ... (*Pontederiaceæ*).	Chachang Layer.
Morinda citrifolia, L. ... ... (*Rubiaceæ*).	Mengkudu Jantan.
M. rigida, Miq.	Lumbu Jawa.
M. sarmentosa, Bl.	Buku Bemban.
M. tinctoria, Rox.	Mengkudu. Mangkudu. Bangkudu. Changkudu.
M. umbellata, L.	Mengkudu Kechil. Buah Butang.
Mormodica charantia, L. ... (*Cucurbitaceæ*).	Peria Laut.
Moringa pterygosperma, L. ... (*Moringeæ*).	Ramunggai. Kelor. Kachang Kelor. Kelu.
Mucuna pruriens, De C. ... (*Leguminosæ*).	Kachang Karkaras Gatal Kachang Babi.

Murraya exotica, L. ... ... (*Rutaceæ*).	Kamuning.
Musa malaccensis, Ridl. ... (*Scitamineæ*).	Pisang Karok.
Musa sapentium, L.	Pisang.
Mussaenda glabra, Vahl. (*Rubiaceæ*).	Daun Petri (Favre). Balik Adap.
M. variabilis, Hems.	Balik Adap Bukit. Akar Bintang Merah. A. Bunga Bintang Kuning.
M. villosa, Wall.	Adap-Adap. Balik Adap.
Mussaendopsis Beccariana, Baill.	Selumar.
Myrialepis Scortechinii, Hk. f. (*Palmeæ*).	Rotan Gajah. R. Kirtong.
Myrica naga, L. ... ... (*Myricaceæ*).	Gelenchak. Kayteng. Kusami.
Myrsine capitellata, Wall. ... (*Myrsineæ*).	Kicher-Kicher.
Myristica Colletiana, King ... (*Myristicaceæ*).	Kayu Jermal. Pendara Paya.
M. crassa, King.	Pala Bukit.
M. crassifolia, Hk. f.	Pala Jantan Paya.
M. Curtisii, King	Pandarahan Bukit.
M. conferta, Bl.	Penara Bukit.
M. elliptica, Wall.	Pala Hutan. Sunkit.
M. Farquhariana, Wall. ...	Leleong Merah. Maralak. Masalak.
M. fragrans, L.	Pala.
M. geminata, King	Enggank. Ingank.
M. glaucescens, Hk. f. .	Chindarah Laut. Pendarah Laut. Singga Putih.
M. globularia, King	Kadanga Hutan Hitam.
M. Griffithii, Hook. f. ...	Ampas Tebu.
M. Hookeriana, Wall. ...	Rengas Daun Besar. Ahtcho.
M. intermedia, Bl.	Medang Paya. Pendara Kikeh.
Myristica Irya, Gaertn. ...	Lempoyan Paya. Lumpoyan Paya.
M. Kunstleri, King	Pala Bukit.

M. Lowiana, King ... ... Pala Hutan Bulu.
M. laurinum, Bl. ... ... Kamarahan. Kerantu. Tenol. Mumpisang Bulu.
M. Maingayi, Hk. f. ... ... Chenderahan. Penarahan.
M. missionis, Will. ... ... Chendarah Padi. Merbulu Kechil. Pendarah Padi.
M. oblongifolia, King ... Pendara Hitam.
M. paludicola, King ... ... Jankang Jaya.
M. polyspherula, Hk. f. ... Jankang Bukit. Pandara. Hijau.
M. Ridleyana, King ... ... Piango Jantan.
M. Scortechinii, King ... Penara Batu.
M. superba, Hk. f. ... ... Pendarah. Penarah. Menarah.
M. sp. ... ... Chindarah.
M. sp. ... ... Penaga Lilin. (Malacca).
M. sp. Nr. polyspherula ... Tebuang Blang.
Myrmecodia echinata, Gaud. (*Rubiaceæ*). ... Perutak. Priok Hantu. Samboko.
Myxopyrum nervosum, Bl. (*Oleaceæ*). ... Akar Dudaro. A. Kulawi.
Nauclea, sp. ... ... (*Rubiaceæ*). Pulasan Hutan. Timbang Dayong. Mumpoyan. Mupayian Kelimpayan.
Nelumbium speciosum, Willd. (*Nymphæaceæ*). ... Saroja. Seroja. Seratei.
Nenga Wendlandiana, Scheff. (*Palmeæ*). Pinang Umu.
Nepenthes gracilis, Korth. (*Nepenthaceæ*). ... Kanchong Kerah. Priok Kerah.
N. sps. ... ... Priok Kerah.
Nephelium costatum, Hiern. (*Sapindaceæ*). ... Rambutan Passeh.
N. eriopetala, Miq. ... ... Gumpo. Sanggol Lubong.
N. Litchii, Camb. ... ... Lichi. Kelingking (Favre).
N. lappaceum, L. ... ... Rambutan.
N. Maingayi, Hiern. ... Ridan.
N. malaiense, Griff. ... ... Mata Kuching.
N. mutabile, Bl. ... ... Pulasan.

Nephrodium dissectum, Forst. (*Filices*).	Paku Kilat.
Neprolepis exaltata, L. ... (*Filices*).	Paku Uban.
Nerium oleander, L. ... (*Apocynaceæ*).	Bunga Anis. B. Japun.
Neuropeltis racemosa, Wall. .. (*Convolvulaceæ*).	Akar China Putih. Bunga Junkal. Akar Oran Merah (Malacca).
Nigella sativa, L. ... ... (*Ranunculaceæ*).	Jintan Hitam (imported).
Nipa fruticans, L. ... ... (*Palmeæ*).	Nipah.
Nicolaia imperialis, Horan. ... (*Scitamineæ*).	Kantan.
Norrisia malaccensis, Hk. f. ... (*Loganiaceæ*).	Jangkot. Kakaras. Saropok. Serupah Bukit.
Nymphea stellata, L. ... ... (*Nymphæaceæ*).	Ati-Ati Paya. Kelipoh. Teratei Kechil.
Oberonia anceps, Lindl. ... (*Orchideæ*).	Sakat Lidah Buaya (Malacca).
O. stenophylla, Ridl. ...	Nibong Palir (Johore).
Ochlandra Ridleyi, Gamble ... (*Gramineæ*).	Buluh Kasap.
Ochanostachys amentacea, Mast. (*Olacineæ*).	Petaling.
Ochthocharis borneensis, Miq. (*Melastomaceæ*).	Sakalan (Johore).
O. javanica, Bl.	Silokan (Singapore).
Ocymum basilicum, L. ... ... (*Labiateæ*).	Selasih Antan.
Olax imbricata, Rox. .. ... (*Olacineæ*).	Maribut (Kedah).
Oldenlandia diffusa ... ... (*Rubiaceæ*).	Rumput Jingah.
O. corymbosa, Heyne ...	Tulo Belankas.
Oncosperma horrida ... ... (*Palmeæ*).	Bayas.
O. sp.	Nibong Padi, N. Linau

O. tigillaria, Jack.	Nibong. Anibong.
Ophiorrhiza, sps. ... ... (*Rubiaceæ*).	Changkoi Bahang. Kudumak. Sambu Badak. Sumpuh Badak.
Orania macrocladus, Mart. ... (*Palmeæ*).	Ibul.
Oroxylon indicum, Vent. ... (*Bignoniaceæ*).	Bulai.
Orthosiphon stamineus, Benth. (*Labiatæ*).	Kumis Kuching.
Ormosia venosa, Baker ... (*Leguminosæ*).	Suga.
Osmelia Maingayi, King ... (*Samydaceæ*).	Chindarong Bukit. Bangas Merah. Medang Kemantow.
Ostodes macrophylla, Benth. (*Euphorbiaceæ*).	Chendarah Hantu. Chungah Putih. Dada Ruan. Julong Jantan. J. Putih. Kasumbo Jantan. Kayn Katu. Kasumbo Jantan Lalantar (Malacca). Langkuang. Sumpuyan Ular.
Oxymitra biglandulosa, Scheff. (*Anonaceæ*).	Akar Mupisang Hitam.
O. sp.	Lingkean.
Oxytenanthera sinuata, Gamble (*Gramineæ*).	Buluh Minyak.
Pachynocarpus Wallichii, King (*Dipterocarpeæ*).	Damar Mata Kuching. Merbatu Pasir. Petaling Ayer.
Pachyrrhizus angulatus, Rich. (*Leguminosæ*).	Kachang Bengkuang. K. Sengkuang.
Pæderia foetida, L. .. . . (*Rubiaceæ*).	Akar Sekuntut. Dandangking (Johore).
Pancratium Zeylanicum, L. ... (*Amaryllideæ*).	Bramban Hutan.
Pandanus atrocarpus, Griff. ... (*Pandanaceæ*).	Mengkuang.
P. fascicularis Lam.	Mengkuang Laut. Pandan duri. P. laut. P. Darat

P. Houlletiana, Carr ... Mengkuang Hutan.
P. inermis ... ... Pudak (Favre).
P. ovatus, Kurz. ... ... Pandan Tikus. P. Beduri.
P. lævis, Rumph. ... ... Pandan Jelinkeh.
P. helicopus, Kurz. ... ... Pandan Resau. P. Rasow.
P. sp. near helicopus ... Pandan Telongkat (Selangor).
P. parvus, Ridl. ... ... Pandan Kura.
P. sp. n. aff. ovatus ... Silangsang. Sendayan Masing.

Pangium edule, Reinwdt. (*Bixineæ*). ... Payung. Kapayung.

Panicum auritum, Prest. (*Gramineæ*). ... Rumput Kumpai. Gumpai (Johore).
P. colonum, L. ... ... Rumput Kusa-Kusa. R Padi Burong.
P. indicum, L. ... ... Rumput Bidis. R. Bonto Darat.
P. italicum, L. ... ... Rumput Sekoyi.
P. myosuroides, Br. ... ... R. Kumani.
P. myurus, H. B. K. ... ... R. Kumpai.
P. nodosum, L. ... ... R. Sarang Buaya.
P. radicans, L. ... ... R. Telor Ikan. R. Upat.
Panicum sarmentosum, Rox. ... Rumput Janggut Ali. R. Tongkat Ali. R. Kulubong.
P. trigonum, Retz. ... ... R. Kurubong Padi. R. Mutubong.

Paramignya longispina, Hk. f. (*Rutaceæ*). Limau Lelang.
P. monophylla, Wight. ... Akar Merlimau.
Parameria glandulifera, Hk. f. (*Apocynaceæ*). Akar Serau.
P. polyneura, Hk. f. ... ... Akar Sedang. A. Serapat.
Parastemon urophyllum, De C. (*Rosaceæ*). Siagnos Betina. Malas. Kelat Pasir.
Parinarium Griffithianum, Hk. f. (*Rosaceæ*). Merbatu Loyang. Chana. Mujagon. Sauh Hutan. Sunko Rimau.

P. costatum, Hk. f.	Poko Obi. Sukupa.
P. nitidum, Hk. f.	Bangas Putih. Kelat Layu Hutan. Medang Kawan. Merbatu Kechil. M. Merah. M. Putih. Mumbatu. Marabatu. Tumbatu. Mumpadang.
Parkia biglandulosa. W. & A. ... (*Leguminosæ*).	Petai.
P. Roxburghii, Don.	Petai. Beka. Bôli. Gudaya.ng Kedawang. Kerayang. Gudawang. Kerayong (Selangor). Kurayong.
Passiflora foetida, L. ... ... (*Passifloreæ*).	Letop-Letop (Malacca). Timun Dindang. T. Padang.
Paspalum scrobiculatum, L. ... (*Gramineæ*).	Rumput Hijau. R. Julong-R. Liku. R. Tulo Sintadok.
Pavetta humilis, Hk. f. ... (*Rubiaceæ*).	Jarum-Jarum Batu.
Pavetta indica, L.	Gading Hutan. Jarum. Jarum-Jarum. J. Paya. Jejarum. Menjarum. Pecha. Priok Putih. Serau Lipis. Surungko.
Payena costata, King ... (*Sapotaceæ*).	Niato. N. Tembaga. N. Balau. N. Putih. N. Hitam. Munglut. Perut Pelandok. Samaram.
P. Leerii, Oliv.	Getah Sundik. Sundek.
P. Maingayi, C. B. C. ...	Getah Percha Burong.
P. quadrangularis, L. ...	Timun Hutan.
Peliosanthes albida, Hk. f. ...	Pinang Lumbah. Suludang Pinang, Tukus Tikus.
P. spp.	Lumbah Bukit.
Pellionia Duvauana N. E. Br. ... (*Urticaceæ*).	Akar Siak Naga.
P. javanica, Wedd.	Chambai Batu.
Peltophorum dasyrrachis, Kz. (*Leguminosæ*).	Alai. Batai.

Pellacalyx saccardianus, Scort. (*Rhizophoreæ*).	Kayu Johore. Mumbuloh Rimbah. Piango Jantan
Pentace eximia, King ... (*Tiliaceæ*).	Medang Lusa.
P. triptera, Mast.	Medang Serai Johore. Kabal Ayam. Sepa Putri S. Petri.
Pentacme malayana, King ... (*Dipterocarpeæ*).	Timah Batu.
Pentaphragma begoniæfolia, Wall. . . .. (*Campanulaceæ*).	Balong Ayam Batu.
Pentasacme caudata, Wall. ... (*Asclepiadeæ*).	Chermin Batu (Pahang).
Pergularia minor, Andr. ... (*Asclepiadeæ*).	Bunga Tongkin.
P. odoratissima, L.	Malati Tongking.
Peristrophe acuminata, Nees. ... (*Acanthaceæ*).	Rumput Lidah Jin.
P. montana, Nees.	Noja.
Pericampylus incana, Miers. ... (*Menispermaceæ*).	Gasing-Gasing. Gegasing. Jerkasing. Kelesu (Penang).
Perotis latifolia ... ... (*Gramineæ*).	Rumput Ekor Kuching.
Petunga sp. ... ... (*Rubiaceæ*).	Tulang Betina.
P. venulosa, Hk. f.	Mempas Jantan. Peluk Hantu. Pulas Hantu. Umpaong Hantu. Gading Lambai.
Phaseolus lunatus, L. ... ... (*Leguminosæ*).	Kachang China (Favre). K. Serinding.
P. mungo, L.	Kachang Chindai. K. Hijau. K. Kechil. Keddi: Kedeli.
P. vulgaris, L.	Kachang Bunche. K. Pendek.
Phaeanthus nutans, Hk. f. ... (*Anonaceæ*).	Pisang-Pisang Bukit. P. P. Kechil. P. P. Paya.

Phoebe multiflora, Bl. (*Laurineæ*). ...	Medang Ketanah. M. Merah (Malacca). M. Pasir.
P. sp.	Medang Burong (Johore).
P. sp.	Medang Kasiri. Kusirai.
P. sp.	Silincha (Johore).
Phyllanthus distichus, Muell. (*Euphorbiaceæ*). ...	Chermei. Chermela. Chamin.
P. frondosus, Wall.	Cherek Hantu.
P. pectinatus, Hk. f.	Laka-Laka. Malaka.
P. pulcher, L.	Kanka Bona.
P. urinarius, L.	Ambelan Buah. Ambin Buah
Phyllagathis rotundifolia, Bl. (*Melastomaceæ*).	Banau Hutan. Bawal Hutan.
Philydrum lanuginosum, Br. (*Philydraceæ*). ...	Kepas. Kipas.
Phyllochlamys spinosa, Bureau. (*Urticaceæ*).	Supucha.
P. Wallichii, King	Gambadak (Kedah).
Physalis minima, L. ... ... (*Solanaceæ*).	Chipluan.
Phragmitis Roxburghii, Steud. (*Gramineæ*).	Gudabong
Phrynium hirtum, Ridl. (*Scitamineæ*). ...	Lerak Betina.
Ph. Griffithii, Baker, and ...	
Ph. Malaccense, Ridl. ...	Lerek. Lerit.
P. Jagoranum, Koch. ...	Lerit Padi (Selangor).
Physostelma Wallichii, Wight. (*Asclepiadeæ*).	Akar Siak.
Phytocrene palmata, Wall. (*Olacineæ*). ...	Akar Pisang-Pisang Buloh.
Pimelandra Wallichii, A. De. (*Myrsineæ*). ...	Layan. Medang Katanah. M. Merah (Malacca). M. Pasir. Tambang Sisir.
Pimpinella anisum, L. (*Umbelliferæ*).	Jintan Manis. (Imported).
Pinanga disticha, Bl. (*Palmeæ*).	Pinang Boring Padi. P. Legong (Pahang).

P. malayana, Scheff.	Pinang Boring. P. Dampong.
P. polymorpha, Becc. ...	Pinang Kaki Pelandok.
P. Scortechinii, Becc. ...	Bayas Betina.
Piper caninum, L. ... ... (*Piperaceæ*).	Chabai Hutan. Akar Kalong. Lada Hantu. L. Anjing.
P. chaba, Hunter	Bakek. Lada China.
P. cubeba, L.	Kumukus (Singapore). Lada Ekor. L. Berekor.
P. Betel, L.	Sirih. S. Malayu. S. China.
P. lonchitis, R. & Sch. ...	Lada Antan.
P. longum, L.	Chabei. Kadok. Kadok. Kadanok. Kudak (Pinang). Keduk (Favre).
P. muricatum, Miq.	Kerubut Paya.
P. nigrum, L.	Lada Hitam.
P. ribesioides, Miq.	Kalong Ular. K. Gajah. Lada Rimba.
P. stylosum, Miq.	Kadok Hutan.
P. sp.	Akar Sangkap.
Piptospatha Ridleyi, Hk. f. ... (*Aroideæ*)	Salimpat.
Pistia stratoides, L. ... ... (*Aroideæ*).	Kambiang. Kiamban. Kiyambang (Favre).
Pisum sativum, L.	Kachang Putih.
Pithecolobium bubalinum, Benth. (*Leguminosæ*).	Giring Antan.
P. clypearia, Jack.	Jering Munyet.
P. contortum, Mast.	Asam Jawa Antan.
P. fasciculatum, Benth. ...	Jering Bali. Kachang Tupai, Saga Gajah.
P. lobatum, Benth.	Jering.
P. microcarpum, Bth. ...	Jering Tupai. Petai Belalang. Kurudus. Kerudas. K. Ayam. K. Api.
Pittosporum ferrugineum, Dryand. ... ... (*Pittosporeæ*).	Chabe Hantu (Penang). Bunga Sapong. Giramong (Jo-

hore). Kapiala Pajan (Malacca). Lusai. Medang Kelelawak (Malacca). Suroras. Sereras (Malacca). Medang Pasir. Trangnok.

Plantago asiatica, L. (*Plantagineæ*). ... Ekor Angin.

Plectocomia Griffithii, Hk. f. (*Palmeæ*). ... Rotan Dahan. R. Tukus. Unak. Onak. Unar.

Pleopeltis angustata (*Filices*). ... Hilan.

P. phymatodes, L. ... ... Paku Wangi.

Pluchea indica, L. (*Compositæ*). ... ... Beluntas.

Plumeria acutifolia, L. (*Apocynaceæ*). ... Chempaka Biru, Kembaja (Favre).

Plukenetia corniculata, Sm. (*Euphorbiaceæ*). ... Pina-Pina.

Plumbago rosea, L. (*Plumbagineæ*). ... ... Cheraka (Singapore). Sitaka (Favre). Binasa (Favre).

Podocarpus neglectus, Bl. (*Coniferæ*). ... Sentada. Setada.

Pogostemon Heyneanum, Hk. f. &. T. (*Labiatæ*). ... ... Nilam Bukit.

P. Patchouli, Pell. ... ... Nilam.

Pollia sorzogonensis, Endl. (*Commelinaceæ*). ... Tampo Kalin. Tubo Keloi.

Polianthes tuberosa, L. (*Amaryllideæ*). ... Sundal Malam.

Polyalthia Beccarii, King (*Anonaceæ*). ... Ruseh.

P. Jenkinsii, Bth. ... ... Mumpisang.

P. Scortechinii, King ... Jankang Hutan. Kenanga Hutan.

P. spp. ... ... Pepisang.

P. Teysmanii, King ... ... Larak Merah.

Polygonum flaccidum, Meissn. (*Polygonaceæ*). Kalina Paya. Kasum.

P. peduncularis, Wall. ... Rumput Janggut Rimau. Rumput Kowah.

Polyosma mutabile, Bl. (*Saxifragaceæ*). ... Tembosa Jantan. Poko Tupai.

P. sp. ... ... Lara Batang (Pahang).

Polyporus sacer, L. (*Fungi*). ... ... Susu Rimau.

Polystictus sanguineus (*Fungi*). ... Chendawan Boreng. C. Merah.

P. xerampelinus ... ... Chendawan Telinga Kra.

Pometia pinnata, Forst. (*Sapindaceæ*). ... Kasai.

Pongamia glabra, Vent. (*Leguminosæ*). ... Kachang Kayu Laut.

Popowia fœtida, Maing. (*Anonaceæ*). ... Pisang-Pisang Besar.

P. nervifolia, Maing. ... Mumpisang Batu. Pasak Achong.

Portulaca oleracea, L. (*Portulacaceæ*). ... Gelang Pasir. Segan Jantan (Penang).

P. quadrifida, L. ... ... Memaniran Putih (Favre).

Pothos Curtisii, Hk. f. (*Aroideæ*). ... Dendendong.

P. latifolia, Hk. f. ... ... Lidah Buaya.

Pothomorphe subpeltata, Miq. (*Piperaceæ*). Sigumbar Urat.

Pouzolzia pentandra, Benn. (*Urticaceæ*). ... Balam.

Pouzolzia indica, Gaud. ... Aring-Aring; Urang Urang.

Premna cordifolia, Rox. (*Verbenaceæ*). ... Ambong-Ambong Laut. Buas-Buas. Babuas. Bruas.

P. coriacea, C. B. C. ... Akar Mulor Padang.

P. corymbosa, Roth. ... Kanrian.

P. parasitica, Bl. ... ... Akar Buas.

Prismatomeris albidiflora, Wight. (*Rubiaceæ*). Langsit. (Penang).

Psidium guava, L. (*Myrtaceæ*). ... ... Jambu Biji. J. Belawas. Melukat (Johore).

Psophocarpus tetragonolobus, (*Leguminosæ*).	Kachang Botol. K. Botor. Botor.
Psychotria angulata, Korth. ... (*Rubiaceæ*).	Jarum-Jarum Betina. Penawar Billah.
P. Jackii, Hook.	Ubat Halan.
P. Malayana, Jack. ...	Bayam Badak. Tulang-Tulalang.
P. ovoidea, Wall.	Akar Ambelu.
P. polycarpa, Miq.	Bertis. Akar Chinta Mula. A. Nasi-Nasi. A. Sulong. Silam Kulu.
P. sarmentosa, Bl.	A. Daldaru. A. Rambeh Padang.
P. stipulacea, Wall. ...	Julong-Julong Bukit.
P. sp.	Akar Gandarusa.
P. sp.	Penoh-Penoh Hutan. Akar Gandarusa.
P. sp.	Akar Sabuseh Putih (Malacca). Sambaran Angin.
Pternandra capitellata, Jack. .. (*Melastomaceæ*).	Kulit Nipis (Penang).
P. coerulescens, Jack. ...	Benut Paya. Bunyut Paya. Kelat Biru. Manaon. Sial Munahon.
P spp.	Dalek. Delek. Delak.
Pterisanthes caudigera, Miq. (*Ampelideæ*).	Akar Gamat.
P. heterantha, Miq.	Akar Sebunkak.
Pterocarpus indica, Willd. ... (*Leguminoseæ*).	Sena. Angsena.
Pterospermum diversifolium, Bl. (*Sterculiaceæ*).	Bayur Jantan.
P. Jackianum, Wall. ...	Bayur.
Ptychopyxis costata, Miq. ... (*Euphorbiaceæ*).	Kaliah Toah. Mendarah.
Punica granatum, L. ... ... (*Lythraceæ*).	Buah Delima.
Pygeum acuminatum. Bl. ... (*Rosaceæ*).	Tampoi Dadah.

P. lanceolatum, Hk. f.	Merapit (Malacca).
P. sp.	Medang Chang Kauno. M. Chupona. M. Kelawar.
Pyrenaria acuminata, Bl. (*Ternstræmiaceæ*). ...	Chumpahong. Gelugur Gajah. Medang Gelugur. Samak Jantan.
Quercus encleisocarpa, Korth. (*Cupuliferæ*).	Berangan Babi Hutan.
Q. hystrix, Korth.	Gugiring. Kampuning.
Q. oidocarpa, Korth. ...	Berangan Antan.
Q. spicata, L.	Berangan Padi. Empening. Pening.
Q. sps.	Berangan Babi.
Q. Kunstlerii, King ...	Kelempening. (Lankawi).
Quisqualis densiflora, Wall. (*Combretaceæ*). ...	Selimpas. Sumang.
Q. indica, L.	Akar Pontianak. A. Suloh
Rafflesia Arnoldii, Bl. (*Rafflesiaceæ*).	Kerubut.
Randia anisophylla, Jack. (*Rubiaceæ*). ...	Bungkal. Chempakah Putih Hutan. Jarum-Jarum Jantan. Medang Gajah. Mumpulu Rimbah.
R. densiflora, Benth.	Burumbong Jantan. Gading Tulang. Geruseh. Gereseh. G. Puteh. G. Jantan. Mata Ular. Merumbong Jantan. Musirah Mata Kerbau. Perawas.
R. fasciculata, De C. ...	Akar Bedarah Laut. A. Duri. A. Kukulang.
R. longiflora, Lam.	Siantan Hutan.
R. macrophylla, Bl.	Kachubong Rimbah. Kumatan. Pecha Pingan.
R. rugulosa, Thw.	Akar Suburus.
Raphidophora Lobbii, Hk. f. (*Aroideæ*). ...	Akar Asam Tebing Paya.
R. minor, Hk. f.	Akar Kelamoyiang.
Ratonia sp.	Pantat Ular Putih.

Renanthera moschifera, Linal. (*Orchideæ*).	Bunga Kasturi.
Rhizophora conjugata, L. ... (*Rhizophoreæ*).	Akit.
R. mucronata, Lam.	Belukap.
Rhodamnia trinervia, Bl. ... (*Myrtaceæ*).	Empoyan. E. Batu. Mungkoyan Pinang. Rusa-Babi (Johore). Sedomang (Malacca).
R. trinervia, var. montana ...	Empoyan Bukit.
Rhodomyrtus tomentosa, Bl. ... (*Myrtaceæ*).	Kamunting. Kemunting.
Rhynchosperma Wallichiana, Kunth.	Bulang Rumput.
Ricinus communis, L. ... ... (*Euphorbiaceæ*).	Jarak.
Rosa centifolia, L. ... ... (*Rosaceæ*).	Bunga Mawar (The Rose).
Roucheria Griffithiana, Bl. ... (*Lineæ*).	Bhoi. Ipoh Akar Putih. Ipoh Putih. Akar Biji. Garam-Garam. Kait-kait. Akar Kait Putih. Akar Musiang.
Roureopsis pubinervis ... (*Connaraceæ*).	Akar Kachang Betina. Akar Kaldee. A. Tukekel.
Rourea fulgens, Wall. ... (*Connaraceæ*).	Akar Asam. Asam Akar. Semilat. Sembilat. Semilat Darah. S. Putih.
R. rugosa, Bl.	Akar Kelintat Kra. Semilat-Semilat. Sembilat.
Rubus glomeratus, Bl. ... (*Rosaceæ*).	Akar Balik Adap. A. Bulan Mudu. Akar Kupor.
R. moluccanus, L.	Tempoh Ragat. (Pahang). Tempu Ranak (Malacca).
Ruellia repens, L. ... ... (*Acanthaceæ*).	Dras Malam. Akar Kurumak.
Ruta graveolens, L.	Aruda (Rue).
Ryparia fasciculata, King ... (*Bixineæ*).	Lumôs. Musukang Putih. Surumkop. Tajam Bulat.

R. sp. ... ... Yu.
Saccharum arundinaceum, L. ... Tebrau.
(*Gramineæ*).
S. officinarum, L. ... ... Tebu.
S. Ridleyi, Hk. f. ... ... Tebrau (Pahang).
Salacia flavescens, Kz. ... Katimbong (Kedah). Sedang.
(*Celastrineæ*).
S. grandiflora, Kz. ... ... Ampadal Ayam. Empedal Ayam.
S. sp. ... ... Nasi Sejuk (Kedah).
Salix tetrasperma, Rox. ... Dalu-Dalu. Jendalu. Dahu.
(*Salicineæ*).
Sauropus albicans ... ... Chekop Manis. Chermela Hutan. Tarok Manis.
(*Euphorbiaceæ*).
Samadera indica, Gaertn. ... Epoh. (Johore).
(*Simarubeæ*).
Sandoricum dasyneurum, Baill. Kechapi Hutan.
(*Meliaceæ*).
S. indicum. ... ... Sentol. Setui. (Lankawi).
S. radiatum, King ... ... Kechapi. Kulapi.
Salomonia cantoniensis, L. ... Rumput Bua.
(*Polygaleæ*).
Santalum album, L. .. ... Chendana.
(*Santalaceæ*).
Santiria apiculata, Benn. ... Keranti Batu.
(*Burseraceæ*).
S. fasciculata, Benn. ... ... Kadongdong Bulan Putih.
S. Griffithii, Engl. ... ... Kempas Roman.
S. lævigata, Bl. ... ... Kerantei. Keratei. K. Merah.
S. multiflora, Benn. ... ... do. do.
Sapium baccatum, Rox. ... Ludai. L. Pelandok. Rulus.
(*Euphorbiaceæ*)
S. indicum, L. ... ... Gurah. Guring.
Saprosma arboreum, Retz. ... Chumpong. Kusimbo. Marabuloh Paya.
(*Rubiaceæ*).
S. sp. .. .. Daun Sekuntut.
Saraca cauliflora Bak. ... ... Gapis Kunyit. Talan Kunyit.
(*Leguminosæ*).

S. triandra, Bak.	Gapis. Talan.
Sarcanthus secundus, Griff. (*Orchideæ*). ...	Sakat Ular.
Sarcocephalus Junghuhnii, Miq. (*Rubiaceæ*).	Bongkah Ayer. Chermin Ayer. Lempedu Jawa. Melada (Pinang). Mempelu Tanah. Mungkal. Sebutah. Sebongkok Bukit.
S. subditus, Miq.	Magal. Markel. Sakir Damak (Johore). Subutu.
Sargassum sp. (*Algæ*).	Dandigum.
Scævola Koenigii, Vahl. ...	Ambong-Ambong. Ambun-Ambun. Buas-Buas Laut.
Schizæa dichotoma (*Filices*).	Paju Jarum.
Schoutenia Mastersi, King (*Tiliaceæ*). ...	Banitan Merah.
Schizostachyum aciculare, Gamble. (*Gramineæ*).	Buluh Padi.
S. Blumii, Nees.	Buluh Juron.
S. chilianthum, Gamble ...	Akar Buluh.
S. Zollingerii, King	Buluh Tuloh.
Schima Noronhæ, Reinw. (*Ternstroemiaceæ*). ...	Medang Bekawi (Pinang).
Schizophyllum commune (*Fungi*) ...	Chendawan Sesak.
Scirpus grossus, Vahl. (*Cyperaceæ*). ...	Mendarong. Menerong. Rumput Murong. R. Musing.
S. mucronatus, L.	Rumput Kerchut. Kumbah.
S. supinus, L.	Rumput Perut Tikus.
Scirpodendron costatum, Thw. (*Cyperaceæ*).	Selensing.
Scindapsus hederaceæ, Schott. (*Aroideæ*).	Akar Lubang Alah.
S. pictus, Hassk.	Siri Chichewi. (P. Wellesley).
S. sp.	Akar Kelumpayang.

Scleroderma flavo-crocatum (*Fungus*). ...	Chendawan Tumbong Klapa.
Scleria oryzoides, Presl. (*Cyperaceæ*). ...	Rumput Liku Daun.
S. sps.	Rumput Sendarian.
S. sumatrensis, Retz. ...	Rumput Kumbar.
Scolopia rhinanthera, Clos. (*Bixineæ*). ...	Rukam Hutan.
Scoparia dulcis, L. (*Scrophularineæ*).	Bunga Baik Salam. Cha Padang. Te Macao Dulis.
Scorodocarpus borneensis, Becc. (*Olacineæ*).	Kulim.
Scyphiphora hydrophyllacea, Gaertn. (*Rubiaceæ*).	Chingum (Johore). Sabasoh. Sebasah.
Sebastiana chamoelea, Muell. (*Euphorbiaceæ*). ...	Amin-Amin.
Selaginella atroviridis (*Lycopodiaceæ*). ...	Jambol Merak.
Selliguea Feei, Hk. (*Filices*).	Paku Gala Hantu Laut.
Sesamum indicum, D. C. (*Scrophularineæ*). ...	Bijan. Lenga.
Sesbania grandiflora, Pers. (*Leguminosæ*). ...	Turi.
Sesuvium portulacastrum, L. (*Ficoideæ*). ...	Gelang Laut. Sesepit (Singapore).
Setaria glauca, Beauv. (*Gramineæ*). ...	Rumput Julong-Julong.
Shorea acuminata, Dyer (*Dipterocarpeæ*). ...	Meranti Paya. Rambeh Daun. Seraya Batu. (Maingay).
S. bracteolata, Dyer ...	Chingal.
S. barbata, Brandis	Resak.
S. Curtisii, Dyer	Meranti Tai.
S. glauca, King	Damar Laut Daun Besar.
S. macroptera, Dyer ...	Kepong. K. Hutan. K. Hantu.
S. parviflora, Dyer ...	Meranti Daun Kechil. Meranti Kerap. Seraya Samak.

S. utilis, King	Damar Laut No. Satu.
S. sp.	Temah (Lankawi).
Sida carpinifolia, L. ... ... (*Malviaceæ*).	Katumbar Hutan (Malacca). Kelulut Putih. Sada Turi. Telor Belangkas.
S. rhombifolia, L.	Bunga Padang. Seliguri Padang. Sendaguri.
Sideroxylon ferrugineum, Hk. (*Sapotaceæ*).	Tawak. Tuak-Tuak.
S. sp.	Chinta Mula Putih.
Sindora siamensis, Teys. ... (*Leguminosæ*).	Saputi.
S. sp.	Saputi Minyak.
S. Wallichii, Benth. ...	Saputi Sindo.
Sloetia sideroxylon, Teys. ... (*Urticaceæ*).	Tampinis. T. Merah T. Kerong. T. Putih T. Hitam are said to be slight varieties?
Smilax calophylla, Wall. ... (*Liliaceæ*).	Itah Tembaga (Perak) Sadawi.
S. China, L.	Gadung China. Ubat Rajah. Ubi Rajah (Java).
S. Helferii, A. de C. ...	Akar Bana. Gadong Tikus. Kijil. (Selangor). Kutona Betina. Akar Seminjo (Pahang).
S. leucophylla, Bl.	Kuranting Jantan.
S. megacarpa, D. C. ...	Kluna. Akar Lampan Bukit. Rabano.
S. myosotiflora, D. C. ...	Akar Ali. Itah Visi.
Solanum aculeatissimum, Jacq. (*Solanaceæ*).	Terong Asam Hutan. T. Blanda. T. Purat.
S. nigrum, L.	Terong Meranti (Kedah). T. Parachichit.
S. sarmentosum, Nees. ...	Terong Tikus.
S. torvum, Swartz.	Terong Pipit.
S. tuberosum, L.	Ubi Benggala. Kentang.
S. verbascifolium, L. ...	Terong Raya. T. Bulah. T. Pipit. T. Rimban. Sukasap.

Sonerila heterostemon, Naud. ... (*Melastomaceæ*).	Ati-Ati Gajah. Ati-Ati. Hutan. Kerakap Ayer.
S. moluccana, Jack. ...	Pouh (Jack).
S. sp.	Bubulus (Malacca). Bulu Ulat.
Sonneratia acida, L. ... ... (*Lythraceæ*).	Bedat. Bedata. Perupat.
S. Griffithii, Kz.	Gadabu.
Sorghum sacchariferum, L. ... (*Gramineæ*).	Betari. Batari.
Soya hispida, Benth ... ... (*Leguminosæ*).	Kachang Japun.
Sphenodesma barbata, Schawr. (*Verbenaceæ*).	Agalumut. Akor Chabang Lima. Lilimbo.
S. pentandra, Jack.	Akar Lintong Rusa. A. Sulang. A. Tanak Rimau.
S. triflora, Wight.	Akar Risa. A. Meruan. A. Memali.
Spathoglottis plicata ... ... (*Orchideæ*).	Lumbah.
Spatholobus ferrugineus, Benth. (*Leguminosæ*).	Akar Jangat. A. Sejangat. A. Sekoet.
Spermacoce hispida, L. ... (*Rubiaceæ*).	Rumput Setarro. R. Standang. R. Susor.
Sphæranthus microcephalus, D.C.	Gelumak Susu.
Spilanthes acmella, L. ... (*Compositæ*).	Gutang.
Spinifex squarrosa, Lab. ... (*Gramineæ*).	Rumput Lari-Lari.
Spondias mangifera, Willd. . . (*Anacordiaceæ*).	Kadongdong. Kandongdong. Dongdong.
Sporobolus diander, L. ... (*Gramineæ*).	Rumput Tule Belalang.
Stachytarpheta indica, L. ... (*Verbenaceæ*).	Selasih Dende. S. Hutan.
Stemona tuberosa ... ... (*Roxburghiaceæ*).	Ubi Kumili Hutan.
Stenochasma convolutum, Griff. (*Scitamineæ*).	Pua Hitam.

S. sps. ... ... Tepus.
Stenochlæna palustris (*Filices*). ... Lamiding. Miding. M. Betina. Paku Mesin. P. Mesah. P. Ramu. Sayur Paku.
Sterculia campanulata, Wall. (*Sterculiaceæ*). Kluet. Kulunot.
S. Jackiana, Wall. ... ... Bayur Betina.
S. lœvis, Jack. ... ... Chempaka Janggi.
S. macrophylla, Vent. ... Milian.
S. parviflora, Rox. ... ... Kadampang, Rongga Jantan.
S. rubiginosa, Jack. .. ... Dudanak Hitam. Kelunting, Saburu. Sakelat. Unting-Unting Besar.
S. scaphigera, Wall. ... ... Kembang Samangko. Silayer (Selangor).
Stereum nitidulum (*Fungi*). ... ... Chendawan Karang.
Stereospermum frimbiatum, D.C. (*Bignoniaceæ*). Cha-Cha. Lumpoyan.
S. glandulosum, Miq. ... Lempayan.
S. hypostictum, Miq. ... Bunga Pawang.
Stephegyne speciosa, Miq. ... Kutum (Pahang).
Streptocaulon Wallichii, W. & A. (*Asclepiadeæ*). Sarapapat. Akar Timah Ketam.
Striga lutea, Lour. ... ... (*Scrophularineæ*) Siku-Siku.
Strophanthus dichotomus, De. C. (*Apocynaceæ*). Akar Dudok Kijang. A. Tandok-Tandok.
S. jackianus, Wall. ... ... Bunga Hantu.
Strychnos laurina, Wall. (*Loganiaceæ*). ... Akar Semijo.
S. pubescens, Clarke ... Blay Besar.
S. Tieute, Bl. ... ... Blay Hitam. Ipoh Akar.
S. sp. ... ... Bedara Hutan. Akar Lada-Lada.
Styrax benzoin, L. (*Styraceæ*). ... ... Keminiyan. Kumian. Kaminan. Kumeyan.
Susum anthelminticum, Bl. (*Flagellarieæ*). .. Bakung Ayer. B. Pantal. B. Suasa. Bangkong. Lo-

	bak-Lobak. Lobak Jantan.
Swintonia Schwenkii, Teys. ... (*Anacardiaceæ*).	Balau Betina.
S. spicifera, Teys.	Mupus (Pinang).
Symplocos adenophylla, Wall. (*Styraceæ*).	Semugum.
S. fasciculatus, Zoll. ...	Jejuh. Lukot. Merpadi Paya.
S. ferrugineus, Rox.	Gánchil Kechil.
S. racemosa, Rox.	Marililin. Mempatu.
S. rigida, Clarke	Laga Egan (Johor).
S. rubiginosa, Wall.	Bantun.
S. sp.	Domun (Singapore).
Synadenium sp. ... ... (*Euphorbiaceæ*).	Sesudu Hutan (Pinang).
Syngramme alismæfolia, Hk. ... (*Filices*).	Paku Tunjok Sanget.
Tacca cristata, Jack. ... ... (*Taccaceæ*).	Kelemoyiang Ayer (Selangor). Sabiak. Sebiak.
T. pinnatifida, L.	Lukeh.
Tabernæmontana coronaria, Bl. (*Apocynaceæ*).	Bunga Susu. Manda Kaki (Malacca). Susun Kelapa.
T. corymbosa	Istong Parah. Restong. Jantang Badak. Jelutong Badak. Saratong (Johore).
T. malaccensis	Gurang. Laggundi Bulan. Lada-Lada Jantan. Lalada. Lelada Padi. L. Hutan. Perachet. Puding Hutan. Penyoi (S. Ujong) Poko Restong.
T. pedunculare, Wall. ...	Sejarang. Sujarong.
Tæniochlœna Griffithii, Hk f. (*Connaraceæ*).	Borombong (Akar). Akar China. Kachang Purai.
Tænites blechnoides, Swartz ... (*Filices*).	Paku Balu. B. Pijai.
Tamarindus indicus, L. ... (*Leguminosæ*).	Asam Jawa.
Tarrietia simplicifolia, Mast. ... (*Sterculiaceæ*).	Merbayu. Mumbaju Siku Keluang. Traling.

Tectona grandis, L. ... ... (*Verbenaceæ*).	Jati.
Terminalia catappa, L. ... (*Combretaceæ*).	Ketapang.
T. phellocarpa, King ...	Pelawei (Selangor). Mampalam Babi.
T. subspathulata, King ...	Jilawei.
Tephrosia Hookeriana, W & A. (*Leguminosæ*).	Kachang Buloh.
Ternstræmia pinangiana, Chois. (*Ternstræmiaceæ*).	Tengah Hutan.
T. coriacea	Buguas.
Tetracera assa, L. ... ... (*Dilleniaceæ*).	Mempelas. Ampalas. Ampelas.
T. macrophylla, Hk. f. ...	Ampalas Gajah. A. Rimau.
Tetractomia laurifolia, Bl. ... (*Rutaceæ*).	Kertak Hudang. Medang Hudang.
Teysmannia altifrons, Miq. ...	Daun Payong. (Pahang) Daun Segalor (Selangor). D. Selebar. Daun Sang (Kinta) C. C.
Thamnopteris nidus-avis, L. ... (*Filices*).	Paku Langsuir (Selangor). Rumah Langsuir. Paku Pandan.
Theallchinensis, L.	Te. Poko Cha (Pinang).
Thecostele maculosa, Ridl. ... (*Orchideæ*).	Sakat Bilimbi.
Thespesia populnea, L. ... (*Malvaceæ*).	Baru.
Thottea grandiflora, Rox. ... (*Aristolochiaceæ*).	Grobo (Malacca). Kurubut. Kerubut. Sambut. Seburat. Saburut. Suprut.
Thrixspermum lilacinum, Rchb-fil. ... ... (*Orchideæ*).	Akar Sesudu Paya.
Thunbergia alata, Rox. ... (*Acanthaceæ*).	Akar Ulan.
Thysanolena acarifera, Nees. ... (*Gramineæ*).	Buluh Tebrau.

Tinomiscium petiolare, Miers. ... (*Menispermaceæ*).	Akar Langkap. A. Lempoyang (S. Ujong). A. Mumbulu.
Timonius jambosella, Thw. ... (*Rubiaceæ*).	Merombong (Malacca). Rio (Johore). Tabah (S. Ujong) Kurau (Penang).
Torenia asiatica, L. ... ... (*Scrophularineæ*).	Kulalawat.
T. pedunculata, Benth. ...	Kelawat. Rulang Hutan.
T. polygonoides, Benth. ...	Kerak Merah. Terutop Batu.
Trema amboinensis, Bl. ... (*Urticaceæ*).	Mundarong. Narong Jantan. Narong Paya.
Trevesia sundaica, Miq. ... (*Araliaceæ*).	Kabu-Kabu. Kakabu. Tapak Rusa.
Trichoranthes anguina, L. ... (*Cucurbitaceæ*).	Ketola Ular.
T. celebica, Miq.	Akar Tiga Chabang (Selangor). Timun Dendang Lunjung.
T. cordata, Rox.	Akar Labu Ayer Hutan. Akar Sunto. A. Lokar.
T. tricuspidata	Akar Katominan (Penang).
T. Wallichianum, Cogn. ...	Timun Gajak. Akar Balistur.
T. Wawraii, Cogn.	Akar Tiga Chabang.
Tridax procumbens, L. ... (*Compositæ*).	Rumput Kanching Baju.
Trichospermum Kurzii, King ... (*Tiliaceæ*).	Kasumba Bukit.
Trigonella Fenugrœcum ...	Alba.
Trigonochlamys Griffithii, Hk. f. (*Burseraceæ*).	Babi Kurus. Damar Kijai. Kijai. Kasir. Kadongdong Mata Hari.
T. sps.	Kadengdong. Kadongdong.
Trigonostemon indicus ... (*Euphorbiaceæ*).	Gadu Gajah. Pelandok Besar. Selendap Bukit.
T. sp.	Mantua Pelandok Jantan.
Trigoniastrum hypoleucum, Miq. ... ... (*Polygaleæ*).	Maharajili (Johore). Mata Passeh (Maingay).

Triumfetta rhomboidea Jacq. (*Tiliaceæ*).	Champadang.
Tristania Maingayii, Duthie. (*Myrtaceæ*).	Pasir Lingga.
T. Wightiana, Griff.	Pelawan. Changal.
Triphasia trifoliata, De. C. (*Rutaceæ*).	Limau Keah. L. Kikit. L. Kaya.
Turpinia pomifera, De C. (*Sapindaceæ*).	Merbong Jantan.
Turnera ulmifolia ... ... (*Turneraceæ*).	Lidah Kuching.
Typhonium divaricatum, Decne. (*Aroideæ*).	Birah Kechil.
Tylophora asthmatica, Wight. (*Asclepiadeæ*).	Sambukan.
T. tenuis, Wall.	Akar Saput Tungal.
T. Wallichii, Hk. f.	Akar Subidai.
Uncaria ferrea, De C. ... ... (*Rubiaceæ*).	Kait-Kait Bukit. Kait-Kait Merah.
U. gambir, Hunter	Gambir. Gatta Gambir.
U. lanosa, Wall.	Gegambir Paya. G. Hutan.
U. pteropoda, Miq.	Kait-Kait Darat (Malacca).
U. sclerophylla, Rox. ...	Belalai Gajah. Akar Selimbar (Favre).
U. spp.	Kait-Kait.
Unona dasmychala, Bl. (*Anonaceæ*).	Chenang Hutan (Malacca).
U. discolor, Vahl.	Akar Darah. A. Kenanga Hutan.
U. dumosa, Rox.	Akar Kenchong Johu.
U. longiflora, Rox.	Jari Ayam.
Uraria crinita, Desv. ... ... (*Leguminosæ*).	Ekor Kuching. Seringan. Pua Acoraging (Johor).
Urceola brachysepala, Hk. f. ... (*Apocynaceæ*).	Gegrip Putih.
U. elastica, Rox.	Gegrip Tembaga.
U. lucida, Benth.	Gegrip Merah. G. Nasi.
U. malaccensis, Hk. f. ...	Akar Sangkang Buaya. A. Serapat Jantan.

U. torulosa, Hk. f. ... ... Akar Montek. A. Suapah.
Urena lobata, L. ... ... Poko Kelulut. Perpulut. Pepulut. Pulut-Pulut.
(*Malvaceæ*).
Urophyllum Blumeanum, Wight. Chemperai Dadis.
(*Rubiaceæ*).
U. Griffithianum, Wight. ... Limputih Paya.
U. hirsutum, Wight. ... Panchan (Malacca).
U. sps. .. .. Jinteh Putih. Mata Keli Para.
Utricularia flexuosa, Vahl. ... Lumut Ekor Kuning.
(*Lentibularieæ*.)
Uvaria dulcis, Dunal.... ... Pisang-Pisang Hitam.
(*Anonaceæ*).
U. dumosa, Rox. ... ... Pisang-Pisang Padi. P. P. Pipit.
U. purpurea, Bl. ... ... Pisang-Pisang Jantan. P.-P. Kuming. P.-P. Tandok.
Vaccinium malaccense, Wight. Kelempadang.
(*Vaccinieæ*).
Vandellia crustacea, Benth. ... Kerak Nasi.
(*Scrophularineæ*).
Vanda gigantea, Lindl. ... Kayu Low (Lankawi) Pisang Kling (Lankawi) Low Kayu.
(*Orchideæ*).
Vanilla Griffithii, Reich. ... Akar Penubal. Telinah Kerbau Bukit.
(*Orchideæ*).
Vatica Curtisii, King. ... Pinang Baik (Penang).
(*Dipterocarpeæ*).
V. pallida, Dyer. ... ... Merambong Bukit Besar.
Vernonia arborea, L. ... ... Jankang Paya. Mengabong. Medang Gambong. Merombong Bukit.
(*Compositæ*).
V. Chinensis, Less. ... ... Rukum Gajah.
V. Cinerea, Less. ... .. Bujong Samalam. Ekor Kuda. Rumput Sapagi. Sembong Hutan. Rumput Susor Daun. Tahi Babi. Tambak Bukit. Tambak-Tambak.
V. scandens, De C. ... ... Akar Lumboh (Malacca).

V. sp.	Ragin.
Vitis adnata, Wall. ... ... (*Ampelideæ*).	Chawat Udi. Akar Pakan Paya.
V. cinnamomea, Wall. ...	Akar Jari Biawak. Keladek Ingan. Susuwat.
V. diffusa, Miq.	Chiarek Merah. Lakom Laut. L. Jang-Jang. L. Umbon. Akar Mumpayang.
V. elegans, Kurz.	Akar Plas (Johore).
V. gracilis, Wall.	Keladek Tana.
V. glaberrima Wall.	Akar Asam Riang. A. Riang-Riang.
V. lanceolaria, Rox.	Akar Kangkong Gajah.
V. macrostachys, Miq. ...	Akar Charek-Charek. A. Sakariah.
V. mollissima, Wall. ...	Lakom Gajah. Akar Sebunkah. Peria Hutan.
V. novemfolia, Wall. ...	Lakom Terbau.
V. quadrangularis, Wall. ...	Salah Laku.
V. sps.	Lakom. Ati-Ati.
V. sp.	Akar Koyah Asam.
Vitex coriacea, Clarke ... (*Verbenaceæ*).	Jali Batu. Medang Pupoi (Malacca).
V. pubescens, Vahl.	Leban. L. Hitam. L. Tandok.
V. sp.	Leban Kunyit.
V. trifolia, L.	Lagundi. Legundi. Lenggundi. Langgundi. Langgudi.
V. vestita, Wall.	Alban. Halban. Bangus Jantan. Leban Bunga. L. Nasi-Nasi. Nasi Remba. Sepit. Sipet.
Viscum spp. ... ... (*Loranthaceæ*).	Api-Api.
Viburnum sambucinum, Rein. (*Caprifoliaceæ*).	Buas-Buas Bukit. Buas-Buas Paya.
Vigna catiang, Endl. ... ... (*Leguminosæ*).	Kachang Merah. K. Perut Ayam. K. Puru Ayam. K. Towchew. K. Panjang.

Ventilago leiocarpa, Benth. (*Rhamneæ*).	Akar Hitam. A. Tukus.
V. Maingayii, Laws.	Kamayan Antan (Pahang). Kutapek.
Voandzeia subterranea, Thouars. (*Leguminosæ*).	Kachang Manilla.
Walsura multijuga, King (*Meliaceæ*).	Laka-Laka Jantan.
Webera grandiflora, Hk. f. (*Rubiaceæ*).	Julong-Julong Jantan.
W. longifolia, Hk. f.	Kulu Babi. Sigauri.
W. mollis	Injau Belukar. Kelabu.
W. stellata, Hk. f.	Kuruseh Putih. Suluro.
Wedelia biflora, De C. (*Compositæ*).	Sarune. Saruney (Favre). Serenah Laut. Sunai Laut.
Wikstrœmia Candolleana, Meisn. (*Thymeleaceæ*).	Chandan (Pahang).
Willughbeia coriacea, Wall. (*Apocynaceæ*).	Getah Gaharu. G. Ujol. G. Menjawa (Malacca). Ujol. Puchong Kapor.
W. firma, Bl.	Gegrip Hitam. G. Besi. Akar Sampat.
Wornica meliosmœfolia, King (*Dilleniaceæ*)	Simpoh Jantan. S. Bukit. S. Hutan.
W. oblonga, Wall.	Kambai Hutan.
W. pulchella, Jack.	Simpoh Paya.
Xanthium strumarium, L. (*Compositæ*).	Buah Anjang.
Xanthophyllum affine, Korth. (*Polygaleæ*).	Chubon. Gading Jantan. Limah Beruk Jantan.
X. Griffithii	Dudoli Paya.
X. Kunstleri, King	Boborek. Limah Beruk Putih. Minyak Beruk.
X. Maingayii, Hk. f.	Limah Beruk Betina.
X. obscurum, Benn.	Buah Kapas.
X. palembanicum, Miq.	Minyak Beruk.
X. rufum, Benn.	Kapas Bulan. Krabu. Medang Katanahan. Minyak Beruk Jantan.

X. Wrayii, King ... ... Medang Surupo.
X. sps. ... ... Limah Beruk. Lamah. Lumah. Minyak Beruk.
Xerospermum Norohnianum, Bl. (*Sapindaceæ*). Rambutan Pachat.
X. Wallichianum, King ... Balong Ayam.
Ximenia americana, L. (*Olacineæ*). ... Bidara Laut.
Xylopia elliptica, Maingay (*Anonaceæ*). ... Lilan.
X. ferruginea, Hk. f. ... Jankang. J. Paya. J. Betina. J. Merah.
X. magna, Maingay ... Kudago Hutan.
X. malayana, Maingay ... Banit Kijang.
Xyris indica, L. (*Xyrideæ*). ... Baghao. Jeringu Padang.
Zalacca affinis, Griff. (*Palmeæ*). ... ... Salak Betul.
Z. conferta, Bl. ... ... Asam Kelubi. A. Paya. Kelubi.
Z. edulis, B. ... ... Salak.
Z. macrostachya, Griff. ... Salak Rungum.
Z. Wallichianum, Mart. ... Kumbak.
Zanthoxylum myriacanthum, Wall. (*Rutaceæ*). ... ... Kabu-Kabu Hutan. Membuloh.
Zea mays, L. (*Gramineæ*). ... ... Jagon.
Zingiber cassumunar (*Scitamineæ*). ... ... Bunglei, Lampayang. Lempoyang.
Z. Griffithii, Baker ... ... Boila Hitam.
Z. officinalis, L. ... ... Aliya. Haliya.
Z. spectabilis, Griff. ... ... Chadak (Selangor). Tupoi (Pinang).
Zizyphus calophylla, Wall. (*Rhamneæ*). ... Dawai-Dawai. Dedawi. Akar Jambu Kelawar. Onak (Malacca). A. Pialu. A. Unak.
Z. jujuba, Lam. ... ... Bedara China.

Z. oenoplia, Mills. ... ... Kuku Balam. K. Tupai. Kukulang.

Silk and Cotton Dyeing by Malays.

By W. W. Skeat.

In Kelantan and Patani the material of which *sarongs*, *kain lepas*, etc., are made is now almost invariably silk or cotton thread imported from Singapore, but in out-of-the-way inland districts a few Malays of the older generation still manufacture a coarse but durable thread of native vegetable fibre (home-spun). In the latter case the dyes most commonly used were blue (biru) and purple (umu) with occasionally some green (ijau or ĕmpo) and a little yellow (kuning or tūla). Red, though much admired, was not commonly used owing to the difficulty of making it fast. When silk is to be dyed, from four or ten *kati's* weight is now usually bought from peddlers or in the bazaar at from $4 to $4.50 per *kati* (1⅓lbs). The following are the processes by which the required colours are obtained, both silk and cotton thread being similarly treated. I may add that the numbers correspond to a series of standard colours which were shown to my informants when the information was obtained, but which it is unfortunately impossible to reproduce here.

Red:—(1) To dye a *kati* of silk red from ten to fifteen fruits of the *asam gelugor*,* with two or three common tamarinds, and as much alum as will cover the nail of the fourth finger, are together put into a pan (blanga), and heated up to boiling-point (sāpā bĕrgĕlĕgâk).† The silk is plunged into the liquid, which is kept on the fire till the whole has been well boiled, when the pan is taken off and allowed to stand all night. Next morning the silk is kneaded to clean it (di-kichâh, Selangor kinchah) taken out, and dried in the sun, and put out in the dew

* *Garcinia atroviridis*.—*H. N. R.*

† I have given exact Kelantan and Patani pronunciations in this article as likely to be of most interest to the reader.—*W. S.*

for the night. This method of dyeing silk red is called by Patani and Kelantan Malays "chĕlu mala" (or, in standard Malay, "chĕlup malau.")

Orange:—(2) To dye silk orange [which is called kuning pinĕ masāk, or "ripe betel-nut yellow"], the silk may be dipped into the already used red dye. Only a weak solution is required, so that if the strength of the dye (*pati*) has been absorbed by the first instalment of silk it does not really matter. Of course if a new solution is brewed, care must be taken to see that it is not too strong, but the former method is generally favoured. The silk is dipped into the liquid and stirred about, and then boiled a little, till it is as red as the *pulut-pulut* flower,* my informant declared. On being taken out again, the dye is wrung out of it, when it is laid aside for the time being. About a "chupāk" of the fruits of the kasōmā klin (*kasumba kling*) are then squeezed (*ramah*) into a dish (*pasu*), the husks being thrown away. To these are added about ten of the fruits of *belimbing masam*, which is also called "Buāh k'rih" in Kelantan and Patani from its being used for the express purpose of cleaning K'ris blades (di-bachā k'rih). These being squeezed into the *pasu*, a pinch or two of alum is added, (as a mordant), and the mixture is ready. The silk is dipped into this liquid and kneaded in it for a few moments (sa-jĕnih), after which it is boiled for a short while on the fire. When taken out, it is hung up upon a line in a shady place to dry (di-sidā di-tĕdoh).† Shade is of importance, as if it is exposed to the sun the colour will fade. It is however exposed to the dew (di-pĕrĕmbong) every night for three nights consecutively.

Dark orange is obtained from chips of the heart of the jackfruit (*nangka*) tree, with the usual mordant (alum and *asam gelugor*).

Yellow:—(3) and all the colours now to be mentioned are now usually obtained from aniline dye-stuffs imported from Singapore. In the absence of such dyes however they are still obtained as follows.

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* *Urena lobata* whose flower is pink.—*H. N. R.*

† In Selangor Malay = Sindal.

To dye silk *yellow*, turmeric or curcuma is pounded in a small specially-made mortar and wrung or squeezed by hand (di-p'råh) to get the juice out of it. Tamarinds, asam gĕlugor, and alum are added in the same proportion as before, and the silk boiled in the mixture and hung up to dry, as in the "malau" process. This dye however like all other shades of yellow must be exposed to the action of the sun, as without this the required tint cannot be obtained.

For *yellow green* (4) the treatment commences with the same process as for yellow, but a mixture is added which is made from the root and heart of the "poko' kĕdræ̃." About a kati (1⅓ lbs) of this wood is taken, chopped up small (di-chichæ̃) and heated to boiling point. It is then allowed to stand and cool a little, when the clearer liquor at the top *(siring)* is spooned off (leaving the thicker stuff, called *dodo'* at the bottom), and added to the decoction of turmeric before referred to. The rest of the process is the same as before. The same colour is also given by young shoots of the Rambutan (*Nephelium lappaceum*) tree, alum and asam gĕlugor being added.

For *Green* (5) a larger proportion of the "kedrang" mixture is applied. For *Blue Green* (6) the process is twice repeated. For *Blue* (7) a decoction of indigo leaves takes the place of the turmeric. The process is otherwise the same but repeated two or three times till the right tint is obtained.

The following are the more important kinds of indigo known in Kelantan and Patani.

1. tarung kĕchi' (= tarum kechil)
2. tarung gĕlæ̃ngæ̃ (= t. gelanggang)
3. tarung Siæ̃ (= t. Siam)
4. tarung ākā or tarung utæ.* (= t. akar or t. eitan).

For *Indigo* (8) the leaves are gathered and thrown into a big earthenware jar called "tĕpayæ" (St. Mal. tĕmpayan) together with the bark of the young shoots or young fruit-spikes of the coconut-palm (kūli'pūti'nyå), one fruit-spike on an average going to each tepayæ̃. A lump of lime "as thick as a man's arm" (bĕsā lengæ̃) is added, and the silk steeped in the decoction till it becomes of the requisite tint.

* *Marsdenia tinctoria* (?)—*H. N. R.*

For *Violet* (9) commence with the light red dye (mālā), as before, but then steep the silk in fermented cocoanut milk (ayĭ nyâ 'dâh jadi ragi) keeping the silk in it only just long enough to turn it of the requisite tinge, as if not watched, and allowed to remain too long, it will turn a rusty black.

Purple (10) may be obtained either from an infusion of tengar bark or by combination of the "mala" (light red) dyeing process with indigo; Dark purple from the sĕrā kayu (Sel. *kenundang*), a tree with small red edible fruits, with alum and asam gĕlugor as usual. *White* (11) is obtained by steeping the silk in a decoction of (burnt) durian skin. Light black or *Black* (12) is obtained from an infusion of tengar bark or by repeated steepings in indigo; or by burying in the soil of the *gurah* tree,* yarn already dyed yellow-green (4) or dark purple (10). *Dark black* (13) by still further repeated dyeing with indigo or fermented coconut milk; *Grey* (14, 15) by dipping in indigo; *Brown* (16, 17) by dyeing with "mundu"† bark, alum and tamarinds being added as required; *Brown* (18) by dyeing with "mundu" bark *only*; and *Brown* (19) by adding indigo to the above.

I may add that the most generally favourite colour is red after which come yellow and a kind of delicate rose-colour (or madder), which is called kĕmbang pĕtang in Selangor (kĕmæ̆ pĕtæ̆ in Kelantan and Patani). Darker and soberer tints are in vogue for the older folks, and the sarong-patterns worn by the women have smaller checks and are more tasteful than those worn by the men.

In Raman (an inland province of Patani), both Blue and Black dyes are obtained from either the wild or cultivated variety of indigo (tarung utæ̆ or tarung kāpon) the yarn being steeped in an infusion coloured by the young shoots until the requisite tint is obtained. The black is therefore merely the deepest shade of blue obtainable. Red is obtained from Brazil-wood or *sepang* mixed with an equal proportion of chips of the

* The yarn after dyeing is buried in soil taken from underneath the *gurah* tree, whose leaves are said to turn the soil underneath it black. The "gurah" tree is probably "Excœcaria agallocha," (H. N. R.) in which case it is the same as the *guring* (?).

† *Garcinia dulcis.—H. N. R.*

"kĕdrĕng" tree. The heart of the tree (tĕrah) is taken and steeped in water until the infusion becomes of a sufficently deep red colour. Green is obtained by taking the old leaves of the Indigo and mixing them with the juice of young cocoanut-fruit pounded small (*ayer numbang* di-tumboh*).

Yellow† is obtained from equal proportions of turmeric (*kunyit*) and lime (*kapor*) which are mixed and allowed to ferment (*di-rapai jadi ragi*).

Purple is made by dipping red-dyed yarn in indigo.

Before concluding I may perhaps here add for the sake of comparison a few general notes on typical dyeing processes on the west coast (Selangor).

In Selangor mangrove bark (*kulit bakau*) is used as a black dye, whilst from *isi tĕmu kunyit* or *tĕmu kunchi* and *tĕmu pauh* (especially from the first of these three) yellow dye is obtained. The yellow dye obtained from these latter preparations is darkened by the addition of lime (*kapor*) and asam gĕlugor.

Red dye is obtained from Sepang and kĕsumba k'ling: green from bunga tĕlang (the creeper, not the bamboo); black from the fruit of the kĕdudok (*Melastoma*) and from the fruit of the tumu, the latter giving the best results.

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* In Raman called gūmĕ (=*gumbang*).

† Probably the exact colour obtained would depend upon the length of the immersion. It might be expected that such a mixture as described would produce, when its full strength was brought out, a sort of burnt ochre.

Malay Tiger-beetles.

By H. N. Ridley.

The tiger beetles (Cicindelidæ) are among the most attractive and conspicuous of our smaller beetles on account both of their bright colours, and their rapid movements in the full sun, in the hottest time of the day. They are exclusively carnivorous, chasing their prey consisting of smaller insects and usually flying very briskly, and usually require the use of the net to capture them. The Malay species may be divided into two groups, the jungle-tiger beetles and the road-tiger beetles. The former include species of the genera *Tricondyla* and *Collyris*.

Tricondyla aptera, Oliv., is the only species of this genus I have seen in the peninsula, and it is by no means common. I obtained a single specimen in the Botanic Gardens in Singapore. and there is also a specimen from Penang in the British Museum. It seems to be abundant in New Guinea and occurs also in Amboina, Aru Islands and Solomon Islands. It is our largest species, about $\frac{3}{4}$ inch long, and is also remarkable for being quite wingless, a narrow, elongate, deep blue beetle with slender antennæ, prominent eyes, and long red legs. I found it running about on the ground with the workers of the common large ant known as Semut Rajah, (*Camponotus gigas*). This ant makes nests in the bases of hollow trees, and the workers are commonly to be seen scampering about on paths, especially in the early morning and late evening, in search of food. The Tricondyla appears to mimick the ant, for though when the two insects are compared the resemblance is less striking, the general form, long legs, and method of running about cause the beetle to so much resemble the ant that I very nearly let it escape mistaking it for the ant.

Of the genus *Collyris* we have three species here and probably more will be found, as the species very closely resemble one another. They are much smaller than the *Tricondyla* but of very much the same shape, though they have

wings, slender long-legged beetles, blue or violet, which are often to be seen flying and scampering over leaves on bushes in the bright sunny spots of the jungle. The commonest species is *C. dolens*, Chand., which I have collected in Singapore, Selangor, Penang and elsewhere. *C. filiformis*, Chand., is a more slender species, bright violet blue with red legs. *C. apicalis*, Chand., is rather larger, very dark in colour, almost black, with red legs and a reddish patch at the apex of the elytra. It is common in the Botanic Gardens.

Therates humeralis has broader elytra and more resembles a road tiger-beetle. It is blue with tawny shoulders and red legs. I have collected it in Singapore.

Of the road tiger-beetles with broad elytra, which dart about on sandy roads, taking short flights, then running a little on their long legs and off again, we have two genera, *Cicindela* and *Heptadonta*. The first genus seems to be very widely distributed, abundant in Europe and North America as well as in the tropics. The larvæ of the temperate climate species are soft bodied with large heads and powerful jaws. They live in holes in the ground from the entrance of which they look out for passing insects on which to prey. The larvæ of our species doubtless resemble those of colder climates, but they have not yet been investigated.

The commonest species is *Cicindela aurulenta*, Fabr., which is very abundant on sandy roads in Singapore, Perak, Penang, Province Wellesley and elsewhere. It is abundant on the west Hill in Penang at an altitude of 3000 feet. The upper surface is of a dark blue green with six golden spots on the elytra. The abdomen beneath is coppery red. It has very powerful black curved jaws, but cannot bite though the skin. Altogether it is a very beautiful beetle.

C. fuliginosa, Dej., is smaller and rather less common, though by no means rare. The elytra have a dark brown key pattern on a cream ground. I have met with it in Singapore, Penang, Province Wellesley and Perak, and it will probably be found all over the peninsula as well.

Heptadonta analis, Fabr., has the same form and habits as the two Cicindelas, but is a plain dark blue-green beetle without any spots. It is widely distributed, occurring in Penang,

Selangor and Perak and is also found in Bombay, Java and Sumatra.

I identified these beetles by the collections in the Natural History Museum. There are probably other species to be found in the peninsula, especially in our hill regions, and as they are conspicuous and easy to catch there ought to be no difficulty in getting a complete set of the species of the peninsula.

A List of the Reptiles of Borneo—Addenda et Corrigenda.*

P. 47.—*Brookeia baileyi*, Bartlett.

This species must now be known as *Orlitia borneensis*, Gray. *O. borneensis* was most incompletely described in 1873, from a very young mounted specimen, collected by Bleeker at Sintang, Dutch Borneo. Boulenger subsequently relegated the species to the genus *Bellia*, since the very immature specimens showed no characters on which to base a sound generic diagnosis. Adult specimens of this same species were later (1895 and 1897) described by Bartlett and Boulenger as *Brookeia baileyi* and *Liemys inornata* respectively. A skull of this tortoise in the Zoological Institute, Munich, was described by Baur in 1895 as *Adelochelys crassa* and referred to the super-family *Chelydroidea*, chiefly characteristic of the New World, and its habitat guessed at as Costa Rica! Finally Schenkel in 1901 suggested that *Brookeia baileyi* and *Bellia borneensis* were conspecific, and pointing out the differences between this species and a typical Bellia, revived Gray's Genus Orlitia. I had already pointed out to Mr. Boulenger the identity of his *Liemys inornata* with *Brookeia baileyi*, and recently was able to obtain, through the kindness of Mr. Bailey, of the Sarawak service, a young specimen of this oft-described tortoise; Mr. Boulenger has compared this with the type of *Orlitia borneensis*, itself a young specimen, and in a letter he informs me that the two are identical. The head and entoplastron alone shew that the species is not a *Bellia*, but must occupy a genus by itself, for which the name *Orlitia* has already been provided.

* See this Journal No. 35, pp. 43-68, 1901.

The species also occurs in Sumatra.

The following is a list of the literature relating to the species :—

Orlitia borneensis, Gray, A. M. N. H. (4) xi, p. 157, 1873.

Bellia borneensis, Boulenger, Cat. Chelonians, Brit. Mus., p. 100, (1889).

Hardella baileyi, Bartlett, Sarawak Gazette, Vol. xxv, p. 83, 1895, and Zoolog. Note Book of Sarawak, No. 1, p. 60, 1895.

Brookeia baileyi, Bartlett, Sarawak Gazette, Vol. xxvii, p. 113, 1896, and Zool. N. B. of Sarawak, No. 2, p. 81, 1896.

Adelochelys crassa, Baur, Anat. Anz., xii, 1896, p 314.

Liemys inornata, Boulenger, A. M. N. H. (5), Vol. 19, p. 868-469, 1897.

Liemys inenata, Siebenrock, Sitzb. Ak. Wien., cvi, 1, 1897, p. 248.

Orlitia (Bellia) borneensis, Shenckel, Verh. Nat. Ges. Basel, xiii, 1901, p. 196.

P. 47.—*Bellia borneensis*, Gray. Omit (see above).

P. 50.—*Tarentola delalandii*, D. & B.
This species should not be included in the Bornean fauna. Its habitat is West Africa and Madeira.

P. 54.—*Lygosoma whiteheadi*, Mocq.
This is conspecific with *L. bowringii*, Günth.

P. 58.—Add Mt. Saribau, Samarahan R. as another locality for *Opisthotropis typica*, Mocq., and *Hydrablabes periops*, Günth.

P. 58.—*Xylophis albonuchalis*, Günth.
This species, which was included by Günther in the genus *Geophis*, has been referred by Boulenger (Zool. Record, 1898) to *Agrophis*, next to *Idiopholis* (see p. 61).

P. 61—After *Agrophis albonuchalis*, Günth, add :—

Agrophis saravacensis, Shelford. Shelford A. M. N. H. (7), Vol. viii, p. 516, 1901. S. M. Kuching. (Shelford).
Type and only known specimen in the Sarawak Museum.

After *Idiopholis collaris*, Mocq. add :—

Idiopholis everetti, Shelford, l. c. p. 517, 1901.

Sawa, N. Borneo (A. Everett) cf. The unique specimen is preserved in the British Museum.

P. 62.—For *Calamaria prakii* read *Calamaria prakkii*.

P. 63.—For *Perraca* read *Perracca*.

R. Shelford.

RULES

OF THE

STRAITS ASIATIC SOCIETY.

I.—Name and Objects.

1.—The name of the Society shall be "THE STRAITS ASIATIC SOCIETY."

2.—The objects of the Society shall be—

a. The investigation of subjects connected with the Straits of Malacca and the neighbouring Countries.

b. The publication of papers in a Journal.

c. The formation of a Library of books bearing on the objects of the Society.

II.—Membership.

3.—Members shall be classed as Ordinary and Honorary.

4.—Ordinary Members shall pay an annual subscription of $5, payable in advance on the 1st January of each year. Members shall be allowed to compound for life membership of the Society on payment of $50.

5.—Honorary Members shall pay no subscription.

6.—On or about the 30th June of every year, the Honorary Treasurer shall prepare a list of those Members whose subscriptions for the current year remain unpaid, and such persons shall be deemed to have resigned their Membership. But the operation of this rule, in any particular case, may be suspended by a vote of the Council of the Society. No member shall receive a copy of the Journal or other publications of the Society until his subscription for the current year has been paid.

7.—Candidates for admission as Members shall be proposed by one and seconded by another member of the Society, and if agreed to by a majority of the Council shall be deemed to be duly elected.

8.—Honorary Members must be proposed for election by the Council at a general meeting of the Society.

III.—Officers.

9.—The Officers of the Society shall be:—

A President;
Two Vice-Presidents, one of whom shall be selected from amongst the members resident in Penang;
An Honorary Secretary and Librarian;
An Honorary Treasurer; and
Five Councillors.

These Officers shall hold office until their successors are chosen.

10.—Vacancies in the above offices shall be filled for the current year by a vote of the remaining Officers.

IV.—Council.

11.—The Council of the Society shall be composed of the Officers for the current year, and its duties shall be:—

a. To administer the affairs, property and trusts of the Society.
b. To elect ordinary members and recommend Honorary members for election by the Society.
c. To decide on the eligibility of papers to be read before general meetings.
d. To select papers for publication in the Journal, and to supervise the printing and distribution of the said Journal.
e. To select and purchase books for the Library.
f. To accept or decline donations on behalf of the Society.
g. To present to the Annual Meeting at the expiration of their term of office a Report of the proceedings and condition of the Society.

12.—The Council shall meet for the transaction of business once a month, or oftener if necessary. At Council meetings three Officers shall constitute a quorum.

13.—The Council shall have authority, subject to confirmation by a general meeting, to make and enforce such by-laws and regulations for the proper conduct of the Society's affairs as may, from time to time, be expedient.

V.—Meetings.

14.—The Annual General Meeting shall be held in January of each year.

15.—General Meetings shall be held, when practicable, once in every month, and oftener if expedient, at such hour as the Council may appoint.

16.—At Ordinary General Meetings of the Society seven and at the Annual General Meeting eleven members shall form a quorum for the transaction of business.

17.—At all Meetings, the Chairman shall, in case of an equality of votes, be entitled to a casting vote in addition to his own.

18.—At the Annual General Meeting, the Council shall present a Report for the preceding year, and the Treasurer shall render an account of the financial condition of the Society. Officers for the current year shall also be chosen.

19.—The work of Ordinary General Meetings shall be the transaction of routine business, the reading of papers approved by the Council, and the discussion of topics connected with the general objects of the Society.

20.—Notice of the subjects intended to be introduced for discussion by any member of the Society should be handed in to the Secretary before the Meeting.

Visitors may be admitted to the Meetings of the Society, but no one who is not a member shall be allowed to address the Meeting, except by invitation or permission of the Chairman.

VI.—Publications of the Society.

21.—A Journal shall be published, when practicable, every six months, under the supervision of the Council. It shall com-

prise a selection of the papers read before the Society, the Report of the Council and Treasurer, and such other matter as the Council may deem it expedient to publish.

22.—Every member of the Society shall be entitled to one copy of the Journal, deliverable at the place of publication. The Council shall have power to present copies to other Societies and to distinguished individuals, and the remaining copies shall be sold at such prices as the Council shall, from time to time, direct.

23.—Twenty-four copies of each paper published in the Journal shall be placed at the disposal of the Author.

24.—The Council shall have power to sanction the publication, in a separate form, of papers or documents laid before the Society, if in their opinion practicable and expedient.

VII.—Popular Lectures.

25.—Occasional Popular Lectures upon literary or scientific subjects may be delivered, under the sanction of the Council, on evenings other than those appointed for General Meetings of the Society.

VIII.—Amendments.

26.—Amendments to these Rules must be proposed in writing to the Council, who shall, after notice given, lay them before a General Meeting of the Society. A Committee of Resident Members shall thereupon be appointed, in conjunction with the Council, to report on the proposed Amendments to the General Meeting next ensuing, when a decision may be taken, provided that any amendment to the Rules which is to be proposed by such Committee to the General Meeting shall be stated in the notice summoning the meeting.

Straits Brch
17 July 1903

STRAITS BRANCH

ROYAL ASIATIC SOCIETY

[No. 39]

JOURNAL

June, 1903

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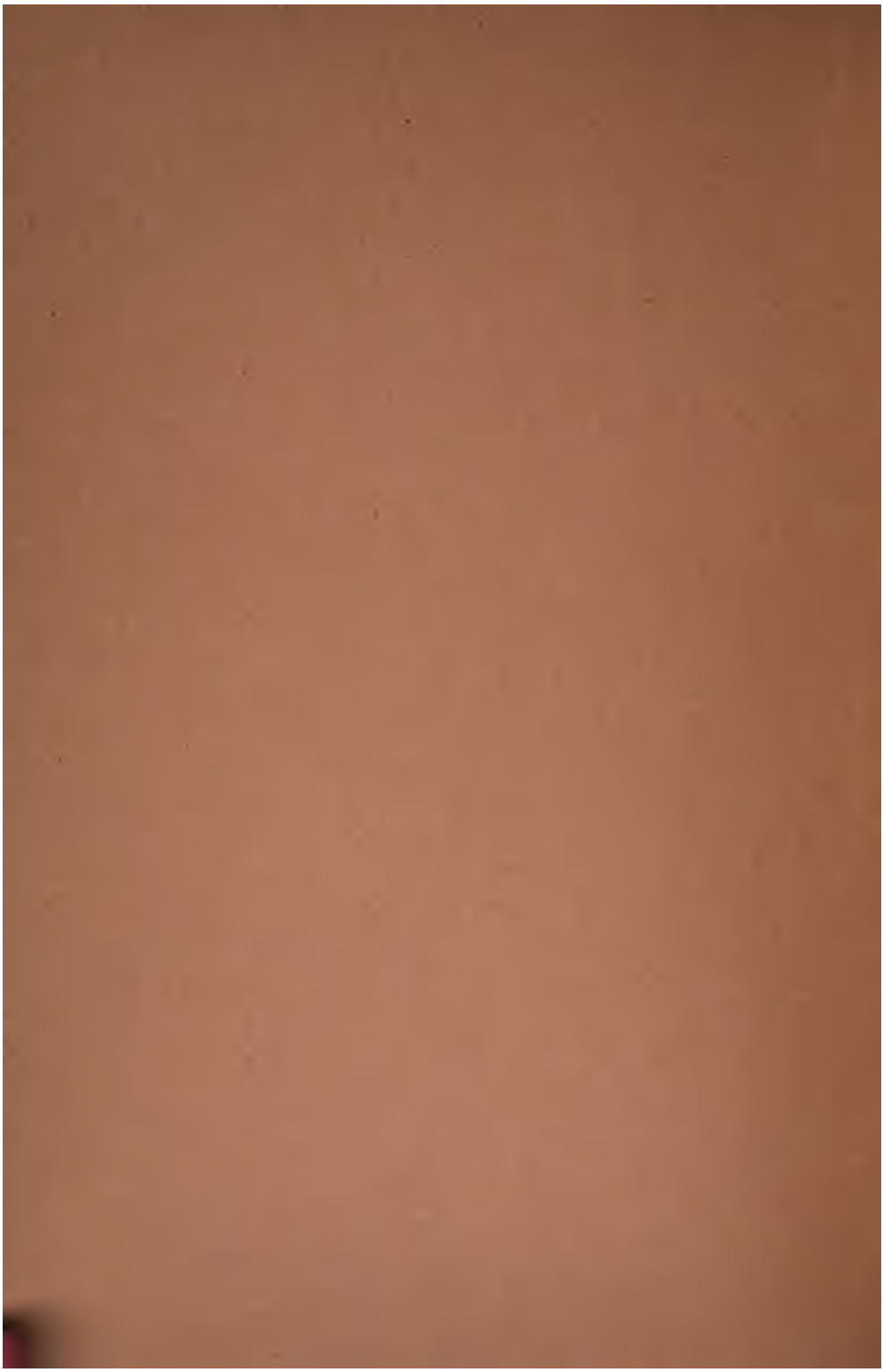

[No. 39]

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THE

STRAITS BRANCH

OF THE

ROYAL ASIATIC SOCIETY.

COUNCIL FOR 1903.

The Right Rev. BISHOP HOSE, *President.*

Hon. W. R. COLLYER, *Vice-President for Singapore.*

Hon. C. W. KYNNERSLEY, *Vice-President for Penang*

H. N. RIDLEY, *Honorary Secretary.*

DR. HANITSCH, *Honorary Treasurer.*

H. ESCHKE, Esq.,
A. KNIGHT, Esq.,
W. G. ST. CLAIR, Esq.,
A. W. O'SULLIVAN, Esq.,
Ven. Archdeacon DUNKERLEY
} *Councillors*

PROCEEDINGS

of the

Annual General Meeting

The Annual General Meeting of the Society was held on January, 23rd 1903.

There were present:—Right Reverend BISHOP HOSE, Hon'ble W. R. COLLYER, Dr. HANITSCH, A. KNIGHT, H. ESCHKE, A. D. MACHADO, Ven. Archdeacon DUNKERLEY,. W. G. ST. CLAIR, J. A. ROBERTS, Esq., Dr. GALLOWAY, H. NS RIDLEY.

The minutes of the last Annual General meeting were read and confirmed.

The Annual Report of the Council and the Treasurer's report were laid on the table and their adoption moved by W. G. St. CLAIR seconded by Dr. GALLOWAY, subject to the auditing of the Accounts which was undertaken by Mr. KNIGHT, as proposed by the Ven. Archdeacon DUNKERLEY and seconded by H. ESCHKE.

The Secretary read the draft of a letter of congratulation to the China Branch of the Royal Asiatic Society which was adopted unanimously by the meeting.

The Council for the ensuing year was then elected, viz.:

President: Right Reverend BISHOP HOSE.

Vice President for Singapore: Hon. W. R. COLLYER.

Vice President for Penang: Hon. C. W. KYNNERSLEY.

Hon. Secretary: H. N. RIDLEY.

Hon. Treasurer: Dr. HANITSCH.

Councillors: W. G. St. CLAIR, Esq., A. W. O'SULLIVAN, Esq. Ven. Archdeacon DANKERLEY.

The President then proposed a vote of thanks to the Secretary and Treasurer which was carried unanimously.

Annual Report for 1902.

The Council are gratified to report that the financial condition of the Society continues to be very satisfactory.

The following new members have been elected since the last Annual General Meeting:—

Rev. E. Gomes.	Mr. H. E. Byrne.
Mr. H. Walter Bourke.	Mr. J. W. Simmons.
Mr. H. Marriott.	Mr. G. Laws.
Dr. Gimlette.	Mr. F. J. Skertchley.
Mr. E. C. H. Wolff.	Mr. W. D. Grandjean.
Mr. C. Curtis.	Mr. D. Beattie.

Dr. Galloway.

Two numbers of the Journal, Nos. 37 and 38, were published during the year. The supply of material for publication, however, was as observed in the last Annual Report, still scanty, and it is hoped that members who have any opportunity of sending in notes or observations on the subjects in which the Society is interested will do so.

The Council regret to have to record the death of a member, Mr. J. P. Joaquim, F. R. G. S.

A number of books, papers and journals were added to the library. The Librarian is re-arranging the library and hopes to have a catalogue of it ready shortly.

The Treasurer's account is appended.

HONORARY TREASURER'S ACCOUNT FOR THE YEAR 1902

	$	c.	$	c.
Balances brought forward from 1901:—				
Mercantile Bank, Fixed Deposits	1553	41		
Mercantile Bank, Current Account	1000	77		
Chartered Bank, Current Account	58	95		
Cash in Hand ...	6	..		
			2619	13
Receipts in 1902:—				
Subscriptions for 1900 ...	5	...		
do „ 1901 ...	45	..		
do „ 1902 ..	470	...		
do „ 1903 ...	10	...		
do for Life Membership	50	..		
Sale of Journals and Publications	214	95		
Sale of Maps	996	85		
Sundry Recoveries ...	9	04		
Bank Interest	81	84	1882	68
			4501	81

	$	c.	$	c.
Payments in 1902:—				
Printing of Journal No. 37	238	25		
do do No. 38	224	15		
Thacker & Spink, for two plates for Journal No. 39	73	93		
Photographs of Coins for Journal No. 39 ...	10	...		
Mounting Maps ...	62	...		
Binding Books ...	56	05		
Clerk's Salary ...	60	...		
Collector's Fee ...	10	...		
Postage, Discount on Foreign Notes and Petties ...	64	03		
			798	41
Balances carried forward:—				
Mercantile Bank, Fixed Deposits	2595	54		
Chartered Bank, Fixed Deposits	700	81		
Mercantile Bank, Current Account	348	10		
Chartered Bank, Current Account	58	95	3703	40
			4501	81

A. KNIGHT,
Hon. Auditor.

R. HANITSCH,
Honorary Treasurer, Straits Branch, Royal Asiatic Society.

Notes on a trip to Gunong Benom in Pahang.

By W. D. Barnes.

Gunong Benom is the name usually given to the "massif" which lies in Ulu Pahang in the centre of the triangle the western side of which is formed by the Pahang Trunk Road running from Tranum through Tras and Raub to Kuala Lipis, the Eastern by the Jelai and Pahang rivers running from Kwala Lipis to Kwala Semantan, and the southern by the Tranum-Bentong road and the Bentong and Semantan rivers which latter river joins the Pahang at Kwala Semantan. The name Benom is used by the Malays on the Pahang river but seems unknown at Raub. The mountain is a very conspicuous object from the Raub Rest House. Its height has been fixed trigonometrically by observations from the Perak and Selangor borders at about 6800 feet.

In July 1900 an experienced mandore Che Musa was sent from Perak by Mr. Young, the present head of the F. M. S. Trigonometrical Survey to erect trigonometrical beacons at this and other points in Pahang. Difficulties having arisen I, in the middle of August undertook the work on Benom. Che Musa was then in Raub having reached what he took to be the top of the mountain and done some clearing there. He had returned for supplies but was unable to get any men to go back with him. With the assistance of Mr. Mason the Asst. District Officer at Raub I managed to collect 17 men on a promise of wages at 70 cents a day and food. The food I had the least hesitation in promising as I knew by experience that a Malay who goes into the jungle on board-wages invariably runs out of stores and has to return for more at the precise moment when work is most pressing and disagreeable. With these men Che Musa went back. On the 29th of August he met me again at Raub and reported that he had built a camp two days

march towards the Mountain and had carried to it half of the trigonometrical beacon and eight tins of rice. I had had all the rice soldered down in clean kerosine tins. The plan answered admirably. Each rice-coolie made a frame work like that of a knapsack on which to lash the tins and fitted it with straps of bark through which to pass his arms and carried in this way five and a half gantangs of rice (roughly the contents of a tin) rode comfortably, no time was wasted in packing and opening bundles, and most important of all—the rice kept perfectly without any of the usual trouble in preserving it from wet.

I was now ready to start and on arranging for my party found that the beacon (it was made of iron) needed a total of 22 men to carry it; more men were of course needed to carry rice for the beacon-carriers; I was very anxious to take sufficient food to last the whole party until the station had been cleared and the beacon fixed. I engaged therefore 32 coolies, all were Malays and but one or two were foreign Malays—Kelantan and Tringganu men. As they assured me that the mountain was infested with peculiarly vicious 'hantu' I engaged a 'pawang' one Wan Putih. He was recommended to me as a powerful exorcist who feared no 'hantu' whatever. In fact he was I was told perhaps a little too rough in the way he dealt with them. The 'pawang' whem Che Musa had taken with him had proved a hopeless failure. My five boatmen also went with me as well as a Malay boy and a Chinese cook. Che Musa completed a party of 42.

We left Raub on the 31st and stopped the night at Wan Putih's house in Ulu Gali. This though only two or three hours' walk from Raub was the last kampong on the way to the Gunong and to it the other half of the beacon had previously been brought. The afternoon was spent in getting packs, etc., all ready for an early start the next morning. I passed the night under a waterproof sheet; most of the men were accommodated by Wan Putih whose house was, if anything, even filthier than the usual Malay house.

Next morning one man was sick with fever and had to be left behind. Two others were engaged in his place and the whole party with half a trigonometrical beacon, a theodolite,

a load of botanical drying paper, my kit and bedding, rice and salt fish for the men and flour and fowls for me started off in good time. The first half of the day's march was easy, the rest up Bukit Numbih and down the other side was hard work for men carrying very inconveniently shaped pieces of angle iron. We camped on a tributary of the Klui which is a tributary of the Dong. The camp was at an elevation of about 1800 feet. Next day Che Musa with one man went back to Raub for more rice and food stores with instructions to hire men to bring them to Wan Putih's. The rest of us went on to the camp which Che Musa had previously made. Here we found a good 'pondok' and the 8 tins of rice and half the beacon. This camp was on another tributary of the Klui and also about 1800 feet high. The march was a short one. The day after I sent back 19 men to Wan Putih's to bring on the additional stores for which Che Musa had gone together with the balance of the beacon tools and with the rest of the men I went on to the foot of the Gunong, crossing Bukit Palas on the way. We stopped for the night at a point a little over 3100 feet high and as this was (so Che Musa had told me) the last place on the way up where water could be got and as the weather was distinctly unsettled (it had rained every day since we started) I set the men to work to build a good shelter.

On the third day ten men went back to the previous camp to bring on rice, whilst I went to Che Musa's clearing at the presumed top of the Gunong. To my surprise I found it to be only about 5000 feet high instead of 6800 as it should have been. As however the clearing was small and faced Raub it was impossible to make out the exact position. Next day I went up again with all the coolies left and started clearing and building a camp, and on the 7th it became obvious that the hill which Che Musa had thought to to the Gunong itself was really a subordinate one three miles away and separated from it by at least five deep valleys. After some consideration I decided to fix the beacon where I was. Looking for the true Gunong with a party of 40 men to feed was obviously out of the question and as the hill on which I was commanded a view of a large number of the main range trigonometrical stations and also much of the Gali and Dong Valleys invisible from the

highest point I decided that a beacon on it would at all events give some return for the expense incurred.

On the 8th Che Musa reached the top and by the 11th nearly all the beacon had arrived enabling me to send ten of my party back to Raub there to be paid off. Nearly all of them were sick with fever or otherwise useless for clearing and filling and and I was very glad to have fewer men to feed. On the 14th the beacon was erected and on the 15th finally placed in position. By this time food was running short for all hands, and the coolies had got very tired of their job. Three had left without permission thereby forfeiting the greater part of their pay and on the afternoon of the 16th all the rest struck works The average foreign Malay who comes to Raub to look for work is not a pleasant person with whom to deal, and if he hail. from Tringganu as did most of my men did, his respect for a contract is very precisely measured by the ability of the other party to improve it. Luckily I was a Government officer and although my powers were not perhaps quite so extensive as I represented them to be, I succeeded in sufficiently impressing the men to induce them to go to work again late the next morning. I must own that I to some extent sympathised with them. Their work was pretty hard and their food had come down to rice and salt only. Fish sufficient for twice their number they had finished entirely. (My sympathies were sharpened by the fact that my own diet had fallen to bread and condensed milk.) When on the 18th the salt also gave out I found that I ran a risk of being left alone with my boatmen and a good deal more kit than they could carry. On the 20th therefore I started down although two very large trees up which a ladder had been contrived still stood on the side towards the Gunong. These are only noticeable from the Raub Rest House, whither late on the afternoon of the 21st I arrived, the return journey being done in two days.

During the whole time between the 7th and the 20th the coolies were felling I was taking a round of theodolite angles and sketching the outlines of the hills in sight. The seeing was rarely good especially towards the north-west and south and trignometrical stations more than 25 miles away could not have been pitched up without the aid of the powerful telescope which

I had fortunately borrowed from the Selangor Survey Office. In clear weather the view was very fine. The hill sloped steeply on all sides except towards the Gunong and seemed to rise out of a level plain. On the north in the dim distance above the spurs of the 'massif' were Gunong Tahan and another noticeable peak since identified at Sinting. On the west the main range ran from Perak down to Jelebu with foot hills below it, and a narrow plain leading from Raub southward to the Bentong and Semantan cut up with long ridges of hills separating the various streams. At the foot of the Gunong were the white limestone cliffs of Gunong Serdam with the Gali plain beyond and Raub with the iron-roofed mine buildings sharply picked out and the cable-track showing like a long angled trench. I managed twice to get bearings of Tahan and to sketch the range of which it forms part. The beacon which I erected stands on the highest of these small peaks of about equal height and the clearing round it measures quite five acres.

The weather was fair only. There was a good deal of rain and on more than one day I never got a single sight. The sun when it shone was very hot and I found that working the theodolite under it meant considerable loss of cuticle from the nose and face. At 8 p.m. the temperature was about 69° and at 6 a.m. 62°. The Malays complained a good deal of the cold although I had provided every man with a blanket. Many of them suffered from chapped lips. My Chinese cook in a blue serge Norfolk suit worn over all his other clothes looked a quaint sight. He never complained however and baked most excellent bread in an empty kerosine tin. A great difficulty was water supply. Every day a water party of five men had to be sent to the last camp nearly 2000 feet down and as the climb was steep and the men out of sight that water party did very little or no other work. Bathing was of course out of the question and washing had frequently to be foregone.

The 'pawang' was a great nuisance. Naturally he did no work himself and I suppose equally naturally he was of no use at all when the men went on strike. He was one of the most self-righteous natives whom I ever met and though quite illiterate fully equalled many a Koran-quoting haji in conceit. As a 'pawang' he did little except to 'Jampi' a man who was bitten

on the foot by a snake on the hill-top. This poor fellow's leg swelled up badly and as he was an oldish man and got high fever I began to be nervous about him. However either the charms or my remedies brought him round and in a few days he could walk again. Occasionally the 'pawang' thought fit to give us a taste of his quality and usually at inconvenient times. At the camp at the foot of the Gunong we heard every night a continuous shrill yelping as of baskets of puppies deserted by their mothers. It was, I think, made by birds though the Malays could give me no name for them. When I asked the 'pawang' he looked mysterious and suggested that the subject should be changed. One night this yelping was very persistent several 'riang-riang' were screeching in the trees, a wind having sprung up the jungle seemed full of noises. I fell asleep but was awakened near midnight by a loud harangue from the 'pawang' to the "hantu" of the Gunong. He began mildly by asking why they made such a disturbance; had they forgotten the propitiatory service he had paid before the first tree was felled? Was it fair to go back on him like this? For a while the noise died down and I heard the men expressing their sense of the 'pawang's' power over the spirits. Soon after however it began again and the pawang after more unavailing discourse lost his temper and scolded the hantu in very unmeasured language indeed. This frightened the men and they kept up a chorus of "Biar-lah," "Jangan-lah," "Nanti dia marah" until finally the pawang was reluctantly pacified and left the hantu alone.

Then they all began to tell ghost stories. One I remember about Bukit Hitam which is full of getah-taban but on which no getah hantu dare collect owing to the tigers which guard the mountain. One man said that his uncle (a particularly brave man) started once with a large party and as a protection kept a ring of fire round the camp at night. Before morning however a tiger sprang through the flames and carried off the leader. This superstition about Bukit Hitam seems only general. I have heard it both sides of the main ridge. The commonest story about high mountains seems to be that they are inhabited by 'beroh' (*macacus nemestrinus*) who increase in size and ferocity the higher the adventurous traveller mounts until at last

they become as lazy as buffaloes. At this point the traveller always returns believing that they would be as large as elephants further on. On Gunong Raja by-the-by there are chili plants sufficiently gigantic to allow these big 'brok' to perch on their branches.

The Malay belief in 'hantu' is of course universal but is noticeable that it is always possible to find some one whether a pawang or otherwise who will have them for a consideration. A charming old Chinese thauke at Belat in Kuantan tells a story of how he offered $5 to some Malays to fell a large chingah tree which overhung his kongsi. They refused and said that it was a "datoh." Subsequently they offered to fell it for $10. The thauke's indignant reply was that he would have nothing to do with men who would cut down their grandfather for ten dollars. Why for fifteen you would cut down your father and mother as well! He got over the difficulty by the aid of a large auger half a tin of kerosine and a lighted match. After describing how in a day or two the tree fell its heart completely burnt out, he always ends by saying very scornfully "Mana hantu?" As a rule however a Chinaman believes in propitiating the local unseen powers and even this sceptical thauke was seriously considering whether he could not change his luck by engaging a pawang to pay the belated sacrifice of a buffalo to the genius loci of his mine. A Chinaman is perhaps somewhat of a fatalist but he believes in insurance all the same.

Another susperstition which I overheard concerned a cure for skin disease. The pawang was complaining that it was difficult to arrange the marriage of a girl who lived near his house as the poor thing was covered with "kurap." My head-boatman who had noticed the girl, displayed great interest (he was I think contemplating matrimony à bonne marché) and stated that he knew an infallible cure for "kurap." It consisted in an ointment of sulphur and kerosine oil applied in some mysterious manner and it was an essential part of the cure that no living soul should see the patient for seven days after the unction.

As regards the fauna of the hill, over the very top of the ridge, i.e., 5000 feet high ran a beast-track and on almost the highest point was a quantity of rhinoceros' dung. One night whilst

we were on the top an elephant came along this track but was turned back by the fallen trees. It is easy to understand that aborigines walk for choice along the ridges and hills in order to avoid the dense undergrowth in the valleys but why beasts whose weight is calculated in tons should voluntarily carry that weight up hills of really considerable steepness in not so obvious. Do they go along the ridge in order to avoid the sidelong ground of the slopes much of which would give an insecurer foot hold? In the present case the track seemed to run towards the Gunong itself nearly 2000 feet higher. On the lower ground we saw many tracks of sladang and elephant and heard elephants more than once. Animal life seemed scarce on the hill top. A snake—mutilated beyond recognition before I saw it—was found, also a wood louse and a scorpion. Small bees (lebah) however abounded as on all hill-clearings and crawled persistently over one's face and hands. Flies too appeared very quickly and in large numbers. They were in colour a dark metallic blue and in size between a housefly and a blue-bottle. They laid masses of longish white eggs on blankets not actually exposed to bright sunlight. There were also a few white woolly-looking flies of about the same size. None of these insects lived apparently on the spot. They all seemed to appear after the clearing was begun. Whence they came I cannot say. I also saw a few butterflies.

With the aid of a supply of botanical drying paper lent by Mr. Ridley, the Director of the Botanical Gardens, Singapore, I made a large and, I think, fairly complete collection of all trees, shrubs and plants which were at the time in fruit or flower. Mr. Ridley informs me that the collection reached him in good order and he has made out the appended catalogue raisonné of it. It is in fact as an introduction to this catalogue that these notes have been written. From the nature of the moss upon the hill I should imagine that Benom is much drier than the hill tops on the main range. The commonest trees were "pagar anak" bintangor, kĕlat, rengas manak, mempassi, membungit and palâwan, at least those were the names of them given to me by the coolies. The "rengas manak" was not I was told poisonous. My Chinese cook however broke out with a bad eruption on his nose and face probably caused by "rengas" sap and on the night

before we started down one of the coolies was very badly stung on the body—so badly indeed that he got high fever and could carry nothing and almost had to be carried himself. I saw him about a week later and the eruption was still visible on his chest. Either therefore rengas proper existed on the hill or else "rengas manak" is not harmless.

The palawan trees were a great nuisance. The wood was so hard that the bliong's in the hands of the less expert coolies were badly gapped and I was obliged to order that one exceptionally good man should tackle them all. The tree seemed to me exactly like the palawan so common on river banks.

On the very top of the hill there was a good deal of "chandan" which Mr. Ridley has identified in a paper recently published in the Journal.

Throughout the whole trip I saw no getah, taban, chinga, merbau, petaling, or other valuable timber. On the lowest slopes of the hill there were however many fine "seraia" trees. The whole of the specimens identified by Mr. Ridley were collected on the top of the hill at a height of almost exactly 5000 feet.

The Benom "massif" consists of granite and I noticed that the sedimentary rocks were left behind very soon after leaving the low ground along the foot of the main range; they are found much higher up and in some places places higher than 1000 feet above sea level. Benom is an isolated granite intrusion without visible igneous connection with the main-range. In the long plain running southward from Raub the ridges which divide the Klan Bilut and Bentong are from their appearance of sedimentary rock. One of them Gunong Raca which overlooks Bentong township is of course conglomerate. This conglomerate is seen also at Jeram Kapur below Bentong. The pebbles in it are as far as I could see, not of igneous rocks but of quartzite and silicified slate. Its strike is a few points West of North and East of South and its dip (apparently) very steep. Similar conglomerates occur in the Ulu Jelai. The metamorphic limestone cliffs off Serdam at the foot of Benom seem identical in composition with those at Bukit Chintamani on the Bentong river and indeed with all the other limestones scattered, mostly in isolated cliffs throughout the Peninsula. In the Jelai river

this limestone has recently been shown to reach to a depth of over 900 feet below the present surface. The height at which the old sedimentary rocks remain on the east side of the main range as compared with the west is very noticeable when crossing the range by the Pahang Trunk Road. Further I have walked along the foot of the range the whole way from Tramun southward to the Triang (a tributary of the Pahang which rises in Jelebu) and have not only seen no granite but have found the pebbles in the streams to be mostly of sedimentary rarely of igneous rocks. The rocks over which I passed were all sedimentaries. The bed rock of the Bentong alluvial flat where the mines are worked is uniformly not a bed of china clay as is usual on the western side of the Peninsula but a denuded surface of slates on edge.

I was unable to ascertain the name of the hill on which the beacon is placed. It is certainly not Bukit Palas as I passed over Bukit Palas on my way to it. It may possibly be Kluang Terbang. At places however like Raub where no native seems to go into the more inaccessible jungle, local names are very uncertain.

If another attempt is made to fix a station on Benom I would strongly advise that another route be chosen. At Raub labour is very expensive and natives with any idea of local topography are nonexistent. Sakais there are none. Personally if I were to try again I should begin by making enquiries as to routes up the Dong or by the Krau, a tributary of the Jelai on the other side of the 'massif.'

List of Plants Collected.

Illicium evenium, King. Also occurs in Malacca, Selangor and Perak.

Polygala venenosa, Juss. var. This is the same plant as that collected by Wray on Gunong Bubu (No. 3813) and distributed under this name by King and is probably the var *gracilis* of Miquel. It is very unlike the ordinary form of the Penang and Perak hills, having a long terminal spike of flowers and not short axillary ones.

Garcinia, sp. In young fruit, branches grey corky, leaves lanceolate acuminate coriaceous 2 inches long and one and a half broad, petiole half an inch long axillary or supra-axillary few-flowered petals small, stigma discoid grooved. I have never seen this plant from elsewhere.

Calophyllum sp. Of this genus there are two species represented; one is perhaps a form of *C. retusum* the other has oblong blunt leaves. None of the specimens have flowers or fruits, but all have the curious bud-galls common to other species of the genus.

Anneslea crassipes, Hook. A big tree; specimens with very large fruit; occurs on Mt. Ophir.

Adinandra maculosa, Anders. A variety with smaller leaves than usual and glabrous fruit quite ripe.

Ternstroemia Scortechinii, King. Also occurs in Perak.

Gordonia imbricata, King. A rare plant once collected by Scortechini, in Perak.

Ternstræmiacea, a very striking plant apparently belonging to the same order but in fruit only was obtained by Mr. Barnes. It is a tree or shrub with dark colored branches, and coriaceous ovate lanceolate leaves with blunt points 1 inch to 1½ long 2¼ to ¾ inch wide with numerous close nerves and reticulations on the under surface. The upper surface is smooth dark green the under surface yellow when dry and the young leaves are red. The racemes are axillary about one inch long with about ten flowers. The fruit is a capsule on a very short pedicel. With a small rounded bract. The sepals are orbicular imbricate 4 in number, coriaceous with a scarious margin fringed with white hairs, and with three elevated ribs in the centre about ⅛ inch long. The capule ¼ inch long splitting into 4 acute lobes on one of which persists the fairly stout style with an obscurely lobed stigma. There is a persistent column in the centre. The seeds are linear curved not winged two in each cell.

The flowers have not been obtained, and consequently it is difficult to refer this with any certainty to

any genus. If as it appears it belongs to the order Ternstrœmiaceæ, it seems most nearly allied to *Pentaphylax* of China.

Pachynocarpus Stapfianus, King. Leaves elliptic shortly acuminate blunt base slightly acuminate 6 inches long 3 wide smooth with 6 pairs of nerves depressed above dark brown above, beneath grey with prominent nerves. and reticulations, petiole stout ½ inch long rugose, Panicles crowded compact short red scurfy. Bracts lanceolate scurfy ⅛ inch long. Flowers crowded less than ¼ inch long red scurfy, calyx and lobes lanceolate obtuse. Petals linear oblong scurfy. Stamens short ovate apiculate. Fruit solitary globose on a stout thickened pedicel, a little over ½ inch long, brown rugose, calyx lobes shorter than the whole fruit projecting as short triangular processes.

This tree was only known from a specimen collected by Scortechini, in fruit. It is very satisfactory to have also the flowers.

Elaeocarpus robustus, Roxb.

Bauhinia cornifolia, Bak. Flowers red.

Bucklandia populnea, R. Br. In flower. The leaves in the specimens are not tricuspid but ovate with three prominent nerves and coriaceous. The petioles and nerves on the back hairy or glabrescent, buds ferruginous hairy, the bracts are narrow as in Miquel's figure, in the Flora of Sumatra.

Weinmannia Blumei, Planch. In flower and fruit occurs on all the higher hills. Mt. Ophir, Perak.

Polyosma loete-virens, Griff.

Carallia multiflora, Miq. From description I take this plant to be Miquel's species collected once in Java by Harfield, the exact locality unknown.

Rhodamnia trinervia Bl.

Tristania meryuensis, Griff. Very characteristic of our higher

hills. The wood according to Mr. Barnes is exceedingly hard and broke the edges of the axes in felling.

Eugenia sp. Leaves very narrow lanceolate with a very long narrow point blunt, coriaceous dotted above, pale beneath one inch long, $\frac{1}{4}$ inch wide fruit in short axillary and terminal racemes $\frac{1}{4}$ inch long, small tessellate $\frac{1}{8}$ inch long.

E. subdecussata, Wall.

Anerincleistus macranthus, King.

Medinilla Clarkei, King.

Begonia Herveyana, King. Rhizome stout often rather long creeping. Leaves when young pink adult dark green, petiole over a foot long, blade ovate acute hardly in equilateral base rounded 6 inches long and 5 wide glabrous. Scape six inches long, lengthening in fruit, male flowers numerous about half an inch across, white outer sepals ovate rounded, inner ones narrower, stamens numerous anthers elliptic blunt not apiculate. Fruit fleshy 3-winged, one wing much larger than the other curved obtuse thick $\frac{3}{4}$ inch long, the others much shorter, deluscing along the base of the wing.

Besides this locality, it has been met with in Pulau Tinggi (Feilding) in Jeram Nyalas (Malacca) by Derry (No. 1130) and in Bukit Sulu (Negri Sembilan). It is called *asam susu* by the Malays.

Argostemma parvifolium, Bemi.

A. hirtum, Ridl. also occurs on Mt. Ophir.

Lucenæa sp. Evidently near *L. pentacme* of Stapf from Kinabalu, resembling it in the white bark of the stem and almost nerveless leaves but the peduncle of the head is longer and the bracts at the base are not connate in a cupule as in that species. The only species recorded from the peninsula is *L. Morindæ*, Jack. which is common in Singapore. This species is evidently undes-

cribed but as Sir George King is at present at work on the *Rubiaceæ* and probably has already seen it, I do not give it a name.

Timonius Tambosella, Tha.

Cephaelis cuneata var. debilis. A more slender plant than the usual form with smaller narrow lanceolate acuminate leaves 3 to 4 inches long and one inch wide or less, petiole ½ to 1 inch long. In fruit this seems to be a weak form of this species of which the common form often occurs high upon our hills.

Lasianthus sp. With lanceolate acuminate leaves strongly reticulate beneath nerves, petioles, and twigs hairy.

Ardisia villosa, Roxb.

A. oxyphylla, Wall. A variety with smaller oblong to oblanceolate leaves.

Linociera lancifolia, nsp. Branches pale, leaves opposite lanceolate acuminate, base cuneate 2 to 3 inches long ½ to 1 in. wide smooth, thinly coriaceous nerves inconspicuous on the upper surface, midrib elevated beneath, nerves alternate ten on the lower surface. Panicles small an inch long with a pair of broad oblong bracts ¼ inch long at the base. Flowers ⅛ inch long umbellate on the ends of the branches, pedicels ⅛ inch long, calyx lobes short ovate puberulous, corolla tube very short lobes linear obtuse from a broad base keeled glabrous. Stamens 2 short broad. Style thick shorter than stamens. Drupe cylindric acute.

Alyxia pumila, Hook fil. A form with larger leaves and fruits than usual. Calyx lobes puberulous.

Dischidia coccinea, Griff.

Hoya sp. near *H. parasitica*, but with much smaller thinner flowers. I have it also from Gunong Hijau in Perak.

Vaccinium bancanum, Miq. A variety with small leaves and fruits.

V. Teysmanni, Miq. var. with branches and petioles and base in midrib beneath covered with black hairs. According to the description the typical form is glabrous. I have obtained it also on Maxwell's Hill, Perak, where it was epiphytic and had pink flowers.

Rhododendron Malayanum, Jack.

Diplycosia urceolata, Stapf, var. This differs only from the plant described from Kinabalu in the leaves being ovate lanceolate and rather larger as much as 4 inches long by two wide, instead of obovate. The form of the leaves however seems rather variable. I have also met with it on Bukit Kutu and Bukit Hitam in Selangor. *D. macrophylla* of Beccari a native of Borneo is as far as description goes similar except in the leaves which more resemble those of the Peninsula plant.

D. lancifolia, nsp. Shrub with rather slender branches with whitish bark upper part setulose, leaves coriaceous lanceolate to ovate lanceolate acuminate, base narrowed to the petiole shining green above. Midrib and two side nerves depressed visible, beneath paler dotted midrib only visible raised, 1½ inch long ¼ to ½ inch wide. Flowers solitary axillary on slender pedicels nearly half an inch long with red setulose bristles. Bracts 2 short ovate pubescent. Calyx campanulate narrowed at the base lobes ovate acute with red hairs, ¼ inch long. Corolla longer glabrous. Stamens with long points opening by two pores yellow. Style rather long slender.

D. consobrina, Becc. A specimen collected by Mr. Barnes resembles the description of this Bornean plant.

Gaertnera Koenigii, Wight.

Aeschynanthus Hildebrandtii, Hook fil. Also occurs in Perak.

Ae sp., possibly a variety of this but with ovate acute leaves, and a bigger plant than I have seen of the species. The specimen is in fruit.

Didymocarpus near *albomarginatus*, Hemsl., but with leaves narrower at the base, in very young bud only.

Clerodendron deflexum, Wall. It is not usual to get this common low country plant at such an elevation.

Nepenthes sanguinea, Lindl.

N. gracilis, Korth.

Litsea sp. A narrow leaved species near *lancifolia* but glabrous; in fruit.

Micropora Curtisii, Hook fil.

Wikstræmia candolleana, Meisn. The Chandan of Pahang. This species is not recorded for our flora in the Flora of British India, but occurs on Gunong Hijau, Kedah Peak, and also at Kamposa in Kelantan. It is a shrub or small tree about 6 to 10 feet tall with smaller flowers than those of *W. indica*.

Loranthus evenius, Bl. This beautiful red flowered mistletoe occurs also in Singapore and in Perak.

L. tetragonus, Bl. New to the Peninsula.

Henslowia buxifolia, Bl. Not rare on our hills.

H. sp., near *Lobbiana*. Leaves ovate orbicular 2 inches long by one wide tapering into the petiole which is $\frac{1}{4}$ inch long, nerves five faintly visible on the under surface. Fruits two or three together axillary on pedicels half an inch long, oblong light brown $\frac{1}{2}$ an inch long, crowned by five short connivent calyx teeth; obscurely five grooved. This is remarkable for the large size and shape of the fruit. I have not seen it elsewhere.

Balanophora multibrachiata, Jungh. Also occurs on Mount Ophir.

Ficus diversifolia, Bl. A form with elliptic oblong leaves and small pedicelled figs.

F. fulva, Reinwaldt.

Quercus Rassa, Miq.

Podocarpus cupressinus, Bl.

Burmannia longifolia, Becc.

Dendrobium sinuatum, Lindl.

D. bifarium, Lindl.

D. Kelsalli, Ridl.

D. macropodum, Hook fil.

D. hymenopterum, Hook fil.

D. cornutum, Hook fil. A rare plant with good sized pink flowers originally collected by Wray in Perak.

Bulbophyllum capitatum, Lindl.

B. catenarium, Ridl.

B. montigenum, Ridl. Also on Kinabalu.

Eria vestita, Lindl.

E. æridostachya, Rchb. fil.

E. bidens, Ridl.

E. longifolia, Hook fil.

E. Scortechinii, Hook fil.

Ceratostylis clathrata, Hook fil.

Dendrochilum angustifolium, Ridl. nsp. Occurs also on Bukit Hitam, Selangor.

D. sp. in fruit only.

Coelogyne tomentosa, Lindl.

C. sulphurea, Rchbf.

C. carnea, Hook fil. This plant occurs in Perak also there is a figure of it in the Icones Plantarum which however represents the petals as fine as and very much broader than they actually are, so that the plant is nearly unrecognizable. I have however a specimen from Scortechini's collection distributed as typical *C. carnea* and a good pencil drawing by Scortechini showing the very narrow petals and labelled *C. carnea* by Hooker. The flowers are neither fleshy nor flesh-colored as the name would imply but rather thin textured even for a *cœlogyne* and brown and yellow.

Pholidota gibbosa, De Vr. This Javanese plant has not previously been recorded for the peninsula. It seems to be very closely allied to *P. carnea*, chiefly differing in the broad three-nerved petals.

Calanthe augustifolia, Lindl. This pretty white *Calanthe* grows on all our high hills.

Saccolabium bigibbum, Hook fil.

Corysanthes picta, Bl.

Smilax calophylla, Wall.

FERNS.

Humata pedata, Sm.

Lindsaya scandens, Hook.

Hymenophyllum Neesii, Hook.

Hymenophyllum polyanthos, Sw.

Polypodium cucullatum, Nees.

Pleopeltis Wrayi, Baker.

Elaphoglossum latifolium, Sw.

Vittaria falcata, Kze.

Also an *Alsophila* without fruit.

Selaginella chrysorhiza, Spring ?

The two typical hill Mosses *Pogonatum macrophyllum* and *Hypnodendron arborescens* also occurred in the collection.

H. N. Ridley.

Notes on the Formation of Words in Malay and Cognate Languages.

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Unlike the great majority of the better known Oriental languages the vernaculars of the Malayan family have not yet revealed the history of their growth and development. The Semitic, Persian, Indian and Chinese languages have not only preserved very early monuments of literature, which serve as infallible guides to the student, but we can follow their growth from step to step, from antiquity to the present day, without missing, as it were, a single foot-print in all the long journey. In this search for light on the origin and the roots of the language numerous sister-tongues have liberally added their testimony. Arabic literature and living speech step in where Hebrew tradition leaves a breach, and both supplement, and are supplemented by, each other and the Semitic varieties of cuneiform and other inscriptions. So it is also with Sanskrit, ancient Persian and the language of the Zendavesta. I remember very well the time, when owing to the lack of a Persian or Zend Dictionary I had to prepare my lessons in the Avesta and in the inscriptions of Bisûtûn with the help of a Sanskrit Dictionary. This will, at least, show the great benefit philologically derived from a comparison of cognate languages, even where the modes of writing and the alphabets are radically different.

In Chinese philology we have not only a literature going back—indirectly if not directly—to great antiquity, but we have also a record of the ancient sounds and signs used at an early date. These together with the comparison of numerous idioms and dialects, enable us to assign what at first appears as a motley of heterogeneous languages to their legitimate mother.

In the Malayan family of languages we have no ancient monuments of literature, but we have a large variety of tongues, which may all be pressed into service to shed their scant light upon the history of the language. I call their contribut-

ion scant because the historic element is almost entirely wanting. We have as yet no data as to the time of division of the various branches of this family, though some writers have settled this question to their satisfaction by intuition, without, however, convincing the careful enquirer. Nevertheless the comparison of Malayan languages will lead us a considerable distance towards the solution of the problem of the proto-malayan language. Nor will this task be a very difficult one after the necessary materials for such a work have once been collected.

In the present paper we will attempt to study, in some of its phases, a more difficult subject, not the original form of words but the formation of words (Wortbildung). We will find not a little agreement in the manner of these formations in widely differentiated languages of this family, and this agreement must necessarily point back to a common source. Such a study, to be on a strictly scientific basis, should start from one of the more unchanged and original languages of the branch, preferably from the Batak (Batta) or one or the other of the Filipino vernaculars, and not from the highly disintegrated and corrupted Malay of the present day.* I have, however, willingly incurred the difficulty and undergone the inconvenience of making Malay the foundation of my remarks, because Malay is a language better known to my readers and consequently of greater interest to them.

The simplest formation of words of a new meaning in Malay is by

I. REDUPLICATION.

Herein and in the use of "classifiers" or numeral co-efficients the Malay family of languages is related both to the Chinese (Mongolian) and the Papuan languages. Let us en-

* This must not be understood as in any sense disparaging to the usefulness and importance of the language. Malay has bought its popularity as a medium of speech over so vast a territory at the same price at which English has acquired its world-wide sway: Grammatical finesse and linguistically interesting forms have been lost in equal proportion as the language has affected larger circles of population.

deavour to classify the varieties of the meanings designated by simple reduplications.

1. Specialization and differentiation.

I believe that I place myself in opposition to every grammarian, who has written on Malay, by denying that reduplication is one of the modes of expressing the plural. I will not make any superfluous quotations, but in half a dozen grammars which lie before me, I find it stated that this is one of the plural formations, though in almost every case, the said grammarians find it impossible to state why the word should be reduplicated, as already the single word implies the plural, and why even the reduplication should be joined together with the adjective سكل *segala* which is universally accepted as indicating the plural. A few careful grammarians have noted the fact that only few words can form plurals by means of a reduplication. This observation should have led them to a correct understanding of the meaning of such alleged plurals. The universal paradigma of this "plural" in grammars is راج٢ *raja-raja*. It is well known that راج *raja* alone can mean "kings;" now if *raja-raja* should be used to avoid ambiguity, or to distinguish it from a possible singular "king," why should in almost every case سكل *segala* be added: سكل راج٢ *segala raja-raja*, where the translation "all the kings" or "all kings" is quite out of the question?

In accordance with other Malayan languages, including the Malagasy, I explain the reduplication as intended to specialize the sense of the word. A careful study of Malay literature, aside of any other language, might have led to a correct understanding of the expression. Take for example the ever-recurring phrase in Malay court novels:

دهادف اوله سكل راج٢ دان منتري هلبالغسرة بدواند سكلين

di-hadap oleh segala raja-raja dan mentri, hulubalang serta biduanda sekalian (Isma Yatim, passim). Not once in this frequent phrase another of the nouns occurring in it, which are all plurals, is found in reduplication, such as mentri-mentri, hulubalang-hulubalang, biduanda-biduanda, while raja is always reduplicated. The heading of this paragraph will supply the explanation of the difference. While the other nouns denote certain offices or ranks, the members of which are equals among themselves, all being ministers or officers of the body-guard, or pages, the title "raja" includes all princes of royal blood (usually below the rank of tengku and engku), inclusive of that large class of attendants at court, who by some however distant blood relation with the ruling prince are thereby differentiated from outsiders. It cannot be denied that there is the greatest variation in rank included under this title, and this the Malay writer and speaker expresses by the reduplication. We may translate the phrase therefore: "(The prince) waited upon by the various classes of Rajas, and the ministers, officers of the body-guard and the pages together."

If there should be yet a reluctance in giving up the long accepted view of seeing in these reduplications proper plurals in our sense of the word, I would refer the reader to those of the Malay classics, which, like the Bustanu's salatin*, the Taju's salatin, and of more modern works, the Taman Permata, are largely made up of Arabic quotations with their Malay translations. It is a very easy task to compare these translations with the Arabic originals, and it will be seen, that in every case where the Arabic plural is at all expressed in Malay, it is done by سكل *segala*. Passages like these are of great interest to the student of the language, because they are the only

*The Bustanu's salatin is one of the most interesting of all Malay works, especially as it is dated. It was written in Acheh, Sumatra, in 1641 (1040 of the Muhammedan era) by Nuru'ddin ibn Ali ibn Hasanji ibn Muhammad al Hamidi (the author is very careful in giving so much of his pedigree) under the patronage of Sultan Iskandar II. Of the seven volumes the first two have been published by R. J. Wilkinson in 1899 and 1900. I possess a MS copy of the seventh volume. The work deserves the careful study of all somewhat advanced students of the language.

authentic commentaries, giving us the exact meaning of the idiom of the writer, supposing however that he fully understood the Arabic of his quotation, which is highly probable in the majority of cases.

The "specialization" expressed by reduplication leads us to another closely connected meaning, which I do not hesitate to place under the same heading. To start from the same expression راج٢ *raja-raja*, we have found that it cannot be translated "kings," but that the meaning of *raja* has been specialized as meaning something not exactly a king, but only similar to one. This is a kind of specialization very frequent in Malayan languages. Of the large number of examples I can only quote a small portion, which will, however, fully suffice to explain the rule.

لاغيت٢ *langit-langit*, a sky yet not a sky: a baldachin;

بواة٢ *buat-buat*, to do, yet not to do: to pretend;

اولر٢ *ular-ular*, a snake, yet not a snake: a streamer, pennon:

ايم٢ *ayam-ayam*, a hen, yet not hen: a waterfowl;

جاروم٢ *jarum-jarum*, a needle, yet not a needle, the needle of a balance.

In the same way فوتيه٢ *putih-putih* means whitish, not white, بيرو٢ *biru-biru* bluish, not blue, ماسق٢ *masak-masak* to play at cooking, not to cook, انق٢ *anak-anak* a doll, not a child. اڤي٢ *api-api*, the mistletoe, which causes trees infested by it to have the appearance as if burnt by fire (api). Here it is also worthy of note that in order to express "flaming" anger or wrath the reduplication براڤي٢ *berapi-api* is used,

while the proper word when speaking of natural flames would be برافي *berapi*.

To this class belong expressions such as

قارغ *parang*, long knife, قارغ٢ *parang-parang*, a fish resembling it. قاري *pari*, rayfish, قاري٢ *pari-pari*, a ring of rotan resembling in shape that of the ray.

Many words are now found in reduplications only, which may possibly belong to the same class, though we have no means at hand to prove it. Such words are كانق٢ *kanak-kanak*, سيد٢ *sida-sida* and many others, while in many cases references to other languages help us to place the words under this group. Such a word is لاكي٢ *laki-laki*, manhood, courage, male, brave, which cames from *laki*, strong, great (so in Tagalog, in Malagasy : *lehy*). In Malay the single word signifies the "stronger," but not the "better" half, the husband.

I now append a short list of reduplications from cognate languages, which will show that in this respect the greatest similarity exists.

Reduplications expressing similarity not identity are in

Malagasy:

lahy, husband,	*lehilahy*, man, male ;
vahy, wife,	*vehivahy*, woman, female ;
sala, wrong,	*salasala*, doubtful ;
fotsy, white,	*fotsyfotsy*, whitish ;

Batak:

lahi, husband,	*lahilahi*, male, man ;
boru, daughter,	*boruboru*, female, woman ;

Tagalog :

puti, white, *puti-puti*, semen, sperma ;

I refrain from further illustrating the use of these reduplications by examples. as this would encroach too much upon the space at my disposal.

2. *Emphasis and repetition.* The second meaning expressed by reduplication is emphasis and repetition. This is so common in almost all languages that it is not necessary to go into many details, especially as no radical change of meaning is effected by such reduplication. I select the following examples :

هابيس٢ *habis-habis*, completely finished;

هارف٢ *harap-harap*, to hope fervently;

بولة٢ *bulat-bulat* (also in Tagalog) all, most sincere ;

لام٢ *lama-lama*, for ever so long;

لاين٢ *lain-lain*, (also in Tagalog) altogether different;

اندە٢ *endah-endah*, very beautiful;

تمبه٢ *tambah-tambah*, to add repeatedly;

دوا٢ *dua-dua*, by two and twos, etc., etc.

It may suffice to say here that this sort of reduplication is found in Tagalog, Batak, Malagasy and every other Malayan language.

Reduplications, which are combined with secondary changes of form do not interest us here, where we are treating merely of the reduplication of primitive words.

With regard to partial reduplication, such as

للاكي *lelaki* beside لاكي٢ *laki-laki*,

ڤڤارو *peparu* beside ڤارو٢ *paru-paru*,

تتمڤن٢ *tetampan*	beside	تمڤن٢ *tampan-tampan*,	
ججمبن *jejamban*	beside	جمبن٢ *jamban-jamban*,	
ججنغ *jejenang*	beside	جنغ٢ *jenang-jenang*	
ببرم *bebram*	beside	برم٢ *bram-bram*,	

no special mention need be made, but that they are found in various Malay languages, (cf. Tagalog *lalaki*, male) and that they all belong to the first group of reduplications, those that express specialization and differentiation.

II. Ancient Vocative Forms.

It may sound very much out of place to speak, in a language like Malay, which has neither declension nor conjugation, of a vocative case. Nor do I wish to imply, by the use of the expression, that the language has ever had a declension. Such a supposition appears to me altogether at variance with the genius of the Malay language. But there is no doubt, that in several of the languages of this family we find a peculiar change of form in words used in the address of persons, which may well be designated as vocatives, and this has been repeatedly done by careful grammarians. It cannot be denied that a considerable number of these expressions, to be presently mentioned, have already lost their distinctly vocative character in Malay, while some forms are losing their character more and more. It may be said that, with one or two exceptions, the forms mentioned here, having yet a distinctive vocative meaning, belong to the language of the past and are preserved almost exclusively in court language or in the poetic style.

Here is a list of the commoner of these expressions:

انغ *anang*, oh child! from *anak*;

ادیغ *ading*, oh younger brother! from *adek*;

باڤغ *bapang*, oh father! from *bapa*;

امبوغ *embong*, eldest child! from *embok*;

اندغ *indong*, mother! from *indok*;

اچغ *achang*, boy! messenger!

I add to these vocative forms words like the following: ابغ *abang*, elder brother; اينغ *inang*, nurse (see examples from Batak below); دايغ *dayang*, maid; اغ *ang*, هغ *hang*, as pronouns of the second person; سولغ *sulong*, eldest son; and with some diffidence I add the ancient names of divinities: يغ *yang* and سغ *sang*. All these words have distinct vocative forms, though they may have lost the vocative meaning, for it is easily seen, how these words, constantly used in the vocative, finally had to do duty for other cases also.

We have forms corresponding exactly to these in Batak, and here in fullest every day use. I mention only the following:

amáng, from *áma*, father!
ináng, from *ina*, mother! (see *inang* in Malay):
ompúng, from *ómpu*, grandfather!
hahâng, from *hâha*, elder brother or sister! (see Malay كاكق *kakak*);
itóng, from *ito*, elder brother! etc.

The only expression denoting close relationship in Batak, which has no vocative form in use is *anggi*, younger brother, though even this word becomes *angging*, when used in intercourse with younger friends, not brothers, just as *itóng* (from *ito*) and *ibotóng* is used as an address to elder friends.

In Malagasy all forms ending in ng have been changed, and this is the reason, I believe, why we have no formal vocatives. The case of address is expressed as in modern Malay, by particles of exclamation.

In Tagalog, and this opinion is strengthened by the same tendency mentioned above of Malay, the vocative has gradually gained ascendancy over the other cases, so that all nouns and adjectives and pronouns add to their vocalic ending (also to final n) the ending of the old vocative. So we have throughout the language.

inang, mother, from *ina*;

amang, father, from *ama*;

panginoong, master, lord, from *panginoon*. In order, therefore to distinguish the proper vocative it is necessary to add the particle of exclamation *oy* or *ay*, which corresponds to the Malay هي *hei* or *hai*.

III. Ancient Adjective Forms.

Lexicographers, rather than grammarians, have noted the existence in Malay of some hitherto unexplained parallel forms, such as:

مالغ *malang* beside الغ *alang*;

ماسيغ *masing* beside اسيغ *asing*;

ماسم *masam* beside اسم *asam*;

ماسين *masin* beside اسين *asin* (cf. Tagalog ma-asin),

مالف *malap* beside الف *alap*

An opinion regarding these forms, that they may be introductions from the Javanese, is disproved on closer investigation.

By comparison with other Malayan languages, however, we learn beyond doubt, that we possess in these and a few other expressions highly interesting adjective forms. The need, in Malay, of a special form for adjectives must have certainly been felt, especially as the common forms used by us in that sense are indistinguishable from nouns. Though custom has given, to mention but one example, to *besar* the meaning of the adjective "great, large," it must not be forgotten that in very many uses of the word it is a distinct noun. Take the following sentences:

hulubalang itu se-tengah tujuh kaki besar-nya.
Lembah itu dua batu lebar-nya.
Sungai itu dua puloh batu panjang-nya.
Bukit itu se-ribu kaki tinggi-nya.
Anak itu se-puloh tahun 'omor-nya.

In these sentences we have *besar* (size), *lebar* (breadth), *panjang* (length), and *tinggi* (height) absolutely parallel with the Arabic noun *'omor* (age). The substantive use of these "adjectives" is certainly the more original, and even now the more idiomatic.

The ancient adjectives were formed from these "roots" by prefixing the syllable *ma-*. Such forms are in constant use in Tagalog, the languages of Borneo, Batak and Malagasy, as we will show by numerous examples, which might be increased almost *ad libitum*. They must have been used to a much larger extent even in historical Malay, and we should expect to find some remnants of this use in geographical names, where antiquities are much more likely to remain unchanged. It would be worth the labour of a student to make careful lists of Malay geographical names, laying stress upon peculiar expressions, and seeing that modern corruptions (in the mouth of Tamils, Chinese and foreign Malays) be eliminated. I will mention but one name belonging to this group. In the Province Wellesley we find the name of a hill and an adjacent town, usually spelled Bukit Mertajam. The latter word is a corruption of *matajam*, which means "sharp, pointed," Batak *ma-tajom*, and the name "pointed hill" is quite in accordance with the character of the elevation.*

In Batak a careful distinction is maintained in the use of the simple root and that of the adjectival form with the prefix.

The latter is only used as a predicate, never as a qualifying adjective. The sentence "*Ma-timbo hayu on*" means: this tree is high, while the expression "this high tree" is rendered by "*hayu na timbo on*," i. e. this tree which possesses height, which is high, this high tree. Other words belonging to this class are:

* It is possible that the very word Malayu comes under this rubric. No previous explanation of the term has found general acceptation. The Tagalog "malayo" means "far, distant, strange, stranger," certainly a very suitable appellation for the roving strangers that settled in the archipelago.

mamara, from *mara*, red (Malay ميرهٗ *mĕrah*):

malemba, from *lemba*, faint. (Malay لمبه *lembeh*):

mamora, from *mora*, rich (Malay مورهٗ *murah*);

mapitung, from *pitung*, blind.

In Malagasy we have forms like :

malady, quick, *manitra*, fragrant, *maluza*, clever, renowned, *malama*, slippery, smooth, *malemy*, soft, tender (Malay لمه *lemah*), *maloto*, filthy, dirty, *marina*, just, righteous,

mahitsy, straight, *masina*, holy, *mainty*, black (Malay هيتم *hitam*, Dusun *meitam*, Tag. *maitim*).

In Tagalog we find :

ma-itim, from *itim*, black, Malay هيتم *hitam;*

ma-lalim, from *lalim*, deep, Malay دالم *dalam;*

ma-lambot, from *lambot*, soft, kind, Malay لمبوة *lembot;*

ma-lapar(d), from *lapar(d)*, hungry, Malay لاڤر *lapar*;

ma-laki, from *laki*, strong, great, Malay لاكي *laki*;

ma-hina, from *hina*, weak, mean, Malay هينا *hina*;

ma-lakas, from *lakas*, swift, strong, Malay لكس *lekas*;

ma-sakit, from *sakit*, sick, painful, Malay ساكيت *sakit;*

ma-puti, from *puti*, white, Malay ڤوتيه *putih.*

The Dusun language of Borneo presents among others these examples : See Journal R. A. S., Straits Branch, vol. 30, 1897, p. 1. sqq.

me-itam, black;
me-suan, dark;
m-iad, alike (from *iad*, form);
m-alus, soft, from *halus*;
m-onsom, sour, from *onsom*, cf. Malay *masam*.

I think that these lists of words will leave the reader satisfied that we have here in Malay a few forms of great antiquity, which go back upon a time when the Malayan languages were not yet divided up into their present divisions, and it is only with the help of the cognate languages of the family that we can grammatically explain them.

IV. Ancient Verbal Forms.

In the formation of verbs, where the modern Malay has effected the greatest change and simplification, we find nevertheless numerous traces of antiquity, of which the Malay has almost or altogether forgotten the original connection.

1. Let me first refer the reader to pairs of words like the following.

كتر *getar*, to tremble. كمتر *gemetar*, to tremble vehemently:

كرتق *gertak*, to spur on, كمرتق *gemertak*, to frighten with weapons;

كولغ *gulong*, to roll up, كمولغ *gemuloug*, rolled up and twisted;

كيلغ *gilang*, to glisten, كميلغ *gemilang*, very glistening;

كيلف *gilap*, to glisten, كميلف *gemilap*, very glistening;

كلاتق *gelatok*, to tremble, كملاتق *gemelatok*, to tremble violently;

كلكوة *gelegut*, to tremble, كملكوة *gemelegut*, to tremble violently;

تورن *turun*, to descend, تمورن *temurun*, farther descent;

تراغ *trang*, light, تمارغ *temarang*, half-light, glooming;

تابر *tabor*, to scatter, تمابر *temabor*, to scatter everywhere;

چورم *churam*, steep, چمورم *chemuram*, declivity;

لوكة *lukut* and لموكة *lemukut*, to pound parched grain;

چرلغ *cherlang* and چمرلغ *chemerlang*, to glitter, glisten;

كورہ *guroh* and كمورہ *gemuroh*, thunder, rolling noise;

تندغ *tandang* and تمندغ *temandang*, outfit, get-up;

تالي *tali* and تمالي *temali*, twisted cordage;

and perhaps the following:

تبوق *tebok* and تمبوق *tembok*, perforated;

تبة *tebat*, and تمبة *tambat*, tied up;

تڠكوڠ *tanggong*, to bear responsibility, تمڠكوڠ *temenggong*, dignitary.

In many cases the similar sense of the two words will invite an association between them, but this does not provide us with a grammatical explanation of the second form.

We have here forms of a conjugation, which in Batak Grammar has been designated as the Fourth, in Tagalog as the First Conjugation. It is formed by infixing into the verbal stem, after the initial consonant the syllable -um- (or, which does not concern us here, if the root commences with a vowel or labial letter, by prefixing the syllable um-). In the first case, -um- is called an infix, in the latter a prefix. Here are a few of the many examples which might be adduced:

Malay:	Batak:	Tagalog:
سورة *surat*,		*sulat*, *sumulat*, to write

سورو *surut*, *surut*, *sumurut*, to withdraw, to bend back.

اوبه *ubah*, *uba*, *umuba*, *ubo*, *umubo*, to change.

It will be seen that but for the fact that in Malay the vowel sign of the conjugation has weakened, being depressed from u to ŭ or ĕ, the above mentioned Malay forms fully correspond to the Batak and Tagalog forms. Such a slight change is nothing improbable, yet we need not indulge in conjectures in the face of even so slight a change, for we find most of the original forms preserved in Malay dialects, e. g. *gilang-gumilang*, *gilap-gumilap*, *gelatok-gumelatok*, *turon-tumuron*, *churum-chumuram*, *lukut-lumukut*, *yuroh-gumuroh*, etc.

Even in the classes of verbs, which are conjugated according to this paradigma, the closest agreement exists. They are mostly verbs denoting visible motion, trembling, (See Malay: *gemetar*, *gemelatok*, *gemelegut*, etc.), and verbs, to whom this conjugation gives the power of "intensiva" (compare Malay *gemetar*, *gemertak*, *gemilang*, *gemilap*, *gemelatok*, *gemelegut*, *temabor*, etc.)

2. We will now notice another class of verbal formations which also appear to be a remnant of a now obsolete conjugation. The examples given below do not exhaust the large stock preserved in the language, but are merely chosen to illustrate the existence of the conjugation, while many other words doubtlessly belong to this class, though their radicals have been lost to the Malay vocabulary.

تكن *tekan*, to press with the hand,

تلكن *telekan*, to lean on the outstretched and stiffened arm;

تكڤ *tekap*, to press softly with the hand,

تلكڤ *telekap*, to brush away with the hand;

تيڠكه *tingkah*, character,

تليڠكه *telingkah*, to be of different character, to collide;

تافق *tapak*, and — تلافق *telapak*, foot-print;

تفوق *tepok*, to pat, — تلفوق *telepok*, to tap softly, as in applying specks of gold and silver flocks upon paper or cloth;

تمڤڤ *tempap*, and — تلمڤڤ *telempap*, to lay the hand flatly on, to measure by hand's breadths;

چوڤر *chupar*, and — چلوڤر *chelupar*, to babble incessantly;

ساڤوة *saput*, to cover with clouds, etc., — سلاڤوة *selaput*, to cover densely or closely;

سمڤڠ *sēmpang*, to go off sidewards, — سلمڤڠ *selēmpang*, to jump sideways;

سمڤي *sampai*, to hang clothes, — سلمڤي *selampai*, to wear over both shoulders, like a shawl;

سندڠ *sandang*, to tie sideways, — سلندڠ *selendang*, to wear sideways over one shoulder;

سودڠ *sudang*, and — سلودڠ *seludang*; to decorate with flowers in a peculiar manner;

سيدق *sidik*, and — سليدق *selidik* to examine closely;

سيسه *sisih*, and — سليسه *selisih*, to quarrel, dispute;

كوسق *gosok*, and — كلوسق *gelosok*, to rub;

كمبوغ *gembong*, and كلمبوغ *gelembong*, to bubble up;

ككق *gegak*, to make an indistinct noise, كلكق *gelegak*, a bubbling noise.

ككر *gegar*, and كلكر *gelegar*, to vibrate;

كتر *getar*, to tremble, كلتر *geletar*, to tremble violently;

كيتق *getek*, to be forward, as an impudent woman, كليتق *geletek* to feel sensual desire, to suffer of nymphomania,

كوكر *gugor*, to drop, esp. when unripe, كلوكر *gelugor*, a wild mango, which falls in large numbers, when unripe;

كمبوغ *kembong*, to be swollen, كلمبوغ *kelembong*, to be swollen, blown up;

كڠكڠ *kangkang*, to stand open, كلڠكڠ *kelangkang*, to stretch out the legs, wide open in indecent posture;

كوڤس *kupas*, and كلوڤس *kelupas*, to peel off.

The enumeration of such examples might be continued much longer, but I will add but a few words, which appear to belong to this class, though the primitive forms are not now extant in Malay:

كليسه *gelisah*, to be restless;

كليچه *gelĕcheh*, to slip, to glide;

كلنچور *gelunchor*, to slide down, to glide;

كليڤر *gelipar*, to glide out, as a knife;

كلوڤق *kelupak*, to open up, as the developing banana bud (cf. kupak);

سلوبغ *selubong*, to cover;

سلغكر *selongkar*, to turn upside down;

سلغكر *selengkar*, to be anxious;

سلغكغ *selongkang*, to be counterfeit;
etc., etc.,

All these forms indicate conjugational changes of the primitive words, with which most are coupled in the enumeration above. It is a conjugation which corresponds to the Tenth conjugation of Batak Grammar, and is formed by the infix -al- and another verbal infix or prefix. While there exist in Batak four different classes of these verbs, according to the difference of the infix or prefix combined with the characteristic of the conjugation -al-, the Malay seems to have preserved none but forms which combine the commonest of all verbal prefixes, me-, men-, meng- mem- or meny- with the infix -al-. I know of no similar formations in Malagasy and Tagalog, though they might possibly be found after a more careful search, perhaps in a slightly varied form, in one or the other of the Philippine languages. I will, however, for comparison, subjoin one or two examples from Batak:

mangh-al-aputi, to do hastily (from *haput*);

mand-al-etes, to be open (as country without jungle);

mand-al-utus, *man-al-utus*, to glide swiftly along (as a boat under sail).

3. Before closing my remarks on the ancient forms of conjugation in Malay, it is necessary at least to mention the most common of all verbal changes, the one which in Malay has superseded all the rest. I refer to the one marked by the prefix: me-, men-, meng-, mem- or meny-, all of which are really the same, modified slightly by combination with the initial consonants or vowels of the verbs. This conjugation is

found in all Malayan languages, as the following examples will show. By selecting Tagalog, Batak, and Malagasy verbs, which are also found in Malay, it becomes unnecessary to select a separate list of Malay examples.

Tagalog:

mang-aral (*aral*) to teach, preach, Malay *mengajar;*
man-ubus (*tubus*) to redeem, Malay *menebus;*
mam-uti (*puti*) to whiten, Malay *memutih;*
man-ulat (*sulat*) to write, Malay *menyurat.*

Batak:

mang-handang (*handang*), to fence, Malay *mengandang* (*kandang*);
mang-embang (*hembang*), to spread out, Malay *mengembang* (*kembang*);
man-urat (*surat*), to write, Malay *menyurat* (*surat*);
mam-unu (*bunu*), to kill, Malay *membunoh* (*bunoh*);
man-obus (*tobus*), to redeem, Malay *menebus* (*tebus*).

Malagasy:

man-enona (*tenona*), to weave, Malay *menenun* (*tenun*);
man-ampana (*sampana*), to separate, Malay *menyempang* (*sempang*);
man-dalo (*lalo*), to pass by, *malay melalu* (*lalu*);
man-doa (*loa*), to spit, *malay meludah* (*ludah*);
mam-eno (*feno*), to fill, *malay memenoh* (*penoh*);
mam-otsy (*fotsy*), to whiten, *malay memutih* (*putih*);
mam-ono (*vono*), to kill, *malay membunoh* (*bunoh*);
man-irakira (*kirakira*), to finger, to count, Malay *mengira-ira*, (*kira-kira*).

The writer of these fragmentary notes on Malay Grammar trusts that his readers will excuse the many imperfections of this article. Though the subject treated in these pages has occupied the interest of the writer for a considerable time, the actual writing was done under great inconveniences, in the spare moments of a very busy period, and without the advantage of a large library close at hand. He should, however, feel well repaid for having undertaken the task, if by his attempt others would be encouraged in taking up this inviting subject.

The Sakai and Semang Languages in the Malay Peninsula and their relation to the Mon-Khmer Languages.

By P. W. Schmidt, s. v. d.

Reviewed by W. D. Barnes.

In the third and fourth numbers of the eighth part of the sixth series of the Bijdragen tot Taal-Land-en Volkenkunde van Nederlandsche-Indië, published in 1901, is a paper by P. W. Schmidt, S.V.D., written in German with the title "Dir Sprachen der Sakei und Semang auf Malacca und ihr Verhältniss zu den Mon-Khmer-Sprachen." The following abstract of it will I think, have great interest for readers of the Journal.

The author begins his introduction as follows:—

"'More important than these connections with the An-
"namite language are the undeniable relations of our mono-
"syllabic Khasi-Mon-Khmer root-stock with the Kohl language
"with that of Nancowry and with the dialects of the abori-
"gines of the Malay Peninsula. We should not however be justi-
"fied in deducing therefrom an ancestral connection with these
"partly polysyllabic languages.' So wrote E. Kuhn towards the
"end of his 'Articles on the languages of Further India' Beit-
"räge zur Sprachenkunde Hinterindiens. Sitzgsb: d. k. bayer. ac.
"d. w. phil-hist. LL 1899 I. p. 219 f.f.) Thus he leaves open the
"question whether there exists between the Khasi-Mon-Khmer
"group and the Khol languages, that of Nancowry and the
"dialects of the aborigines of the Malay Peninsula, an intimate
"actual relationship, or whether the evident identities are due
"merely to external influences.

"Some years later—1894—E. (sic.) Otto Blagden in the
"Journal of the Straits Branch 27 pages 21-56, without appar-
"ently knowing anything of Kuhn's work put forward a more

"complete comparison of the Vocabulary of the dialects "of the Peninsula aborigines with that of the Mon-Khmer "(Anam) languages. But as his title "Early Indo-Chinese in- "fluences in the Malay Peninsula, as illustrated by some of "the Dialects of the Aboriginal Tribes" shows, Blagden also "did not go so far as to conclude that the identities to which "he drew attention arose from any intimate connection between "the two groups of languages. He says, 'But even to assume "that the aboriginal dialects are cognate languages which should "be classified in the Mon-Annam family would be going further "than our evidence justifies us in doing.' Neither Blagden nor "Kuhn had examined the whole material which is available on "the subject of these aboriginal dialects. It is my purpose to "collate this full material and to endeavour by its aid to remove "the present uncertainty concerning these dialects and to settle "their genealogical relation beyond doubt. For this purpose "it is first necessary to settle the relationships of these dialects "to one another, a task which in itself demands much labour "since no comprehensive work has been done on the subject. "The first half of my paper will comprise this comparison, and "the comparison of the aboriginal dialects with the Mon- "Khmer languages will occupy the second half."

His first part the author begins with a list of publications in which words, vocabularies, etc. from the aboriginal dialects have been given. This list is I presume the completest yet published and I give a full abstract of it. Journal of the S. B. R. A. S. Vol. I, p. 38; V, p. 129; VII, p. 94; VIII, p. 9; XXIV, p. 13; XXVI, p. 41; XXVII, p. 27; XXX, p. 13.

(1). T. J. Newbold "Political and Statistical Account of the British Settlements in the Straits of Malacca." London, 1839, Vol. II, pp: 369-434.

(2). The MSS of Hrolf Vaughan Stevens. Veröffentl: d. K. Museums f. Völkerk. zu Berlin; Bd 2 und 3.

(3). Marsden's Miscellaneous Essays:—A Short List of 'Jakoon' words from Raffles of 'Jooroo' Semang (J. Anderson given as collector) and of 'Quedah' Semang.

(4). Roberts' Embassy to the Eastern Coasts of Cochin China, Siam, Muscat:—'Jooroo' Semang—A list of words (Mr. Maingay given as collector) and 'Quedah' Semang (McLunes

given as collector):—apparently the same lists as those given by Marsden.

(5). Klaproth, Journ. Asiatique 12 pp. 241-243 (Semang.)

(6.) Mentera-Glossen (Mantra) by Borie, Tijdscrift voor Ind-Taal-Land-en Volkenkunde 10 pp: 439, &c.

(7). Crawford. History of Indian Archipelago, Edinburgh 1820. Nrs. 12: ('Quedah' Semang—apparently the same list as given by Marsden and Roberts).

(8). Sakaya S. Kerbou &c. by L. de Morgan "Bulletin de la Société Normande de Géographie, Rouen 7. 1885. p. 434 &c. also printed in L. de Morgan Exploration dans la presqu'île Malaise, Paris 1886.

(9). J. Low, Sakai in Perak. Journal of the Indian Archipelago. Old Series IV, p. 430.

(10). Tomlin. A list of Samang words, "Extract from the Malacca Observer from an article on Tomlin's Mission-Travels (Royal Library, Berlin).

(11). Miklоucho-Maclay, Tijdschrift voor Ind.-Taal-hand-en Volkenkunde 23 reprinted in Vol. I of J. S. B. R. A. S.*

The next ten papers contain a critical examination of this material. The author points out that several of the old lists are wholly or partly copies of one another and laments the infinite variety in the methods adopted by the different collectors in the spelling of words given. 'Clifford alone' he says (to some extent Blagden and Hewitt) makes a praiseworthy 'attempt to give a determinate value to the vowels used."

The author himself employs throughout the system of Fr. Müller except that he uses ǧ instead of dž.

The next 75 pages contain a vocabulary compiled from the various lists, etc., detailed above. This vocabulary contains

* Here and elsewhere the author also quotes the following books :—

Alb: Grünwedel. Veröffentlichungen aus d. k. Museum für Völderkunde in Berlin (1894).

Bd: 3 Teil 2. p. 145. (Bibliography and Glossary.)

R. Martin. Die Ur einwohner der Malayischen Haltinsel. Sonder Abdr. aus. d. Corresp.—Blatt der deutsch Anthrop. Gesellschaft, 1899. Nrs. 10 p. 6.

1249 roots arranged alphabetically. The author explains that it is possible that in some cases further enquiry or rather fuller material for enquiry may show that some of his roots may require correction, but contends that for his purpose the arrangement adopted is the most useful one. All hypothetical root-forms are enclosed in brackets. All Malay loan-words are omitted.

Next follow the only available 'texts' viz:— those given by Skeat in Berisi by Clifford in Sen-oi and by de Morgan in Sakai of S. Kerbou and S. Raya, and in 'Söman.' The translations are given in each case.

The next thirty pages contain a discussion of the 'Grammatik.'

The fourth subsection of the first part is headed "The re-"lation of the dialects to one another." The author begins as follows:— "The questions as to the relation of these "languages to one another and to their correct grouping are "the more important since the races who speak them have no "ethnological unity. The Sakai although sharply distinguished "from Mongolian races have a more Mongoloid character than "have the Semang. The Semang on the other hand belong "as even B. H. Meyer's very critical examination shows, "to the Negritoes. Our examination has therefore a further "meaning in that it aids in answering the question whether "these Semang-Negritoes have a language of their own." In the next nine pages the author examines in detail the similarities and differences in the vocabularies of the various dialects and concludes that, as far as the present state of our knowledge allows us to judge, the Sakai and Semang languages are one. He then points out the two marked groups into which this one language falls. In the one group come the words, etc., collected from 'Quedah-Semang' Semang of Tjoh. Steven's Semang, Semang of Ulu Selama, Mikonho-Maclay's Ulu Kelantan and Ulu Petani, Tomlin's Semang 'Jooroo-Semang,' in the other words, etc., collected from Bersisi, Palou, Ulu Indau, Sakei of Sungei Raya, Clifford's Sen-oi, Sakai of J. Kerbon, Sömang of de Morgan, Clifford's Tembe. Perak Semang and Chanderiang Sakai.

The author now points out that it is not safe to believe that collectors of vocabularies who have called certain races

Sakais or Semangs have in all cases correctly described them. He therefore tests these statements by the locality, physical peculiarities, etc., of the tribes in question. He points out that Semangs do not exist in the southern part of the peninsula and quotes R. Martin who gives as their country northern Perak, Kedah, Rahman, Rangan, and Kelantan, a description with which Stevens agrees. He further notes that the Semang use or have used the bow, and that there is no record of the Sakais having done so. He concludes that the Semangs in his first group are correctly described but that de Morgan's 'Söman' and the 'Perak Semangs,' and 'Kenning Semangs' mentioned in fifth volume of the J. S. B. R. A. S. may very possibly have been Sakais or at all events mixed races. The Sakai who form his second group fall linguistically into two sub-classes the divisions between which seem to be confirmed geographically by Clifford's line from Blanja on the Perak River to the Bidor Mountains and thence to Kuala Angin in Kelantan to the north of which line Clifford found his Tem-be to the south his Sen-oi. He concludes therefore that the Semang and Sakai form two different branches of one language and that the Sakai branch shows two sub-branches.

The second part is headed 'comparison of the Sakai and Semang languages' and opens with a list of books consulted by the author in his study of the latter. Then follows a list of those Mon-Khmer words and roots which are found to be similar to words and roots in Sakai and Semang. The author's comments on this are as follows :—"The above agreements seems "to me to be amply sufficient both in number and kind to nega- "tive the suggestion of 'A mere external borrowing.' As to the "their number out of the 1249 forms contained in the vocabulary "there are about 240 such agreements. That is in itself a notable "result but it gains in meaning when two things are borne in "mind :—First that most undoubtedly a part at least of the "materials for the Sakai and Semang languages are recorded "with a wrong or uncertain meaning thus rendering it difficult "or even impossible to find their correct equivalents in Mon- "Khmer, and secondly that another part,—more specially that "collected by de Morgan and Stevens, is of such a nature "(names of implements and individual parts of them, of individ-

"ual plants, etc.,) that in any case corresponding expressions "for them could hardly be expected. Finally it must be pointed "out that in these prefix-languages it is most difficult to find "corresponding words in dictionaries which are arranged al- "phabetically according to the initial letters of the words, and "that our vocabularies of a part at least of the Mon-Khmer "languages are by no means complete."

The words showing similarity are next arranged in groups as follows:—Nouns: 18 such as God, Thunder, Night, Rain, Stone, Fire, etc.; 8 such as Tree, Flower, Rice; 21 such as Louse, Fly, Egg, Dog, Elephant, Rhinoceros, etc.; 18 such as Man, Stranger, Wife, Aunt, Nephew, etc.; 33 such as Blood, Hair, Mouth, Neck, Belly, Elbow, etc.; and 13 such as Clothing, Arrow, Knife, Stick, etc.; Verbs: 61 including to go, give, sleep, fasten, see, sit, turn back, cry, call, speak, drink, etc.; and 33 Adjectives and Adverbs: such as many, white, with, bad, sweet, cold, etc. The author continues:— "The comprehensive manner in which all kinds of correspondences "are represented and more especially in which the names for "almost all parts of the human body show agreement and finally "the large number of indentities in verbs and adjectives leave, "in so far as an examination of the grammatical relations of the "two groups of languages offers no obstacle, one conclusion "only, viz:—that there exists an inward and intimate condition "between the Sakai and Semang languages and those of the Mon- "Khmer."

The author next points out that there is a small number of words occurring in many Sakai and Semang dialects for which no corresponding words can be found in Mon-Khmer, but he asserts that the existence of these can not disturb the conclusion drawn from the total result more especially as further search in the more out-of-the way dialects of Mon-Khmer may yet reveal them. He then continues:—"As against these however great stress must "be laid on the part that for those particular words which con- "stitute the difference between Semang and Sakai no parallels "can be found. If therefore we can rely upon our knowledge "of the Mon-Khmer vocabulary it is very remarkable that it is "these words and these (so to speak) alone which fail us. "When further we bear in mind that the words in question are "such as are in constant use in every day life it seems most im-

"probable that their parallels will be found in these Mon-Khmer "languages of which we have at present any knowledge and it "may be regarded as very doubtful indeed if any entirely new "branch of these languages will be discovered which will supply "the deficiencies. It seems therefore very probable that we have "in these words a remnant of the former Semang-Negrito-lang-"uage. If that is really the case then further and more exhaus-"tive research will certainly reveal still more material of the "same kind. May this be a keen incentive to those who are in "a position to make such researches to commence them without "delay before the rapidly advancing disappearance of these races "render further proof ever impossible! Perhaps we may be able to "oppose some positive facts to that wave of theories which has "burst over these poor Negritoes!"

The next eighteen pages are occupied with a close comparison of the "Grammatik" of the two groups. The following conclusions are drawn:—

(i) The sounds are in essentials the same.

(ii) The word-formation follows the same laws.

(iii) The personal pronoun shows as much identity as can be expected.

(iv) Pronouns and adverbs are in essentals demonstratively the same.

(v) The syntactical relations of nouns, adjectives and verbs are the same.

(vi) The numeral is the same in form and construction.

The author continues:—"Against these resemblances and "identities no important divergencies are as yet opposed. When "we consider them in conjunction with the wide spread identities "in the vocabulary we are justified in concluding that the Sakai "and Semang languages are intimately related with the Mon-"Khmer languages and must be regarded as a member of that "family. In the case of the Sakai languages this conclusion can "be pushed further. When we consider the physical resemb-"lances between the Sakai and the Mon-Khmer peoples we are "justified in saying that the language now spoken by the Sakai "was the original Sakai language."

The author then gives the following four physical characteristics of the Mon-Khmer people:—

(i) Dolicho-cephalic skulls.
(ii) Darkish skins.
(iii) Eyes horizontal not oblique.
(iv) Hair wavy not straight and not woolly; and he quotes R. Martin and Logan as proving that the Sakai have the same peculiarities.

He continues:—"It is otherwise with the Semang. Their "darker colour, and woolly hair separate them anthropologically "both from the Sakai and from the Mon-Khmer people. The "fact that they speak what is essentially the same language can "only be explained on the assumption that they have abandoned "their own and adopted a foreign one. As is the case with the "Negritoes of the Philippines the original Negriti language seems "to have been lost although indeed in the case of the Semang a "number of words appear to exist as a new want of it.

The paper here ends. It covers 180 octavo pages and is obviously the outcome of most careful and labourious work. It is much too important not to be noticed in the Society's Journal and in default of a review by a competent hand my abstract may, I trust, suffice to direct the attention of members to it.

The Comparative Philology of the Sakai and Semang Dialects of the Malay Peninsula—A Review.

By C. O. Blagden.

There has recently appeared in the *Bijdragen tot de Taal-Land-en Volkenkunde van Nederlandsch-Indië* a monograph [a] of some length on the Sakai and Sĕmang dialects, which may fairly claim to be the most comprehensive piece of work yet done in this connection and is therefore deserving of the attention of the readers of this Journal. It is the more interesting as being the first occasion for many years that a scholar of some standing in Europe has been attracted to the study of these dialects, and it will serve as a landmark for future collection and research in relation to his rather neglected subject.

Never before have these dialects been submitted to the systematic comparison to which Professor Schmidt subjects them in his paper. It has been his purpose to collate all the existing published materials and to see whether any sound inferences could be drawn from such a comparison. He has actually omitted very little, and that little is not of the first importance. The sources from which he draws are carefully enumerated: they include, besides the previous numbers [b] of this Journal the works of Newbold [c], Roberts, [d] De Morgan [e] and Vaughan Stevens [f] as well as the vocabularies published by Klaproth [g] Tomlin, [h] Low, [i] Borie [j] and Maclay, [k] so that they comprise practically everything of permanent value that had

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a. Die Sprachen der Sakei und Semang auf Malacca und ihr Verhältnis zu den Mon-Khmĕr Sprachen, von P. W. Schmidt, S. V. D., Bijdragen, etc., ('S Gravenhage, 1901) No. 52, (6e Volgr., Deel 8) pp. 399-583.

b. Nos. 5, p. 129 *et seq*; 8, p. 112 *et seq*; 9, p. 167 *et seq*; 24, p. 13 *et seq*; 27, p. 22 *et seq*; 29, p. 13 *et seq*; See also Nos. 1 p. 41 *et seq*; 3, p. 113 *et seq*; 33, p. 247 *et seq*.

appeared in print about these dialects when the author's paper was written [l]. The addition of the relatively few words given by Lias [m] and the vocabularies of Castelnau [n] and Errington de la Croix [o], as well as those published in the Selangor Journal [p], would have made the collection as nearly complete as could have been wished.

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c. T. J. Newbold, Political and Statistical Account of the British Settlements in the Straits of Malacca, (London, 1839) Vol. II, pp. 369-434.

d. Edm. Roberts, Embassy to the Eastern Courts of Cochinchina, Siam, etc. (New York, 1837) pp. 413-415.

e. L. De Morgan, in Bulletin de la Société Normande de Géographie, (Rouen, 1885), Vol. 7. p. 434 *et seq*; reprinted as Exploration de la presquîle malaise, (Paris, 1886), Linguistique.

f. H. V. Stevens, (ed. Grünwedel) Materialien zur Kenntniss der Wilden Stämme auf der Halbiusel Malaka, in Verröffentlichungen aus dem Königlichen Museum fur Völkerkunde (Berlin, 1892, 1894) esp. Pt. II, p. 145 *et seq.*

g. Klaproth in Journal Asiatique No. 12, pp. 241-3 (Paris, 1883).

h. Tomlin, "A list of Samang Words" from the "Malacca Observer," no date given. This appears, however, to be a mere reprint of the list given by Begbie in The Malayan Peninsula, (Vepery Mission Press, 1834) pp. 14-18.

i. Low in Journal of the Indian Archipelago, Vol. IV, p, 431.

j. H. Borie, Notice sur les Mantras, in Tijdschrift voor Ind. Taal-Land-en Volkenkunde Vol. 10, p. 439 *et seq.* (Batavia, 1861) (translated in Indo-Chinese Essays, 2nd Series, Vol. I.)

k. Miklucho-Maclay in Tijdschrift voor Ind. Taal-Land-en Volkenkunde, Vol. 23 p. 303 *et seq*, p. 309 *et seq.* (Batavia, 1876). A part of these last also appeared in this Journal (No. 1), but the lists there given are less complete and are disfigured by several misprints.

l. See also J. Crawfurd History of the Indian Archipelago Vol. II, p. 125 *et seq.*, (Edinburgh, 1820). Malay Grammar Vol. I. p. clxvi, clxxi-ii (London, 1852). W. Marsden, Miscellaneous Es-says, (London, 1834), pp. 87, 113. J. Anderson, Political and Commercial Considerations relative to the Malayan Peninsula (Prince of Wales Island, 1824) p. xliv *et seq.*

m. Brau de St. Pol Lias, Pérak et les Orangs-Sakèys (Paris, 1883) pp. 270-273.

n. F. de Castelnau, Mémoire sur les Mantras, Revue de Philologie et d'Ethnographie (Paris, 1876), Vol. II, pp. 142-3.

o. Errington de la Croix, Les Sakaies dé Pérak, Revue d'Ethnographie (Paris, 1882) Vol. I, pp. 317-341.

p. Selangor Journal (1895) Vol. III p. 223 *et seq;* 240 *et seq:* (1897 (Vol. V p. 325 *et seq;* 361 *et seq;* 378 *et seq*; 393 *et seq.*

The author's merits, however, do not lie in the mere compilation of materials: he analyses his sources with the utmost ingenuity, showing how in some cases two authorities have borrowed from one source, which is sometimes a written, sometimes an unwritten one, and how the several vocabularies are related *inter se*[q]. Here it might have been worth while to go even more deeply into the bibliography of the subject, and to show, for instance, that Klaproth's list is an unacknowledged copy from the one that appears in Crawfurd's History of the Indian Archipelago, eked out however with some additions from elsewhere, and to mention that Roberts merely copies, as he himself admits, from Anderson. In dealing with Newbold's somewhat irritating "Benua" list, the author rightly points out that it is a heterogeneous mixture of Bĕsisi with words from some Sĕmang dialect cognate to the one given by Tomlin (and Begbie); but his want of first-hand acquaintance with the spoken dialects of Malacca has prevented him from recognizing in it a third element, viz: Jakun, which is represented by a good many words collected for Newbold by Munshi 'Abdullah, as related by the latter in his well-known Autobiography. It is worth noticing too, though the author does not mention it, that the older sources (i. e., prior to 1875) practically all deal either with the Sĕmang dialects of the North of the Peninsula (collected from Penang) or the dialects of the south (collected from Malacca). The latter barely take in the Southern fringe of the Sakai group, the purer forms of which, situated as they are in the centre of the Peninsula, remained quite unknown (except for the short notice by Colonel Low) until the introduction of the Residential system opened the Native States to European enquirers.[r]

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q. I may, perhaps, be permitted, in this connection, to confirm the author's inference, drawn purely from internal evidence, that I did *not* copy the Bĕsisi words I gave in a former paper from my friend Mr. W. W. Skeat, or *vice versa*. Mine were collected in Malacca, his in Selangor. I venture to think it is rather a tribute to our accuracy that they exhibit so few serious discrepancies.

r. Bearing these limitations in view and allowing for their occasional errors, the old lists are still very valuable and well worth studying, especially for the Sĕmang dialects.

After discussing the sources, Professor Schmidt gives a comparative vocabulary of words of all the aboriginal dialects represented in them, reduced as far as possible to a uniform system of spelling and arranged according to the apparent relationships of the individual words. This has been very well done and must have been a difficult and troublesome task, but it is needless to say that such an arrangement (the only one possible for comparative study) is necessarily, in the present imperfect state of our knowledge of the subject, to some extent tentative and provisional. In many cases the author's assumption of an underlying affinity seems somewhat unconvincing. It is difficult, for instance, to believe that *log*[n] is the same word as *jĕhu*: true they both mean "tree" or "wood" (though I believe *log*[n] = "tree," Mal. pohon and *jĕhu* = "wood" Mal. kayu), and there are, it must be admitted, forms in existence which seem to be almost intermediate between them, e. g., *delok*[n], *jelop*, *jĕhup* and the like, but the evidence of identity does not seem to be quite conclusive, the more so as, apparently, the two variant forms appear on occasions together in one dialect.[s]

Sometimes, too, in his natural desire to arrive at identifications, the author is inclined to take liberties with his authorities: e. g., he will have it that *ge*, "to eat" (in Sĕmang) is to be pronounced *je*, so as to bring it into line with the other and more common word for "to eat," viz: *cha* (Sakai), *chi* (Sĕman). But the *g* in *ge* is hard, and the word appears to be quite distinct from *cha* and *chi*.

In compiling his comparative vocabulary, the author has designedly omitted words of Malayan origin.[t] This is somewhat regrettable as the forms assumed by these words in the aboriginal dialects throw an interesting light on their phonology. Moreover the omission seems to involve the assumption that all such words are of comparatively modern importation from Malay, whereas in fact there are in these dialects words of undoubted Malayan affinity which cannot possibly have come into them in that way. Certainly such words as *to'ot* "knee", *asu* "dog" *awe*

s. See Dr. Luering's Ulu Kampar Sakai in No. 35 of this Journal.

t. The process has not been quite completely carried out, some 50 words being left in, besides those noticed by the author.

"rattan," *siah* "salt," *manuk* "fowl," *kebus* "dead," *hirum* "black," point back to a Malayan dialect *other than Malay*, and the presence of such words, relatively few though they are, inevitably throws some doubt on the origin of others whose source, by reason of their being common to Malay and other Malayan languages, is necessarily a subject of uncertainty.

The omission of these words obscures one important element in the constitution of the aboriginal dialects which must not be left out of sight in any speculation as to their origin and affinities.

It is difficult to account for their presence in the aboriginal dialects of the Peninsula except on the assumption that they represent relics of Malayan dialects locally evolved there and distinct from Malay itself, which is a Sumatran language not originally native to the Peninsula; and in that case their introduction must, it would seem, be of very ancient date, going back to the days when Malay had not yet become the language of the Peninsula; or to put the same thing in another way, some of these aboriginal dialects are, at any rate in part, derived from an independent Malayan origin going back to a remote antiquity. While, therefore, there can be no doubt as to the importance of the well-known Mon-Annam element in the aboriginal dialects, this very archaic Malayan element is equally deserving of recognition.

These points are not without importance, for the author's argument for the Mon-Annam origin of these dialects depends to some extent upon the percentage of Mon-Annam words which can be discovered in them: if therefore the aggregate number of words examined is unduly reduced, either by arbitrary exclusion or by doubtful identifications, it is plain that this percentage will be overstated. As the figures stand, the author reduces his words to about 1250 and of these he professes to identify about 240, say 20 per cent, as Mon-Annam. The comparison is made at a later stage, and it is rather anticipating matters to mention it here, but it is the main thesis of the article.

Most of the identifications seem to be quite unassailable and even if they only account for something less than 20 per cent of the vocabulary, that is still a considerable achievement.

But a good many are at least doubtful, and one great element of uncertainty remains which it is at present impossible to eliminate, viz: the question whether the so-called Mon-Annam languages themselves constitute a true family or are not rather a very mixed formation, embodying various elements of unknown origin.

The point is shortly this: so long as one is dealing with Peguan or Cambojan, about which, as they are written languages, a considerable amount is known, one is on relatively safe ground and can fairly refer words, that are attested by their appearance in these two languages, to the Mon-Annam group. But when it comes to words that reappear only in such dialects as Lemet, Cat, Sedang and the like, of which merely a few short vocabularies exist, while little or nothing is known of their structure, the genuine Mon-Annam character of such words is at least doubtful. The frequent comparisons with Cham which the author makes also illustrate this point: for Cham is, in part at least, a Malayan language. Such a word as *cheong* "belly" in Sĕmang, if it be really identical with the Cham *tian*, cannot be referred to a Mon-Annam origin, for *tian* is unquestionably Malayan, occurring as it does in several island languages of the Archipelago.

The fact is that one is dealing here with very mixed materials, and even the greatest care will not prevent an occasional mistake.

After setting out the comparative vocabulary and the too few sentences which have been recorded, the author proceeds to give what is really the first attempt at a comparative grammar of these dialects. As a first attempt it can only be characterized as admirable.

He begins by discussing the sounds, both vowels and consonants: and here it is worth while laying stress upon his well-grounded complaint that collectors almost uniformly omit to give a key to their systems of orthography. If they would only be good enough to explain precisely how they intend words to be pronounced, the work of the comparative student would be much facilitated. The discussion of the phonology of these dialects brings out several interesting points. The nasal consonants are noticed; the nasal vowels, however, which are

equally well-marked, are not observed by the author, that is not his fault: it may be explained that they somewhat resemble the French *n* sounds, but are not unfrequently followed by an ordinary consonant. The pronunciation of the palatal letters (*ch*, *j*, *sh*) seems to require further elucidation, as it is not quite clear whether they are identical with the corresponding English sounds or somewhat softer. There is a question whether all the so-called diphthongs are really diphthongs or merely two vowels in juxtaposition, each retaining its separate force. A few letters seem to be doubtful: e. g., *z* and *f* in Newbold's list, where the former represents a rough (probably palatal) *r* and the latter generally a *p*; but both *z* and *f* appear, though rarely, in Sĕmang, and *z* in a few Sakai words. On these points perhaps future collectors may throw more light.

Reduplication and repetition as modes of word formation are next noticed, and then follows a most valuable section on prefixes and infixes. Their existence as formative elements in these dialects has been pointed out before,[a] though never worked out as completely as is done here. There can be no two opinions as to its importance, especially in relation to the closely similar formation of the Mon-Annam and the Malayan families of speech. It may however be as well to express a doubt as to the soundness of the author's view that a prefix can be assumed whenever a word appears in two slightly varying forms differentiated by their initial syllables, or by the absence in one case of an initial syllable which appears in the other. In the first place, the mutability of sounds in these dialects is something quite remarkable, but this need not imply that the syllable which changes is a prefix, that is to say a merely formal accretion and no part of the essence of the word: for the same mutability shows itself in the final consonants,[b] which must surely be part of the root. Secondly, where there are two forms, a longer and a shorter, it is by no means certain that the shorter is always the original one: it may be only an abbreviation, the result of rapid speech and phonetic decay. Some allowance, too, must be made for the defective observation and spelling of some collectors.

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a. e. g., by Mr. W. W. Skeat in Selangor Journal, Vol. V, p. 328.
b. The author gives instances of the interchange of k, -t and -p.

Still, after making a reasonable allowance for these sources of error, there remains a large number of words in which the existence of prefixes is quite certain. Their meaning is more difficult to arrive at, but some, e. g., *Ka-* in Bĕsisi and *ma-* in Sĕmang are undoubtedly verbal, and there are others which are apparently adjectival and pronominal or demonstrative. One very curious verbal prefix found in a dialect of the Northern Sakai group (but by the collector, De Morgan, called Sĕmang) appears to vary its final consonant to suit the final consonant of the principal root: e.g. *nĕpchip* "to go", *neblŭp* "to enter," *nĕkpok* "to open." This would seem to be in reality a combination of a prefix and a broken down repetition of the root word.

The author after comparing in succession the pronouns, personal, possessive, demonstrative and interrogative, proceeds to deal with the syntax of the substantive. It is worth noting that, so far as appears, the same system of syntax runs through all these dialects. The nominative (subject) precedes the predicate; the genitive, adjective and demonstrative pronoun follows the verb which governs it. Apparently there is no foundation, at any rate in the materials here analysed, for the theory that in Sĕmang the ideology is different.

Next the numerals are compared: here there is a clear classification into groups, and as the numerals raise certain points of some difficulty and considerable interest it seems desirable to give specimens of the various types which occur. They are as follows:—

	I *Sĕmang.*	II *Sakai.* (*Tĕmbe'*)	III *Sakai.* (*Sĕnoi*)	IV *Bĕsisi* (and other southern dialects)
1.	nai	neh (nei)	nanu	mui
2.	bie	nar	narr	'mbar
3.	(various)	ne'	ni	'mpe'
4.	(various)	(none)	(none)	npun
5.	(none)	(none)	(none)	măsok^{n}
6.	(none)	(none)	(none)	pĕru
7.	(none)	(none)	(none)	tempo

For *three* in Sĕmang the forms *pat*, *ne*, *diu* and for *four* *sa-beh* and *nos* are given. These seem doubtful; but all the forms

given in the above table are well attested, and it is noticeable how little agreement there is between the Sakai on the one hand and the Sĕmang and Bĕsisi respectively on the other. It is true that *one* appears to be the same in groups I and II and possibly this is due to the fact that II is a mixed group of Sakai with a tinge of Sĕmang in it, as is evidenced by other words common to these two groups. But the author's attempt to derive the forms of groups I, II and III from the purely Mon-Annam forms of group IV is more or less conjectural, and even if it is correct it leaves one with the curious result that the pure Sakai is (as regards the numerals) further removed from the regular Mon-Annam type than the mixed Bĕsisi and its neighbours. This group IV consists of a string of outlying dialects scattered along the border line between the pure Sakai and the Jakun, in a tract of country which extends from Ulu Tĕmbĕling and Kuantan (Pahang) to the Jasin district of Malacca and from Kuala Langat (Sĕlangor) to Ulu Indau (Johor). In this group alone [w] do the numerals extend beyond *four*, and that fact as well as their singularly good state of preservation (in these very mixed dialects) seems to me to indicate that these Mon-Annam numerals were not native to the aboriginal dialects of the Peninsula but were imposed from without, and that they either have nothing whatever to do with the Sakai numerals (from which they certainly cannot be derived) or that they have filtered through into Sakai in degenerate forms. It seems very unlikely that the pure Sakai first imposed its numerals (in a primitive form) on the Jakuns who speak Bĕsisi etc., and then proceeded to corrupt them while the Bĕsisi preserved them unchanged.

So far as this evidence goes, it appears to me to tell against the conclusion which the author ultimately arrives at, viz: that all the aboriginal dialects of the Peninsula are branches of the Mon-Annam stock.

It will be seen, too, that it is a mistake to regard the various dialects as corruptions, in different degrees, of one single type

w. Some rather dubious lists of numerals beyond "four" are given by two or three authorities, but all differ *inter se* and are suspected on that ground.

of Sakai, represented in its purest form by the Sĕnoi dialect. This erroneous view has perhaps tended to discourage the collection of the other dialects, which has been stigmatized as useless except for the purpose of studying the progressive decay of the language. It is evident, however, that Sĕnoi, though no doubt on the whole the purest type of its own class of Sakai, cannot be called upon to explain all the other dialects, some of which appear to be in some respects nearer to the ancient forms.

I need say nothing of the author's further comparison with the numerals of two Borneo dialects given in Mr. Ling Roth's work on Sarawak, as Mr. Ray (in "Man" 1902, No. 42) has shown that one of these so-called Borneo dialects is really a Sakai dialect of Perak collected by the late Mr. Brooke Low, while the resemblance of the other is very slight and clearly fortuitous.

After pointing out that a fair number of words (some 50 or so, and all or nearly all of them of Mon-Annam origin) run through almost all the dialects, the author next proceeds to analyse the lists where they differ, with a view to discovering the relationship of the various dialects *inter se* and establishing a classification of them into groups. Considering the paucity of the materials for many of the dialects, this is really a brilliant piece of work, to which justice could be done only by going into details for which there is no space in this notice. The upshot of it is that the dialects of the Peninsula, so far as they are here represented, fall into the following groups:—

I. Sĕmang.

(i) A relatively pure Sĕmang (and Pangan) group, curiously homogeneous though covering a large tract of country and extending from Northern Kĕdah to southern Kĕlantan;

(ii) Another Sĕmang group, less pure than the preceding, represented by (a) the "Jooroo" (Juru) Sĕmang of the authorities, (b) the dialect given by Begbie (and Tomlin) and (c) certain words in Newbold's "Benua" list: apparently to be regarded as "low country" Sĕmang as opposed to the purer dialects of the interior hills.

II. Sakai.

(iii) The Tĕmbe' (or northern) Sakai group;

(iv) The Sĕnoi (or central) Sakai group and the southern dialects, such as Bĕsisi.

Substantially this classification, so far as it goes, would seem to be entirely justified by the existing materials. It will be observed that the main line of division (that between groups I and II) corresponds pretty closely with the difference in race between the Negritos (Sĕmangs) and the Sakais, while the sub-division of group II into sub-groups iii and iv coincides with Mr. Clifford's distinction between Tĕmbe' and Sĕnoi and agrees with Dr. Luering's statement (which is borne out by a comparison of their vocabularies) that the Ulu Kampar Sakais, who belong to sub-group iv, cannot understand the dialect of the Kinta Sakais, who fall into sub-group iii. So far at least as the Western half of the Peninsula is concerned, this classification will probably stand the test of further enquiry: in Pahang there appear to be dialects of a mixed character which partake of some of the characteristics of several of these sub-groups and have peculiarities of their own as well. Of these the author had no knowledge, as they have not as yet appeared in print.

It is probable that sub-group iv should be further sub-divided into—

(a) Central Sakai, including Sĕnoi, the Southern Perak dialects and some of the Sĕlangor dialects, down to and including the dialect of the Orang Tanjong of Ulu Langat,[x] and

(b) Bĕsisi and a straggling group of allied dialects in Southern Sĕlangor, the Nĕgri Sĕmbilan, Malacca, and part of Pahang.

This last sub-division runs along the borderland between Sakais and Jakuns: to the south and south-east of it come the more Malayan Jakun dialects of Johor and the neighbouring territories, and it is to be observed that the Bĕsisi group, itself, though remarkable for the purity with which it has preserved the Mon-Annam numerals, contains a considerable Malayan ele-

[x] Selangor Journal (1895) Vol III pp. 244, 245.

ment. Similarly one of the chief differences between the Sĕnoi and the Tĕmbe' groups is that the latter has more in common with Semang than the former. The purest Sĕmang appears to be spoken in Central and Northern Kĕdah and the adjoining States of Raman and Ligeh, and the purest[y] Sakai in South-eastern Perak, between Sungei Raya and Ulu Slim, and in the adjoining valleys of Ulu Pahang. Between these centres there is a debatable country in which are to be found more or less mixed tribes speaking mixed dialects partly Sĕmang, partly Sakai.

The author's classification appears to be defective in one point, namely in ignoring the Jakun group of the South of the Peninsula: this group, whatever its origin, is now hopelessly broken down and almost swamped with Malay, but it is of some interest and apparently originally quite distinct from Sakai.

Here we have, however, the first attempt at a systematic grouping of these dialects, and for this the author deserves every credit. He also brings out a most important fact, viz: that, underlying the common Mon-Annam element which apparently runs through practically all these dialects, though in varying strength, and the comparative uniformity of which has led some former writers into the erroneous Pan-Negrito theory,[z] there is in the Sĕmang dialects an alien element, neither Mon-Annam nor Malayan, which may reasonably be assumed to be the remnant of the original speech of the Negritos.

It is a mistake to assert that there are but few words common to Sakai and Sĕmang: the contrary is the case, such words being fairly numerous. But, apart from these, there is a body of words apparently peculiar to Sĕmang and not derived from Sakai or any other known language. It is in these words that the original affinities of the Sĕmang dialects will have to be sought (if indeed it is any longer possible to detect them) and not in the words which Sĕmang has in common with Sakai and

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y. I mean pure with reference to Sĕmang and Sakai intermixture only, leaving Malay influence out of the question.

z. By this I mean the notion (of Maclay and others) that the whole of the aborigines are of Negrito origin and that the differences amongst them depend merely, on the percentage of crossing with Malays.

the Mon-Annam languages of Indo-China. The author is fully justified in claiming to have established on purely linguistic grounds the existence of a distinct Semang group of dialects, spoken by and more or less co-extensive with the Negrito tribes of the North of the Peninsula.

It is true that the border lines of language and physique do not quite coincide: there are mixed Sakai-Sĕmang tribes in Northern Perak who speak substantially Sakai dialects, while in Southern Kĕlantan and Trĕngganu there are tribes, described as having the Sakai physical characteristics, whose dialects nevertheless must be classified as Sĕmang. But the great point gained is that there is now proved to be a Sĕmang group of dialects originally distinct from Sakai and retaining a considerable number of words for which no analogues have yet been found elsewhere. Instances of such words are (1) *Kĕto'*, "day," (2) *Kawau*, "bird," (3) *mako*, "egg," (4) *ekob*, "snake," (5) *ek*, "dog", (6) *gus*, *ngus*, "tooth", (7) *chas*, "hand," which are in no way connected with the corresponding Sakai words (1) *jish*, (2) *chim* (or *chep*), (3) *tap*, (4) *taju*, (5) *cho*, (6) *lĕmun*, (7) *tĕk*^{a} (or *tih*). With the possible exception of No. 6, none of the above Sĕmang words appear to be Mon-Annam; while, of the Sakai, Nos 2, 3, 5, 6, and 7 certainly are.

The next section of the paper is occupied with a careful analysis of the mode of formation of the Mon-Annam languages. It is shown that the sounds correspond pretty closely with those of our aboriginal dialects; but the greatest stress is laid on the system of prefixes and infixes. In this place it is hardly practicable to do more than illustrate this point by an example or two, drawn from the author's specimens. Thus in Cambojan, from a word *pĕk*, "to fall to pieces: to split up; division," are derived the following:—

pnēk	"part"
pămpēk	"to divide"
pamnēk	"piece"
prenēk	"piece"
prapēk	"division"

where the persistence of the root (here shown in italics) is clearly seen in spite of the apparatus of prefixes or infixes added to it. Another similar case is:—

kăt	"to cut off"
khnăt	"measure"
kămnăt	"piece"
thkăt	"pain"
tămkăt	"pain, suffering."

Analogous, though less elaborate, formations occur in several of the other Mon-Annam languages, and this system, it must be admitted bears a strong resemblance to the mode of formation of the aboriginal dialects of the Peninsula.

It must, however, be borne in mind that it also finds parallels in the Malayan family, some members of which (e. g. the Philippine languages) have carried it to an even higher stage of complicated development. In fact the relation between the Malayan and Mon-Annam families in this particular are very puzzling: there is so much similarity in their structure and so little, relatively speaking, in their material or lexicographical elements. I suppose it may be regarded as certain that these two families of speech formerly bordered on one another in Southern Indo-China (and possibly in the Peninsula too) and, it would seem that while they were in contact the one group in some way exercised a profound influence on the other, probably in the way, mainly, of the Mon-Annam group absorbing Malayan elements, both material and formal. This makes it doubly difficult, in the case of the aboriginal dialects of the Peninsula which must have been evolved somewhere near the border line of these two families, to decide to which, if either, of them they originally belonged, seeing that the mode of formation in both is so very similar. In the apparent absence of suffixes and in some other respects, however, it must be admitted that the aboriginal dialects offer more analogy to the Mon-Annam than to the Malayan family.

After analysing these formal elements, the author runs through the various parts of speech in the Mon-Annam languages

and compares them with the corresponding ones in the aboriginal dialects, so far as the materials admit of such comparison. The upshot of the matter is that, in his view, on grounds of phonology, structure, and similarity of pronouns, demonstrative adverbs and numerals, as well as the number of other words already alluded to, the Sakai and Sĕmang dialects are to be considered as essentially related to the Mon-Annam family. Further the author holds that, on anthropological grounds, the Sakais are to be considered as genuine members of the Mon-Annam group of races, and therefore that their dialects are not an acquired form of speech but represent their own original language.

This latter point is, unfortunately, very slightly handled. The author rests it upon (1) the dolichocephalic character (2) the dark complexion (3) the non-Mongoloid eyes and (4) the wavy hair of these tribes, characteristics which may be paralleled in certain of the Mon-Annam races.

This matter is, however, involved in great obscurity: for some of these characteristics appear to be absent in some of the Mon-Annam races. The Peguans and Cambojans appear to be decidedly Mongoloid in type, though with a difference:[a] and the author's view requires us to believe that this is due to crossing with a Mongoloid strain which has obliterated their genuine original characteristics, while these have been retained in relative purity by some of the wilder tribes. The thing is possible. One knows that in Indo-China there has been an enormous amount of crossing of races, and it is conceivable that a slight strain of the strong Mongoloid type (which, as one sees in Straits Eurasians, is very persistent even when present in small percentages) might have modified the physical characteristics of the civilized members of the Mon-Annam stock (after the wild tribes had parted off from it) without seriously affecting their languages.

In the case of the Negritos the matter is not susceptible of the same explanation, and the author's view is that the Sĕ

a. I am assured by a Peguan that he can distinguish his own people from the Burmese by their more oval faces and more prominent (almost European) noses; and that wavy hair occurs, though rarely, amongst them.

mangs have substantially given up their own languages and now speak dialects imposed upon them by a Mon-Annam race, that is presumably by their neighbours the Sakais, although they have preserved a good many genuine old Sĕmang words.

The collection and analysis of new materials will show whether these conclusions are tenable. Personally I still incline rather to the view, suggested in a former number of this Journal, that most of the Mon-Annam words in these dialects have been imposed from without by the influence of a Mon-Annam race of higher civilization; and I think that the curiously pure form of the numerals in the otherwise mixed group of dialects to which Bĕsisi belongs supports this view. It would not however be inconsistent with this idea to hold that the Sakai dialects are also of Mon-Annam origin, though much more distantly related to the parent stem: and that would perhaps account for the divergence of the Sakai numerals from the normal type. In that case we should have two waves of Mon-Annam influence in the Peninsula, as well as two of Malayan, and the analysis of the dialects would be somewhat as follows:—

I. Common elements running through practically all the dialects—

(1) Malay;
(2) Mon-Annam of the purer type:
(3) Malayan, other than Malay.

II. Separate original elements.

(4) In Sĕmang: the original language of the Negritos, whatever that may have been (possibly akin to Andamanese?)
(5) in Sakai: a rude Mon-Annam form of speech (?)
(6) in Jakun: Malayan (?) and if so, identical with (3) above (?).

It is evident from what has been said that though some progress has been made in the study of these dialects, much remains to be done; and as the author's main purpose, as stated by himself, is to encourage further research, it is to be hoped that collectors will be stimulated by his valuable paper, and will take the matter seriously in hand. Above all it is absolutely necessary to obtain a large number of genuine sentences, as

actually spoken by the aborigines: mere lists of words have their value, but the only chance of getting an insight into the grammar of a language lies in the collection and analysis of sentences, and that is now the most urgent *desideratum* in connection with these dialects. Such work can only be done properly by men on the spot and thoroughly conversant with local circumstances, and the task should be undertaken at once, before the imminent extinction of these dialects makes it for ever impossible. In view of the high value, from a scientific point of view, of such researches (which is attested by the interest taken in them by a scholar of European reputation like the author of the paper I have attempted to review) I venture to express the hope that the Governments of the Straits Settlements and the Native States will follow the good example, in these matters, of the Indian Government and will give some assistance, or at least encouragement, towards a systematic linguistic survey of the Peninsula on the lines of the Linguistic Survey of India.

The Contents of a Dyak Medicine Chest.

By Bishop Hose.

A few days ago I was in the upper part of the Saribas river, the home of the race once celebrated throughout Malaya for daring deeds of piracy. My companion was the Rev. William Howell, the joint author with Mr. D. J. S. Bailey of 'A Dictionary of the Sea-Dyak Language,' and an authority on all subjects connected with the religious and other customs of that people. We had ascended the Padih, an affluent of the main river, to the village of Kundong, where we were going to spend the night in the Dyak house, of which Brok is the *tuai*, or head-man. The house is of moderate length, about twenty doors; and as usual the apartments of the *tuai* are near the middle of the building. There we were hospitably installed on the *ruai*, or undivided hall, (sometimes described as a verandah), which extends throughout the whole length of a Sea-Dyak house, and occupies about half of its area. The good mats were brought down from the *sadau*, or loft, and spread for us; the rare luxury of a chair was provided for me and there we talked, and taught, and answered questions, and dispensed medicines, while the inhabitants of the other rooms gathered round us, as well as the occupants of our host's private quarters. There also we ate, and there we slept when the kindly people would at last consent to our going to bed.

The majority of the 'rooms,' i. e. separate tenements, in this house are inhabited by Christians of long standing, but there are a few who have not yet come in. Amongst them is a *Manang*, or Doctor of Magic, named Dasu, who has a large practice in the neighbourhood. I was anxious to interview him in order to get some information that I wanted for the purpose of comparing the original spiritual beliefs of the Borneans with those that underlie the Mohammedanism of the Malays of the Peninsula. I was also desirous of ascertaining how far the methods of the

Dyak *Manang*, when undertaking to cure diseases, resembled those of the *Pawang* and *Bomor*, his Malay confréres.

At our invitation Dr. Dasu came out of his room readily enough, and sat down with us to chat and smoke a cigarette. He talked freely and intelligently about such matters of general interest as happened to be broached, especially the late expedition against the turbulent people of the Ulu Ai, and the terrible epidemic of cholera which was just passing away. But as soon as we began to give the conversation a professional turn, and speak of the practice of medicine by the native doctors of the Saribas, he put on a look of impenetrable reserve, and could hardly be persuaded to speak at all. There is reason to believe that this was chiefly owing to the presence of Howell. He has succeeded in winning the confidence and affectionate regard of Dyaks to an unusual degree, but he is unpopular among the *Manangs*. His teaching has led people to think for themselves, and wherever he goes the business and the gains of the village doctor shew a tendency to decrease. Moreover several of the fraternity have submitted to his influence, abandoned their tricks, and taken to honest farming. It is known too that some of these have surrendered their whole stock of charms to my friend, and have also made dangerous revelations, whereby the profession has been much discredited.

So Dr. Dasu was only with great difficulty induced to impart to us his knowledge. He told me after more confidential relations had grown up between us, that he suspected me of an intention, by some means or other, to get possession of his precious *materia medica*, and so deprive him of his means of living. However his fears were removed by repeated assurances that it was information only that I wanted, and that I was consulting him just because I preferred to get it direct from a professor of repute, rather than trust to reports received from white men. At length we persuaded him to be gently catechised. I got some precise answers to my questions respecting certain articles of Dyak belief which had been variously defined by different investigators, and about which my ideas had been a good deal confused. But those matters are not the subject of this note. It is the concluding incident of the rather prolonged interview that I propose to describe.

We had talked to one another so pleasantly and frankly that I thought I might ask Dasu as a great favor to show me his *Lupong*, or Medicine Chest, and the charms of power which it contained. It was quite evident that this aroused his suspicions again, and he retired within himself as before. But the principal people of the house, who were sitting by us, urged him to consent, and, as old acquaintances of mine, assured him of my good faith. So he was at last persuaded, and went to his own room to fetch the treasure.

As I have said, the good mats of the household, as is usual when it is intended to show respect to a visitor, had been taken down for our accommodation from the place where they are stored. But we now saw that the most valued of them all had been held in reserve. This, which was made of fine and very flexible rotan, the latest triumph of the skill and industry of our courteous hostess Ipah, Brok's wife, was now handed down and spread in front of us for the reception of the great man and the mysterious implements of his profession. After some considerable delay, probably intended to excite our curiosity the more, he appeared and sat down on the mat prepared for him: a subdued murmur of applause and satisfaction greeting him as he took his seat.

A Manang's *Lupong*, or case for holding his charms, may be almost anything. Sometimes it is a box, sometimes a basket, sometimes a bag. In this instance it was an open-mouthed basket made of thin shavings of bamboo, hung round the neck of the owner by a strip of bark.

Before beginning the exhibition Dasu made a little formal speech, in which with much show of humility, he spoke in depreciation of his own powers and knowledge, and of his collection of remedial charms, as compared with those of other members of the profession elsewhere. These remarks were of course received with complimentary expressions of dissent from the audience: and then at last the contents of the basket were displayed before us. They were tied up together in a cloth bag, the most highly prized being further enclosed in special receptacles of their own, such as a second cloth covering, a little bamboo box with a lid, or a match-box. They were ceremoniously brought out and placed side by side on the mat

of honour. I was then invited to handle and examine them, and the name and use of each were told me without any fresh indication of unwillingness. This is a list of them.

i. *Batu bintang*, or Star-stone; a small transparent stone rounded by the action of water till it was almost spherical, with a rather rough surface. The *Manang* looked upon it as his badge of authority, and told the following story of the way he became possessed of it. Many years ago, in the interval between harvest and the next seed-time, he was working as a cooly in Upper Sarawak. There he had a dream in which he was visited by the being whom he looks upon as his guardian-spirit. As in all cases when this spirit has had any communication to make to him, it appeared in the form of a tortoise. It told him that he must forthwith put himself under instruction in order to be qualified for the office of a *Manang*: and that if he neglected this command all the spirits would be angry, and death or madness would be the penalty. When he awoke he found the *Batu bintang* by his side, and had no doubt it was the gift of the spirit. Accordingly he did as he was bidden without loss of time. He acquired the professional knowledge and the stock in trade which were necessary, and was at last duly initiated with all the proper rites and ceremonies.

ii. *Batu krat ikan sembilan*, or The petrified section of the Sembilan fish. This was a curious object which I could not quite make out. It was oblong in shape, about two inches long, one inch broad, and half an inch thick in the middle, but getting suddenly thinner towards the two edges till it became not more than $\frac{1}{16}$ of an inch. The thick part was hollow, having a large oval-shaped perforation going through it. It resembled a section from the middle of a large winged seed, but heavy for its size, and feeling like stone. I could not of course test this by cutting or scraping. When used it is soaked for a time in water; the water is then given to the sick man to drink, or is rubbed gently upon the part of his body which is affected.

iii. *Batu lintar*, or Thunder-bolt: a small dark-coloured stone, about an inch and a half long, and a quarter of an inch thick at the base, tapering to a sixteenth of an inch at the point; curved and rather like a very small rhinoceros horn, and highly polished. It was probably the same kind of stone as that of

which the stone implements found in the Malay Peninsula are made, which are also called *Batu lintar*. It is pressed firmly against the body wherever pain is felt.

iv. *Batu nitar*, another name for Thunder-bolt: a minute four-side crystal, half an inch long and about two lines thick. A charm to be used only in extreme cases. It is dipped in water and then shaken over the patient. If he starts when the drops of water fall upon his body he will recover, otherwise he will die.

v. *Batu krang jiranau*, or Petrified root-stock of *jiranau* (a Zingiberad ?). They told us this is the Dyak name of a kind of wild ginger. The word is curiously near to *Jerangau* or *Jeringu*, which Ridley says is Acorus calamus: "a plant much used by native medicine-men," (Wilkinson, Malay-English Dictionary.) The thing so called was possibly part of the back-bone of some animal, bent double and the two ends tied together, each vertebra brown and shining after long use. A charm for dysentery and indigestion, and also for consumption. It is dipped in oil, and rubbed on the patient's body in a downward direction.

vi. *Batu ilau*, or Sparkling stone, also called *Batu kras*, or the hard stone. A six-sided crystal, two inches long and three quarters of an inch thick. One end appeared to have been formerly stuck into some sort of handle, as it was covered with *malau*, or lac. This is the indispensable sight-stone to be looked into for a view of that which is future, or distant, or otherwise invisible to ordinary eyes. It is specially used by *Manangs*, for discovering where the soul of the sick man, wandering away from the body, is concealing itself; or for detecting the particular demon who is causing the illness.

There were also, jumbled up together at the bottom of the bag, a number of tusks of wild boar, pebbles, and other rubbish, but these were pronounced to be *utai ngapa*, things of no importance. One article that we hoped to find was absent. Dasu said he should be glad indeed to have it, but it had never come in his way. It is the *Batu burung endan*, or Pelican stone. He explained to us that this is a stone which has the magical power of securing the presence and cooperation of a spirit who dwells in the form of the *endan*, (pelicanus malaccensis). When the *Manang* is seeking to enter *Sebayan*, the Spirit world, in search

of the errant soul of a sick man, this demon can ensure to him a swift and unimpeded passage thither and back again.

While Dasu was telling us the story of his vision of the Tortoise spirit who gave him the *Batu Bintang* I watched his face carefully for any sign that he believed, or did not believe his account. I could not be sure: but I am inclined to think he did not. He seemed relieved when we had finished our examination of his possessions, and he could pack them all up and carry them off to the security of his own dwelling.

Several similar collections of charms have at different times been given to me, obtained from Manangs who have become Christians but it was particularly interesting to me to have a set actually in use exhibited and explained by their owner, and I have thought that a description of them might possibly have some interest for other Members of the Society.

New Malay Orchids.

By H. N. Ridley.

The following new orchids mostly from the peninsula have been obtained since the publication of the Orchids of the Malay Peninsula in the Journal of the Linnean Society Vol. XXXII, p. 213.

In working up the group for the Flora of the Malay Peninsula I find we have as at present known 530 species belonging to 87 genera, and doubtless there are many more to be discovered especially in the northern districts, and on the hills of the east of the Peninsula. I have added a few descriptions of new species also from Sumatra, the orchid flora of which is really very little known, though the more showy kinds have been exported thence for many years.

Liparis atrosanguinea, n. sp. Stem stout sheathed 4 inches long tall, leaves ovate lanceolate acute crisped 8 inches long by three inches wide or less, scape stout over a foot tall. Raceme lax many flowered. Bracts very small ovate lanceolate, ovary and pedicel 1 inch long twisted, and the ovary with sinuate ribs. Flowers as large as those of *L. venosa* entirely deep red purple. Sepals linear obtuse revolute. Petals much narrower. Lip orbicular oblong ½ inch long subacute denticulate with two short semicircular lamellæ at the base. Column arched with narrow wings.

Perak on the Gap on the Thaiping hills at 4000 feet elevation, (Curtis and Derry.)

Allied to *L. venosa*, Ridl., but with a broader lip and deep purple flower. A really beautiful plant.

L. vittata, n. sp. Pseudobulbs conic crowded short 1 inch long. Leaf lanceolate acute 5 inches long ¾ inch wide. Scape 6 inches long. Flowers numerous ¼ inch across. Sepals lanceolate, petals linear all white. Lip entire,

oblong obtuse white with a central crimson bar. No calli. Ovary and pedicel ¼ inch long. Column straight. broadened at the base.

Sumatra, Indragiri (Curtis). Flowered in Penang Gardens.

A pretty little plant of the *Coriifoliae* section, somewhat resembling *L. lacerata* Ridl., inhabit, but the lip is quite entire, and very differently colored.

Platyclinis odorata, n. sp. Pseudobulbs cylindric tapering 2½ to 3 inches long leaf lanceolate subacute petiolate blade 9 inches long ¾ inches wide, petiole 2 inches long slender. Raceme nodding graceful one foot long, lower half nude slender. Flowers greenish white sweet-scented ¼ inch long numerous bracts lanceolate, acuminate longer than the shorter ovary, Sepals and petals lanceolate acûminate acute. Lip entire tongue-shaped obtuse minutely pubescent keels 2 nearly the whole length of the lip. Column rather short with broad wings, arms free from a little below the stigma as long as the hood linear apex soothed, hood of columns large toothed anther with a short broad beak.

Perak (Curtis, No. 2854).

Dendrobium viridicatum, n. sp. Stem rather slender flexuous over a foot long. Leaves lanceolate acute 2½ inches long, ½ inch wide sheaths ½ inch long. Flowers borne on leafless stems numerous in very short racemes of 2 or 3 flowers, peduncles ½ inch long, bracts very small ovate sheathing, pedicels ¾ inch long. Flowers ½ inch long light green. Sepals lanceolate acute, laterals broader, mentum very short blunt. Petals broader oblong lanceolate. Lip entire lanceolate acute column short with erect arms.

Perak, at Ipoh (C. Goldham.)

This seems as nearly allied to *D. macrostachyum*, Lindl., as to any other species.

D. Calicopis, n sp. Stems slender over a foot long internodes ½ to 1 inch long. Leaves lanceolate acuminate acute,

3 inches long ½ inch wide. Flowers three or four on a short peduncle ½ inch long, pedicels with ovary ½ inch long, flowers an inch across, sepals ovate obtuse, laterals narrower subacute, mentum as long cylindric subacute. Petals broader elliptic obtuse, all white tinted with rose, lip entire broadly oblong truncate apex bilobed, lobes short rounded, with 4 raised veins in the centre two thick in the centre and two thinner outside all white with a rosy spot on the tip. Column short and thick enlarged at the stigma arms erect both like crimson. Anther ovate pink large.

Lankawi Islands, (Curtis).

This belongs to the *Pedilonum* section and is allied to *D. hymenopterum*, Hook. fil. which grows in Kedah. The flowers though few and rather fugacious, are very pretty the deep crimson of the tip of the column, contrasting well with the rosy white of the rest of the flower.

D. tenuicaule, n. sp. Stems very slender weak, a foot long. Leaves narrow linear lanceolate acuminate 3 inches long ¼ inch wide, sheaths one inch long. Flower solitary large, pedicel and ovary slender ½ inch long. Upper sepal ovate acute, mentum very long cylindric apex decurved acute ¾ inch long. Petals broadly ovate all pink darkest at the tips. Whole flower ¾ inch across. Lip claw very long narrow lateral lobes broad up curved, mid lobe short ovate apex bifid, edge crisped, white with a central pink line. Column short with a very long foot, arms toothlike erect. Anther margin pubescent.

Lankawi, Ayer Hangat (Curtis).

D. bifidum, n. sp. Plant with the habit of *D. flabellum*, stems a foot or more long slender, pseudobulbs oblanceolate flattened 1½ inch long, 2 inches apart. Leaf broadly lanceolate ovate obtuse 5 inches long 2 inches wide. Bracts lanceolate acute red. Flowers 1 or 2 open at a time, ovary and pedicel ½ inch long. Sepals and petals linear oblong acute recurved yellow with red spots, petals a little smaller, mentum acute. Lip longer than

the sepals, claw narrow linear edges and ridges crenulate, apex with two narrow cuneate truncate labels half as long as the claw, white yellowish at the tip column stout conic, as long as the foot. Anther oblong-truncate in front.

Lankawi Islands (Curtis).

One of the *Desmotrichum* section resembling *D. flabellum* but remarkable for the terminal lobe of the lip formed of two narrow cuneate truncate lobes.

Bulbophyllum variabile, n. sp. Rhizome stout woody, pseudobulbs curved 3 inches long. Leaf elliptic ovate acute 6 inches long, 2 to 3 inches wide, thin by coriaceous, petiole an inch long. Scape from near the pseudobulb stout, red with several sheaths at the base and three or four lanceolate red spotted ones scattered on it. Bracts large lanceolate acute spotted red half as long as the ovary. Flowers 1 or 2 large show 3 inches across. Upper sepal lanceolate acute, laterals falcate. Petals lanceolate nearly as long all yellow with red dots. Lip tongue-shaped recurved with a broader base, short, apex blunt yellow with red spots. Column short, foot twice as long, apex free, arms short rounded.

B. Reinwardtii, Hook. fil. Fl. Brit. Ind. V. p. 754 (not *B. Reinwardtii*, Rchb. fil. *Sarcopodium Reinwardtii*, Lindl.)

Thaiping Hills on trees and rocks; collected by Mr. Curtis and myself; and at Gunong Batu Putih, by Wray, 1122.

There are two colour forms of this, one as described above, the other has the sepals and petals crimson, with red spots at the base; lip dark crimson, column yellow with crimson spots. Both forms are very beautiful and attractive plants, but like so many of these large Bulbophylla very troublesome to grow.

B. pustulatum, n. sp. Stem stout crinite, pseudobulbs crowded oblong conic half an inch long. Leaf elliptic lanceolate acute four inches long by one inch wide, petiole $\frac{1}{2}$ inch long. Flower solitary an inch across, pedicel slender $\frac{1}{4}$ an

inch long. Upper sepal lanceolate acute, laterals much broader ovate obtuse. Petals lanceolate acute nearly as large as the upper sepal. All yellow with red stripes. Lip fleshy ovate cordate obtuse dark maroon colored ¼ inch long with 2 raised lobes at the base, and a mass of papillæ on the disc. Column short with a long foot, the apex free, arms triangular oblong obtuse. Climbing on trees on the lower slopes of the Mount Ophir range.

B. tenerum, n. sp. Rhizome slender filiform pseudobulbs ovoid ¼ inch long about ¼ inch apart. Leaf oval half an inch long not petiolate. Scape slender red 2 inches tall with a few bracts at the base. Flowers 3 at the top of the stem ¼ inch long, shortly pedicelled. Upper sepal lanceolate acuminate, laterals much longer slightly gibbous at base, purple bases green. Petals ovate-elliptic much shorter green. Lip small recurved acute purple. Column thick curved green foot as long purple, arms long linear curved acute.

Lankawi Islands (Curtis).

Very small few-flowered species allied to *B. hirtulum*, Ridl.

B. cincinnatum, n. sp. Very small plant pseudobulb very small. Leaf elliptic obtuse closely nerved, 4 inches long 2 inches wide, scape very slender 2 inches long. Flowers ⅛ inch long, 2 on the apex of the scape. Bracts ovate very short ovary and pedicel ⅛ inch long. Sepals lanceolate subacute nearly equal brown, hairy. Petals brown linear oblong falcate hairy. Lip obtuse with long white hairs. Column short foot as long, arms short.

Perak, Batu Tujoh (Curtis).

This is another of the small species with a few small flowers on the end of a slender scape. The curious white curly hairs on the lip are perhaps its most striking characteristic.

B. brevipes, n. sp. Rhizome woody, pseudobulbs ½ to ¾ an inch apart cylindric conic curved. ½ inch long. Leaf elliptic shortly petioled one inch long ¼ to ⅓ inch wide,

apex subacute coriaceous; raceme very short about 6 flowered ¼ inch long. Flowers pale yellow. Bracts lanceolate much longer than the ovary. Sepals subequal lanceolate acuminate ⅜ inch long. Petals about ⅓ of the length elliptic blunt. Lip shorter curved thick fleshy deeply grooved base clawed, with two strongly raised ridges or wings from the base. Column short and thick with a short foot, arms erect narrow acuminate.

Perak, Bujong Malacca (Ridley), Scortechini drawing 176. Allied to *B. Gamblei*, Hook. fil., but with a much shorter peduncle.

B. ochranthum, n. sp. Pseudobulbs densely crowded oblong conic ¼ inch long. Leaf linear-lanceolate acute base narrowed 1¼ inch long, ⅛ inch wide. Scape nearly as long flowers 5 or 6 crowded in a head about ¼ inch long. Bracts lanceolate shorter than the ovary; upper sepal narrow linear-lanceolate acuminate, laterals one quarter longer, all white with yellowish tips. Petals less than half as long as the upper sepal lanceolate obtuse white. Lip small tongue shaped acute recurved yellow. Column thick foot shorter, arms narrow linear acute curved.

Perak, Thaiping Hills, at 3000 to 4000 feet elevation (Curtis).

B. (*Cirrhopetalum*) *Curtisii*, n. sp. Rhiome slender creeping, with ovoid conic pseudobulbs ⅜ inch long, ½ an inch apart. Leaf elliptic oblong obtuse thick 1 to 1½ inch long, half an inch wide, very shortly petioled. Scape slender 2 to 3 inches long with a lanceolate-pointed sheath in the middle. Flowers about 5 crowded at the top. Bracts lanceolate acuminate. Upper sepal triangular lanceolate laterals quite free, linear flat narrow ⅜ inch long yellow. Petals falcate lanceolate glabrous, brown. Lip small tongue-shaped fleshy curved. Column broad arms triangular short.

Dindings. In Mangrove swamps (Curtis).

B. perakense, n. sp. Pseudobulb conic ¼ inch long. Leaf elliptic narrowed at the base 2 to 3 inches long, ½ inch wide.

coriaceous, scape 3 to 4 inches long fairly stout; flowers crowded numerous glabrous; bracts lanceolate acuminate. Upper sepal ovate acute, laterals ⅜ inch long connate for half their length, tips acuminate. Petals nearly as large as the upper sepal, ovate lanceolate acute. Lip tongue-shaped channeled above, but little curved; column arms triangular obtuse erect broad.

Perak, on the Waterloo Estate near Kwala Kangsa. (Sir Graeme Elphinstone).

Dendrochilum angustifolium, n. sp. Rhizome long woody terete, pseudobulbs 1 to 1½ inch apart or closer, subcylindric ¼ to ½ inch long. Leaf narrowly linear lanceolate 2 inches long, ¼ inch wide blunt; mucronulate, narrow at the base, scapes solitary or several together on a stout short peduncle from the base of the pseudobulbs with numerous basal sheaths 3 to 4 inches long. Flowers numerous greenish white ⅛ inch long. Bracts ovate subacute half the length of the ovary, rachis scabrid. Sepals linear lanceolate. Petals narrower. Lip narrow lanceolate to obtuse with 2 thick ridges at the base and a lower one between them. Column short upper margin hooded minutely toothed, arms linear from near the base. Capsule half-an-inch long subglabose ovoid three-angled.

Selangor, Bukit Hitam, (Kelsall).

Pahang, K'luang Terbang, (Barnes).

D. ellipticum, n. sp. Rhizome long woody branched yellow, pseudobulbs conic-cylindric curved ¾ inch long. Leaf thinly coriaceous elliptic oblanceolate obtuse 3 inches long by one inch wide. Scapes 3 inches long with large sheaths at the base; bracts ovate acute nearly as long as the short ovary. Flowers ⅛ inch long rather fleshy. Sepals lanceolate acute, apex thickened terete. Petals similar but narrower. Lip pandurate obtuse pustular, basal ridges obscure forming a pustular mass. Column rather long, hood with three teeth, arms from about half-way up the column, linear longer than broad.

Singapore, Sumbawang, (Ridley 6536).

A curious little species on account of its pustular lip.

It is interesting as being the only low country species, the rest being all mountain plants.

Eria pendula, n. sp. Stems terete 2 or 3 feet long ¼ inch through leafy. Leaves narrowly linear lanceolate acuminate 4 inches long ¼ inch wide sheaths dilate upwards ¾ to 1 inch long. Racemes lateral hardly ½ inch long with several lanceolate acute red brown bracts half an inch long. Flower solitary nearly an inch across white. Pedicel and ovary ½ inch long red. Upper sepal oblong obtuse laterals broadly ovate reflexed, mentum short very broad and blunt. Petals oblong rounded as broad or broader than the upper sepal. Lip shortly clawed broad obovate rounded, side lobes indistinct, midlobe longer broad keels 2 curved plates on the disc. Column stem foot long.

Selangor at the Kwala Lumpur Caves (Kelsall).
Perak (Scortechini, drawing).
Borneo Sarawak.

Eria (*Trichotosia*) *cristata* n. sp. Stem a foot tall, leaves lanceolate acuminate oblique 3 inches long ½ inch wide, coriaceous almost glabrous above hairy beneath sheaths glabrescent when old, very hairy when young, half an inch long. Racemes short ¼ inch long very hairy, lowest bract cup-shaped; upper ones ovate lanceolate acute ½ inch long much longer than the ovary; flowers 2 to 3 half an inch long. Sepals lanceolate acute covered with red hair, mentum as long blunt; petals linear obtuse much narrower, lip with a very long claw pubescent at the base spathulate tip rounded retuse, glabrous except for the ends of the three raised veins which are covered with short clubbed hairs; column base pubescent.

Penang, and Lankawi Island at Terutau, (Curtis 1696).

E. rotundifolia, n. sp. Stems slender forming a matted mass. Leaves in small tufts on short stems ⅛ inch long, fleshy thick obovate blunt hairy ¼ inch long. Flowers ¼ inch long on a very short pedicel solitary with 2

cupular bracts with a short point, upper one longer than the ovary; upper sepal oblong ovate, laterals much broader, mentum rather large rounded. Petals oblong obtuse; all greenish yellow, billows on the outer serface. Lip oblong obtuse, tip broader three-lobed; side lobes small, midlobe rounded, all denticulate greenish yellow with a central raised bar ocreous, and some purple spots on each side, column short foot long olive green; anther orange conic one-celled, apex with a short blunt point, front edge emarginate. Pollinia 8 subequal.

Penang, above the Waterfall (Curtis).

A very curious plant forming large masses of small tufted leaves something like those of *Dischidia mummularia*. It is allied to *E. dasyphylla*, Par., a native of India, and *E. microphylla*, Bl. of Java. From the former it differs in its shorter rounded leaves, much shorter peduncle and longer mentum. The lip is broader at the tip and 3-lobed, and is differently colored. The anther is also quite different in shape having a kind of blunt conic boss on the top.

Ceratostylis puncticulata, n. sp. Stems slender weak curved to 3 4 inches long but little branched, sheaths short ampliate, mucronulate, minutely punctate. Leaves narrowly elliptic lanceolate blunt. petiolate 2 inches long ¼ inch wide. Flowers in pairs on short slender pedicels with minute bracts. Sepals lanceolate acute. Lip spathulate with an acute thickened tip.

Perak, Thaiping Hills at 5000 feet elevation.

Calanthe mutabilis, n. sp. Habit of *C. veratrifolia*. Leaves broad ovate lanceolate acuminate 12 inches long 4 inches wide. Scapes stout 20 inches tall sometimes branched, raceme about 6 inches long-many flowered. Bracts persistent oblong obtuse ¼ inch. Pedicels slender ¾ inch long. Upper sepal broadly lanceolate ovate laterals lanceolate acute ¼ inch long. Petals narrow linear. All white. Lip claw very short with 3 large lanceolate papillæ and a number of small ones, terminal lobe broad ¼ inch across reniform bilobed at the apex, white with claw and

base of midlobe yellow, at first, becoming ocreous orange after one or two days and fading red orange. Spur very slender an inch long obtuse decurved. Column thickened round the stigma, anther shortly bluntly beaked.

Sumatra, Deli, imported with *C. veratrifolia* and cultivated in the Botanic Gardens, Penang. Fl. September.

This plant Mr. Curtis says is indistinguishable from *C. veratrifolia* in leaves and habit. The flower is however quite different. The broad kidney-shaped bilobed lip, colour changing from white tinted with lemon yellow at the base to dull dark orange red is very striking. The branched scape a most unusual character in Calanthe is not apparently rare, as it has been produced in two out of three plants cultivated by him.

C. albo-lutea, n. sp. A large plant with broadly lanceolate acute leaves 2½ feet tall, 4 inches wide with strong ribs petiole stout 8 inches tall, scape over 1½ feet long, stout. Bracts caducous, flowers about half an inch across, pedicel and ovary ¼ inch long. Sepals and petals short broad ovate acute white. Lip 3 lobed white with yellow base, lobes very short falcate acute, midlobe obovate rounded reniform broad, bilobed, calli 2 short semiovate ridges at the base, spur shorter than the pedicel thick blunt clubbed curved.

Perak (Scortechini), Bujong Malacca (Ridley), Larut Hills (Derry).

C. aurantiaca, n. sp. Rhizome fairly stout, leaves narrow lanceolate acuminate 12 inches long ¾ inch wide, petiole 3 inches long. Scape slender a foot tall with a large lanceolate sheath towards the base. Bracts caducous. Flowers ⅓ inch across orange. Pedicel and ovary slender ½ inch long. Sepals ovate apiculate ½ inch long. Petals much broader. Lip narrow, side lobes subtriangular ovate, midlobe narrow linear oblong obtuse red. Keels 2 short semiovate, spur slender sigmoid blunt. Rostellum long beaked.

Perak, Bujong Malacca (Ridley).

C. microglossa, n sp. Pseudobulb short; Leaves distichous lanceolate acuminate 6 inches long, 2 inches wide. Scape stout a foot tall, with a large swollen sheath. Bracts lanceolate acuminate pale caducous. Flowers small ovary and pedicel ½ inch parts distinct. Sepals ovate acuminate ¾ inch long orange. Petals shorter orbicular ovate rounded. Lip shorter very small scarlet, oblong spathulate base broad narrowed in the middle; apex deflexed with two elevated ridges at base, spur as long as ovary thick scrotiform, rostellum and anther not beaked.

Sumatra, East Coast, (native collector) near *C. Scortechinii*, but with a differently formed and colored lip. It has quite the appearance of *C. curculigoides* at a little distance. It was sent with other orchids from the East Coast of Sumatra by a native and flowered in the Botanic Gardens, Singapore.

Coelogyne densiflora, n. sp. Pseudobulbs long cylindric-conic narrow 4 inches long. Leaves lanceolate acuminate 15 inches long 1¾ inch wide, petiole 2 inches long. Scape pendulous 8 inches long dense flowers numerous smaller than in *C. Dayana*, rachis and ovaries not nigrohirsute. Bracts red brown oblong truncate half an inch long and as wide; sepals lanceolate acute; petals narrower ½ inch long brownish. Lip, side-lobes short acute, apices narrow, outside white, inside brown with white streaks; midlobe orbicular, shortly apiculate, edge white, centre red brown with a large yellow central papillose mass; keels on the disc between the lobes crested. Column hood retuse anther white.

Selangor, on Bukit Hitam, (Kelsall)

C. pallens, n. sp. Rhizome stout, pseudobulbs subcylindric 2 to 3 inches long wrinkled. Leaves 2 elliptic or oblanceolate 3 to 6 inches long 1 to 1½ inch wide petiole 1 inch long. Scape from the top of the pseudobulb, base nude with 1 persistent bract. Raceme 6 inches long flexuous. Flowers 2 inches across. Sepals lanceolate acute pale green. Petals linear filiform. Lip white lateral lobes

long with subacute long pubescent tips, base saccate midlobe as long, with 2 long sinuous brown keels. Column hood three lobed central lobe long undulate. Anther conic not beaked.

Perak, Thaiping Hills (Curtis). Bujong Malacca (Ridley).

This is closely allied to *C. anceps*, Hook fil. Ic. Pl. 2109 but the scape is terete not compressed and the petals are much narrower.

Saccolabium Machadonis, n. sp. Stems curved slender 12 inches long. Leaves terete recurved 3 inches long $\frac{1}{8}$ inch thick apex pungent. Racemes 2 inches long. Flowers scattered $\frac{3}{8}$ inch long; sepals linear oblong obtuse. Petals narrower all recurved olive yellow. Lip pale violet, side lobes erect oblong truncate, midlobe much longer flat hastate triangular acuminate obtuse spur short curved blunt olive-yellow, upper callus in mouth rounded hemispheric with an anchor-shaped process on the top, lower edge of callus truncate pubescent, lower callus conic ending in a lamina running to the back of the spur. Column short stout sigmoid olive yellow. Anther flattened 1 celled hemispheric, pollinia subglobose on a broad elongate candicle tapering upwards to the point and fixed to the saddle-shaped disc. Rostellum lobes broad deflexed parallel oblong.

Johor. On Gunong Banang, Batu Pahat.

This species is allied to *S. halophilum*, Ridl., but differs in the violet hastate lip and the remarkable callus in the mouth of the spur. It is named after Mr. A. D. Machado with whom I collected the plant which flowered in the Botanic Gardens.

S. rugosulum, nsp. Stem stout 6 inches long. Leaves linear narrowed at the base, apex bilobed mucronate 5 inches long $\frac{1}{2}$ inch wide, sheaths $\frac{1}{2}$ inch long deeply transversely wrinkled. Racemes short $\frac{1}{2}$ inch long stout with a few cup-shaped sheaths at the base. Flowers $\frac{1}{4}$ inch across, on pedicels $\frac{1}{8}$ inch long yellow-spotted with red. Sepals ovate coriaceous. Petals thinner pallid. Lip boat-shaped, side lobes very short oblong, midlobe fleshy

ovate grooved ending in a long slender horn bifid at the tip, spur very short conic blunt. Column large arms rounded.

Kedah, on Kedah Peak.

S. (Cleisostoma) hortense, n. sp. Stem stout 1 to 2 inches long or more. Leaves lorate, coriaceous blunt unequally bilobed 4 to 6 inches long ¾ inch wide. Scape erect taller than the leaves, base nude apex racemed or more usually with a few branches. Bracts small ovate. Flowers ¼ inch across. Sepals oblong obtuse, laterals broader. Petals narrower yellow with red edges Lip yellow, side lobes small erect with two subacute points, midlobe broader ovate acute, spur scrotiform very broad red, callus in the mouth of the tube a thin lamina bifid at the apex. Column short and broad. Anther broad abruptly truncate beaked; pollinia elliptic, caudicle linear very narrow disc ovoid, rostellum entire. Capsu e elliptic oblong an inch long.

Singapore Jurong; Johor, Tana Runto, Malacca, Sungei Rambai (Derry) Perak (Scortechini's drawings No. 53); Penang, Tanjong Bunga (Curtis 1834). This little plant generally occurs in orchid trees, and I cannot think how it has escaped being described for so long. It grows also in Borneo. Its flowers resemble those of *S. latifolium*, Ridl. *Cleisostoma latifolium* and *C. fuscum*, Lindl., but it has a much smaller stem than that plant and the panicle is much smaller.

S. arachnanthe, n. sp. Stem tall climbing, leaves oblong obtuse 4 inches long 1½ inch wide sheaths ½ inch long. Panicle 2½ feet long with a long nude peduncle purple, branches 3 or 4 inches long spreading. Flowers scattered ½ inch across, pedicels longer slender. Bracts small ovate. Sepals and petals spreading spathulate obtuse, lateral sepals falcate white with purple spots at base. Lip fleshy side lobes indistinct forming a wall round the entrance of the spur, midlobe ovate broad short, spur broad saccate rounded large, all white, callus in the mouth oblong notched. Column short and broad, rostel-

lum short. Anther thin depressed hemisperic. Pollinia 2 globose, caudicle broadly linear, disc half as long oblong.

Perak and Kedah collected by Mr. Curtis from whom I have received specimens and a colored drawing. The habit of this plant is that of a *Renanthera* but the flowers rather are those of a *Saccolabium* of the section *cleisostoma*

S. patinatum, n. sp. Stem very short hardly an inch long. Leaves 2 to 3 very coriaceous oblong obtuse broadly bilobed 7 inches long by 2 inches wide. Raceme very short rachis stout, flowers about $6\frac{3}{4}$ inch across. Sepals obovate spathulate blunt. Petals narrower yellow with red spots. Lip saccate rounded, no distinct side lobes, terminal lobe ovate triangular entire glabrous blunt all white with violet spots. Column very short and broad at the base pink, no arms, anther obtuse conic in front triangular bifid. Pollinia oblong globose half split, candicle linear, disc oblong hastate. Rostellum bifid. Capsule elliptic narrowed at base 2 inches long.

Pahang, Kota Glanggi (Ridley).

Distrib., Borneo.

This is probably the *S. Calceolare*, collected in Perak by Carter in Fl. Brit. Ind., as it much resembles that species when dry. It differs from *S. Calceolare* in the entire smooth lip.

S. Myosurus, n. sp. Stems short 1 to 2 inches long crowded together and forming a dense mat with copious roots. Leaves lanceolate falcate subacute 3 inches long $\frac{1}{4}$ inch wide, sheaths $\frac{1}{4}$ inch long. Scapes slender 3 inches long scabred at the base, racemes thickened 1 inch long, bracts ovate very numerous blunt. Flowers minute. Sepals lanceolate oblong falcate. Petals narrower, lip side lobes oblong erect, midlobe ovate lanceolate shorter, spur pendulous as long as the ovary. Column short and broad. Capsule cylindric $\frac{1}{2}$ inch long, pedicel $\frac{1}{8}$ inch long.

Pahang at Kwala Tembiling.

A very curious plant, with the habit, foliage and ra-

cemes of a Dendrocolla, but the very minute flowers have the structure of a Saccolabium.

Ascochilus teres, n. sp. Stem 6 inches or more tall slender. Leaves terete acute 4½ inches long ⅛ inch thick, sheaths ½ inch long ribbed and transversely wrinkled. Raceme slender 4 inches long. Flowers few scattered ¼ inch across. Bracts very small ovate, ovary and pedicel ⅜ inch long. Upper sepal oblanceolate hooded; laterals oblong ovate oblique much larger. Petals broadly spathulate oblique shorter. Lip side lobes erect lanceate falcate, midlobe hastate, basal lobes rounded apex subacute spur half the length curved obtuse. Column as long as its foot nearly as long as the petals, arms short and broad.

Johor, Bukit Banang, Batu Pahat, (Ridley).

The habit of this is just that of a *Luisia* or one of the *Saccolabiums* and not at all like the rest of this genus.

A minutiflora, n. sp. Stem very short, leaves linear lanceolate falcate acute, 3 inches long, ½ inch wide or less, sheaths very short. Scape very slender an inch long pubescent; raceme very short. Bracts cucullate ovate. Flowers ⅛ inch across. Upper sepal lorate oblong laterals lanceolate, all keeled, yellow with red spots. Petals obcuneate yellow with a red spot at the base. Lip side lobes large oblong truncate, midlobe very short truncate entire spur short blunt rather thick saccate scrotiform obtuse. Column tall curved slender foot hardly as long. Anther long beaked.

Pahang, Kwala Tembiling.

Sarcochilus virescens, n. sp. Stem very short; Leaves lanceolate subacute 1½ inch long ½ inch wide or less. Raceme an inch long. Bracts ovate, flowers an inch across. Sepals ovate acute. Petals narrower lanceolate. All light green. Lip very short white, side lobes short rounded, midlobe represented by an orange callus, spur short broad conic, column short and thick, foot as long curved. Anther orange beak triangular.

Perak at Tapah. Collected by Mr. Aeria, flowered in the Botanic Gardens in Penang.

Podochilus densifolia. Stems over a foot long covered with close-set distichous leaves oblong obtuse, bases broad, an inch long ½ inch broad, sheaths ¼ inch long. Racemes 2 terminal an inch long densely flowered to the base, rachis stout, bracts ovate reflexed. Flowers ⅛ inch long, white. Sepals ovate obtuse mentum rather long. Petals ovate but little smaller. Lip ovate acute fleshy, an irregular fleshy callus in the middle with a thickened ridge running to the tip. Column short. Rostellum long deeply bifid acuminate. Anther lanceolate subacute.

Pahang, Tahan River, (No. 2370).

This plant has the inflorescence of one of the *P. pendulus* section, and indeed has been referred to that species, but the flowers are quite different and the callus on the lip is rather that of *P. cornutus.*

Zeuxine rupestris, n. sp. Whole plant 6 to 8 inches tall slender, leaves few lanceolate narrow blunt ½ to ⅝ inch long ⅛ inch wide, scape slender pubescent. Flowers 2 terminal ¼ inch long white. Sepals ovate hairy, petals adnate to the upper sepal. Lip base saccate with 2 linear subulate processes inside, limb clawed with a terete minutely toothed claw blade bifid lobes oblong, truncate. Column short rostellum lobes linear blunt incurved. Capsules erect ¼ inch long.

Penang on rocks at the top of Government Hill on the way to Richmond pool, (Curtis 2823). A very slender little white-flowered thing remarkable for the long narrow claw of the lip which thus more resembles that of an Anoectochilus.

Goodyera lanceolata, n sp. Stem slender 9 inches tall. Leaves lanceolate acuminate 1½ inch long nearly ½ inch wide. Scape 3½ inches long pubescent few flowered. Bracts lanceolate accuminate ⅜ inch long woolly pubescent. Laterals oblique acuminate woolly pubescent reddish. Petals adnate to upper sepal thin glabrous reddish.

Lip base saccate adnate to the column by the edges glabrous within with a raised central keel and a tuft of digitate processes on each side. Apex of lip acuminate subulate column short. Anther very long acuminate. Pollinia ½ inch long clubbed with a pair of caudicles. Caudicles connate about half way down. Rostellum long shortly bifid, lobes acute, stigma large with thin walls.

Selangor at the Gap on the Pahang track, (Curtis). A single specimen only was found. The plant is allied to *G. rubens*, Bl., *G. cordata*, Hook. fil.

Hetoeria parvifolia, n. sp. A slender plant of exactly the habit of *Zeuxine clandestina* Bl. Stem 2 inches long, leaves small lanceolate accute nearly sessile 1 inch long ¼ inch wide, sheaths ¼ inch long ampliate, scape slender pubescent 5 or 6 inches tall with several rather long distant acuminate sheaths. Raceme 2 inches long. Flowers very small ⅛ inch long appressed to the stem. Bracts narrow lanceolate acuminate nearly as long as the ovary, upper sepal adnate to petals ovate acuminate pubescent, laterals lanceolate acute. Lip base saccate with minute cylindric processes inside; apex lanceolate acute, sides at tip involute forming a tube not longer than the sepals. Columu short dilated above. Rostellum arms nearly as long linear truncate. Anther with a long narrow beak.

Penang, Government Hill. I collected this plant at the same time as Mr. Curtis and myself got *Zeuxine rupestris*.

Descriptions of New Genera and Species of Hymenoptera taken by Mr. Robert Shelford at Sarawak, Borneo.

By P. Cameron.

This paper is a continuation of one describing the new genera and species contained in the Sarawak Museum and those captured by Mr. Shelford at Sarawak, published in the Journal of this Society, No. 37, January 1902.

Siricidæ.

Xiphydria erythropus, sp. nov.

Black, the scape of the antennæ and the legs dark red. the wings dark fuscous-violaceous, the nervures and stigma black, the head and thorax closely rugosely punctured, the greater part of the vertex and the upper half of the front broadly; in the middle smooth and shinning, ♂.

Length 16 mm.

Hab. Matang, 3600 feet.

Front coarsely rugosely punctured, the punctures running into reticulations in parts; its centre is furrowed; the furrow is punctured on either side, the punctured band becoming wider towards the apex. On the smooth part of the vertex, at the apex, is a deep transverse furrow; behind, in the centre, is a narrower, shallower longitudinal furrow. Face irregularly longitudinally striated; the clypeus is piceous; its apex is broadly roundly incised. Mandibles opaque, sparsely punctured; their teeth are smooth and shining, large and broadly rounded. Thorax coarsely rugosely punctured: the pleuræ more coarsely than the mesonotum and more or less reticulated; the propleuræ smooths and with the central depression bearing some stout keels. The central lobe of the mesonotum has a deep furrow in the centre which is stoutly transversely striated; on the apex in the centre are 4 longitudinal keels. The fore tarsi and the

apical joints of the posterior are black. Except on the inner sides and apices of the lobes the median segment is closely punctured; the basal 4 segments are broadly furrowed across the base: these furrows are closely longitudinally striated.

Xiphydria melanopus, sp. nov.

Black; the wings fuscous violaceous: the head rugose, the vertex smooth, the thorax coarsely rugosely punctured and reticulated throughout; the lateral and central furrows on the mesonotum wide, closely transversely striated, the lateral curved and becoming wider towards the apex, ♀.

Length 17 mm.

Hab. Matang.

Mandibles at the base closely punctured and thickly covered with white hair. Middle lobe of mesonotum coarsely irregularly reticulated; the lateral lobes on the inner side less strongly and more irregularly reticulated, on the outer almost smooth; the furrows become gradually wider towards the apex. Scutellum rugosely, coarsely punctured, except at the apex, which is smooth and shining; it is longitudinally furrowed down the centre. Abdomen as in *X. erythropus*.

Apart from the difference in colour this species may be known from *erythropus* by the much wider, broader at the apex, more rounded and closely striated middle lobe of the mesonotum, by the front having a large deep round depression and by the thorax being more strongly punctured,

TENTHREDINIDÆ.

Monophadnus trichiocerus, sp. nov.

Black, shining; the clypeus, labrum, the apex of the femora, and the tibiæ, the upper edge of the pronotum and the tegulæ whitish-yellow; abdomen testaceous, darker towards the apex; the wings from the transverse basal nervure fuscous-violaceous, the stigma and nervures black, ♀.

Length 9 mm.

Hab. Matang.

Antennæ short stout; the basal joint testaceous, the apical joint rufous beneath; they are thickly covered with

stiff black hair. Centre of vertex bordered by wide and deep furrows, in front by a narrow oblique one; the front is deeply depressed, narrowly above, widely below. Apex of clypeus transverse. Labrum large, rounded in front. Mandibles pale yellow, rufous at the apex. The apical segments of the abdomen are narrowly edged with black at the apex; they are darker coloured than the basal and have a faint but distinct, violaceous tint. Legs covered with white hair; the apex of the hinder tibiæ black.

Selandria iridipennis, sp. nov.

Dark blue, the labrum, the coxæ, trochanters and the base of the tibiæ broadly white; the front wings fuscous, with a violaceous tint and highly iridescent; the stigma and nervures black; the hinder wings clear hyaline, ♀ and ♂.

Length 9 mm.

Hab. Kuching.

Antennæ thickly covered with stiff black hair. Front and vertex closely and distinctly punctured, the vertex not raised; the lateral furrows shallow, indistinct; on the centre of the front is a large wide fovea almost transverse in front, rounded behind, and having a smaller round fovea on either side. Clypeus closely and distinctly punctured. Labrum smooth. Base of mandibles closely punctured. Legs thickly covered with white hair; the claws bifid. The 1st transverse cubital nervure is widely interrupted in the middle.

CYNIPIDÆ.

Mesocynips, gen. nov.

Abdomen sessile, large, ovate, its middle as wide as the thorax, its basal 4 segments of equal width, the apical 2 longer. Antennæ stout, 13-jointed; they are placed near the top of the head. Eyes ovate, widely separated from the base of the mandibles, the malar space being longer than their length. Clypeus depressed, separated from the face, obliquely narrowed towards the apex, which is transverse. Mandibles stout, broad, bidentate, the teeth broadly rounded. Vertex stoutly, longi-

tudinally keeled; the front being also bordered below by a stout keel. The apex of the pronotum is sharply keeled; this keel is continued down the middle of the propleuræ obliquely, their apex being also keeled. Mesonotum and scutellum stoutly transversely striated. Scutellar fovea large, deep and stoutly keeled in the middle. The metanotum is bordered laterally by a stout keel and outside this, on the pleura, is a stout curved, irregular keel. Radial cellule short, the radius curved not reaching half way to the apex; the areolet is small, elongate, narrow, closed below by a thick pseudo-nervure; the cubitus reaches to the apex of the wing, it really issues from the radius, for a transverse cubital nervure can hardly be said to exist. The costal, median and submedian cellules are all distinct; the externo-median nervure is distinct, the discoidal nervure is distinct and reaches close to the apex of the wing, it is interstitial with the externo-median nervure.

The ovipositor is long and issues from the base of the abdomen, is straight and its sheaths are curved and project; the hypopygium is short and does not reach to the apex of the abdomen. Legs stout, pilose; the front calcaria are curved, the basal joint of all the tarsi is much the longer; the middle 3 are small; the apical large, but not quite so long as the basal one; the claws are large, curved, simple.

This new genus will form a new subfamily of *Cynipidæ*. It has the form of *Cynips* but differs from that in the abdominal segments being of almost equal length, and in the straight, not curved, ovipositor. The subfamily *Ibaliinæ* may be known from it by the long, cultriform abdomen, which has, as in our subfamily, the segments about equal in length. It has the alar nervures better developed than in the other subfamilies and in that respect resembles *Mesocynips*, whose systematic position is probably between the *Ibaliinæ* and the *Cynipinæ*.

Mesocynips insignis, sp. nov.

Ferruginous-yellow, the yellow tint more noticeable on the sides; the flagellum of the antennæ infuscated, paler towards the apex; the mesonotum and the basal half of the scutellum

strongly, sharply transversely striated; the wings dark smoky-fuscous; the base to the transverse basal nervure and above to the base of the stigma bright yellow: the apical nervures fuscous-black; the basal bright yellow, ♀.

Length 10 mm.

Hab. Kuching.

Head shining, sparsely punctured; the middle of the face raised and more closely and distinctly punctured; the face, front, vertex and occiput covered, but not thickly, with longish pale fuscous and white hairs. Apex of the mandibles broadly, deep black. Thorax Smooth and are shining; the pro-and meso-sparsely, the meta thorax thickly covered with long pale hair. Centre of metanotum smooth; the sides somewhat shagreened. Abdomen shining; the back and apical segments covered with long pale fuscous hairs; the penultimate segments punctured; the last much more strongly and deeply punctured. Femora sparsely, the tibiæ and tarsi thickly covered with pale hairs; the claws blackish.

This species is probably identical with "*Cynips*" *insignis*. Smith, described, Proc. Linn. Soc. 1857, p. 117, from Sarawak. It is in no sense a *Cynips* in the modern meaning, and belongs to the parasitic branch of the family. To prevent the making of a synonym I have used Smith's name in case an examination of Smith's type would prove it to be identical with the species I have described.

CHALCIDIDÆ.

Leucospis erythrogastra, sp. nov.

Black, the ventral surface and apex of abdomen rufous mixed with yellow; a large broad mark on the inner orbits, rounded at the top and bottom and roundly curved inwardly on the inner side. a large somewhat heartshaped mark-narrow above incised below–below the antennae, a smaller, somewhat similar mark below it, a line, dilated at the sides, on the base of the pronotum, a slightly broader one, not reaching to the edges, on its apex, 2 oblique irregularly oval marks on the centre of the mesonotum, a longish, broad line on its sides, slightly incised on the innerside, the sides of the scutellum from near the base and

its apex more broadly, a large curved line on the post scutellum, a large mark on the mesopleuræ narrowed and rounded below, its top at the base and apex—the apex more widely—obliquely narrowed, the greater part of the base of the metapleuræ—the mark straight at the base, the apex rounded and its top part wider than the lower, a large curved—its top rounded—oblique mark on either side of the 1st abdominal segment, a broad transverse line on the 2nd, a large curved one on the 3rd, which is dilated roundly backwards at the side and is then continued along the lower edges to the base of the segment, 2 small oblique marks on the top of the 4th, yellow; the remaining segments and the ventral surface rufous, mixed slightly with yellow. Legs yellow, the fore-femora broadly above, the middle broadly, irregularly at the base, a large curved mark on the outerside of the hinder-narrow at the top becoming gradually wider towards the bottom-the lower edge and the teeth, the hinder tibiæ broadly below on the inner and outer sides and their calcaria, deep black. Wings almost hyaline, the fore pair infuscated broadly in front, the nervures black.

Length 11 mm. ♀

Hab. Kuching.

Except the front, the entire head and body is strongly and closely punctured; the face and clypeus are more closely and finely punctured than the rest; the front above the antennæ is smooth and shining; the scutellar depressions are strongly, distinctly, but not very closely, striated; the lower part of the pro- and mesopleuræ depressed and smooth and shining, this part on the mesopleuræ being obscurely finely striated around the edges. There are 7 teeth on the hinder femora: the basal one is short, blunt and indistinct; the 2nd is not much longer, but more distinct and broader; the middle 3 are very much larger, longer and more widely separated; the 6th is distinctly shorter than the 5th; and the 7th is shorter and less distinct than the 6th. The hinder tarsi are rufous: the 4 anterior dark yellow; the hinder coxæ are rufous on the under side at the apex and have there a yellow mark. The ovipositor reaches to the apex of the scutellum.

Megacolus apicipennis, sp. nov.

Black, the tarsi dark rufo-testaceous; the basal half of the

wings to the ulna smoky-fuscous, the ulna fuscous, the cubitus black, the apex of the wings milky-white; the hinder femora with 7 teeth; the ovipositor stout, two-thirds of the length of the body, ♀.

Length to the commencement of the ovipositor 10 mm.; the ovipositor nearly 4 mm.

Hab. Kuching.

Head and thorax coarsely, closely rugosely punctured; the front is stoutly keeled down the middle and is stoutly transversely striated on either side of the keel; the face is sparsely covered with glistening white hair. The upper part of the propleuræ is smooth and is depressed at the base, the lower is irregularly striated. The basal third of the mesopleuræ is depressed and is irregularly, widely striated. The base of the pronotum is obliquely depressed and is irregularly transversely striated. The apex of the scutellum broadly projects in the middle and is there roundly incised. Median segment coarsely reticulated; at the base on the sides is a large area roundly narrowed at the apex; between them are 3 areæ of which the central is the larger, and it is widened at the apex; on the sides of the segment is a large projection, wide at the base, roundly narrowed towards the apex; the apex of the segment triangularly projects. The basal three teeth on the base of the femora are short, broad and bluntly rounded; the others are more distinct; the apical two are closer to each other than the pair in front of them and are less prominent.

Megacolus rufiventris, sp. nov.

Black; the abdomen bright rufous; the tarsi, four front knees and the apices of the 4 front tibiæ rufo-testaceous; the hinder femora with 6 irregularly separated not very prominent teeth; the wings hyaline, with a faint fulvous tinge; the nervures dark fuscous; the ovipositor black, very stout, as long as the abdomen, ♀.

Length 9; ovipositor 4 mm.

Hab. Kuching.

Head and thorax coarsely rugosely punctured; the pro- and mesopleuræ closely reticulated; there is a smooth band at

the base of the latter which has on the upper part, 7 keels (the lower 3 separated from the upper) and below are 3 more widely separated longitudinal keels. Front stoutly keeled down the centre and closely transversely striated. Pronotum transversely striated at the base; on its apex is a smooth narrow band. The projecting apex of the scutellum is prominent and ends in two rounded lobes. Metanotum coarsely irregularly reticulated; its sides near the base, project into a stout, sharply pointed tooth and there is a shorter one near the middle. On the apex of the basal third of the hinder femora is a short tooth somewhat triangular in shape, followed by an indistinct one at some distance; following this, and separated by a less distance, is a sharper, longer; more distinct one, at about the same distance from this is a stouter one, immediately behind this a short blunt indistinct tubercle-like one, followed on the apex by 2 stout keels of which the hinder is somewhat the larger. Tegulæ rufous. The head, thorax and legs are covered with a silvery pile.

Closely allied to *Megacolus* is the following new Indian genus.

Megachalcis, gen. nov.

Antennæ placed over the base of the clypeus, 11-jointed, the 2nd joint cup-shaped, the 3rd much longer and narrower than it. Scutellum large, roundly convex, its apex transverse. The sides of the metanotum project at the base above and have a stout tooth in the middle. The base of the mesosternum has a stout tooth in the centre; the for ecoxæ have a rounded leaf-like expansion on the apex above. Hind femora regularly toothed. Basal abdominal segment longer than all the others united; spiracles on the 3rd large; the last large, elongate and forming a sheath for the ovipositor, which is stout and twice the length of the abdomen.

The occiput is margined, more sharply above than on the sides. Base of metanotum areolated. Five segments are on the abdomen as seen from the side, but only four from above. Sheaths of ovipositor stout, broad, pubescent and round on the apex. Hinder coxæ nearly as long as the femora. Pronotum large, roundly produced in the middle at the base.

Comes nearest to *Megacolus*, Kirby, which differs from it in having the antennæ 12-jointed and in the scutellum ending in a raised, bilobate plate behind. The 1st abdominal segment is, in *Megacolus*, half the length of the remainder.

Megachalcis fumipennis, sp. nov.

Black; the 4 front tarsi and the hinder tibiæ piceous, the hinder tibiæ ferrugineous; the wings smoky, the nervures deep black; hinder femora with 10 teeth of nearly equal size, ♀.

Length 12; terebra 10 mm.

Hab. Khasia (coll. Rothney).

Scape of antennæ, head, median segment and sides of abdomen thickly covered with silvery pubescence; the tarsi on the underside are thickly covered with stiff pubescence and bear, on the apices of the joints, stiff spines. Sides of the head in front coarsely rugosely punctured, the punctures running into reticulations; the vertex closely punctured; the outer orbits bear shallow, scattered punctures. Apex of clypeus roundly, but not deeply, incised; the part between the antennæ raised, transverse below. Pro- and mesonotum rugosely punctured, the punctures running into reticulations. The scutellum is more widely reticulated; it is flat above; at its base, laterally, the mesonotum forms two large rounded masses, opposite the tegulæ. The base of the median segment is flat, smooth; on the middle are five stout, longitudinal keels; the outer side is deeply foveate. The apex of the segment has on the top a large, deep, fovea, rounded behind, transverse below; below this are 2 or 3 irregular reticulations; the sides project largely and have, shortly beyond the middle, a large, somewhat triangular tooth. Propleuræ irregularly reticulated behind; the apex below and the lower part depressed, the mesopleuræ deeply and widely depressed, smooth, obscurely and finely striated in the middle. Metapleuræ regularly reticulated. Abdomen smooth and shining at the base, the 2nd segment broadly in the middle and the others entirely and more strongly punctured.

Epistenia longicollis, sp. nov.

Purple mixed with green and blue; the flagellum of the

antennæ black, the 4 anterior trochanters, femora, tibiæ and tarsi, the hinder trochanters, base of femora, apex of tibiæ and base of tarsi narrowly, rufous; the flagellum of the antennæ black, the scape for the greater part green; the wings hyaline, the nervures and stigma dark fuscous. ♀.

Length 12 mm.; ovipositor 2 mm.

Hab. Kuching.

The clypeus and the basal half of the mandibles are dark rufous, the latter covered with longish hair. Face and front for the greater part golden; the face covered with curved striæ, which are finer and closer on the inner half of the malar space, the latter being clearly separated from the outer part, which is minutely and finely striated. The front is rugose between and above the antennæ; this central part is wedge-shaped and bounded by the wide antennal furrows; the part between this and the scape is blue and finely transversely striated. Pronotum broadly depressed in the centre; the sides broadly rounded and finely and closely transversely striated; the pleuræ are finely and closely covered with curved striæ. The middle lobe of the mesonotum irregularly transversely striated; its base is dark blue; behind this is a green band; the rest is dark purple, except for a green band at the tegulæ; the apex of the middle lobe is transversely striated, except round the edges; in the centre are two curved, deep furrows. Scutellum somewhat strongly and closely longitudinally striated; it is dark purple, with a blue band on the base. Median segment green; the centre purple; this purple part is narrow at the base and becomes gradually and roundly wider towards the apex; it bears 4 or 5 stout, irregularly curved keels; the parts bounding this are stoutly striated and are raised above the sides, which are finely and closely rugose. Mesopleuræ for the greater part green, finely, closely and irregularly striated: the lower part is clearly separated off and is closely irregularly reticulated, except at the base which is raised and finely and closely punctured. The base of the metapleuræ is almost smooth above; below covered with fine curved striæ; above is a deep, distinct curved crenulated furrow, Abdomen dark purple the basal five segments, above and below. with narrow, longish rounded green lines on the outer edges.

The fore coxæ are for the greater part purple; the fore femora have a large green mark on the top; the apices of the 4 front femora are paler than the rest of them; the 4 hinder tarsi are dark testaceous.

E. imperialis, Sm., from Sarawak may be known from this by the ovipositor being two-thirds of the length of the abdomen and by the legs being black. In our species the anterior ocellus is larger than the two posterior and is placed in front of them about double the distance these are separated from each other; the ocellar region is an elongated oval and is clearly separated from the eyes; the vertex behind them is depressed. The prothorax is long, two-thirds of the length of the mesothorax; the head is almost double its width; the metathorax is fully half the length of the scutellum; the incision on the apex of the 3rd dorsal segment is better marked than it is on the basal two.

EVANIIDÆ.

Evania malayana, sp. nov.

Black; the palpi white; the wings hyaline iridescent, the nervures and stigma black; the mandibles with a testaceous band behind the teeth; the face with a small raised point in the centre, ♂.

Length 11 mm.

Hab. Kuching.

Face, clypeus and mandibles thickly covered with white pubescence, smooth and shining. Front irregularly striated; the striæ more or less intersecting and forming narrow elongated, irregular reticulations; in the centre is a moderately stout longitudinal keel. Hinder ocelli separated from each other by not quite half the distance they are from the eyes. Malar space closely and finely striated, the striæ obliquely curved. The central lobe of the mesonotum bears shallow, irregular punctures; the scutellum is less distinctly and more finely punctured; metanotum closely reticulated; in the centre the reticulations are closer, longer and narrower; laterally larger and rounder. At the apex the propleuræ bear some shallow elongated foveæ; near the bottom the meso- bear a broad, somewhat oblique band of punctures; the meta- closely and almost uniformly reticulated.

The metasternal keel is sharply raised; the fork is stout, short and broad, the sides straight, the apex bluntly rounded. The 2nd transverse cubital nervure is obsolete; the cubitus distinct; the lower part of the apical abscissa is rounded: the upper straight and oblique. The petiole above between the middle and apex, is irregularly longitudinally striated; the sides more stoutly obliquely striated. Tibiæ and tarsi thickly covered with short stiff black pubescence and more sparsely with short black spines; the calcaria are black; the front tibiæ and base of tarsi are pale testaceous in front.

Evania violaceipennis, sp. nov.

Black; the scape and the basal joints of the flagellum beneath, the mandibles, except the teeth and the 4 anterior femora and tibiæ in front, pale testaceous; the posterior tarsi except the apical joint, white; the wings uniformly dark violaceous; the nervures and stigma black. ♀.

Length 11-12 mm.

Hab. Kuching.

Face and clypeus opaque, alutaceous: the apex of the clypeus rounded; the malar space alutaceous; they are all thickly covered with silvery pubescence. Front longitudinally striated throughout; the striæ all distinctly separated; the central is the stouter. The hinder ocelli are separated from the eyes by almost double the distance they are from each other. The middle lobe of the mesonotum is indistinctly, irregularly reticulated. The part at the sides of the scutellum behind is stoutly, obliquely striated. The metanotum is closely, rather strongly, irregularly punctured, except at the apex which is smooth. Propleuræ almost entirely smooth; the meso- smooth, indistinctly punctured below, above with a raised, slightly oblique, band of stout striæ; the meta- are stoutly, regularly reticulated. The tibiæ are thickly covered with stiff black hair and sparsely with black spines. The apical abscissa of the radius is roundly, broadly curved inwardly; the first recurrent nervure is received distinctly beyond the transverse cubital; the 2nd transverse cubital nervure is obsolete. The sternal keel is stout; the metasternal process is stout, the forks diverge outwardly,

are stout, roundly curved and bluntly pointed at the apex. Petiole smooth above; its apical half laterally stoutly, obliquely striated.

STEPHANIDÆ.

Foenatopus fuscinervis, sp. nov.

Black: the head dark red; the vertex blackish; the basal joints of the antennæ pale rufous; the wings clear hyaline; the nervures and stigma pale fuscous; the abdominal petiole twice the length of the following joints united; the prothorax twice the length of the mesothorax, ♂.

Length 13 mm.

Hab. Kuching.

The scape of the antennæ is not much longer than the 2nd joint, which is slightly more than one half the length of the 3rd; the 4th is as long as the 2nd and 3rd united. The apical three frontal tubercles are stout, narrowed, but not sharply, above; the hinder pair are smaller and more rounded. Face closely rugosely punctured; its sides finely and closely transversely striated. Vertex closely, distinctly transversely striated and indistinctly furrowed down the middle, the furrow not breaking the striæ. The inner orbits are distinctly margined; the outer are pale yellowish. Prothorax closely and rather strongly aciculated, except at the apex which is testaceous in colour; there is a curved, not very stout keel on the apex; a stout keel runs between the tegulæ; the middle of the mesonotum is deeply depressed, the depression with some transverse striæ, and it is rounded at the base and apex. The base of the metanotum is widely depressed; in the centre are 2 stout straight keels; outside these is a thinner one; outside these a stouter oblique one and the edges are also keeled. The rest of the segment is stoutly reticulated, except the lower part of the metapleuræ, which is smooth, except for 4 stout, slightly oblique keels. Mesopleuræ sparsely punctured at the base and apex. Petiole very long and slender, closely striated; the sides, except on the apical fourth, furrowed; the sides of the 2nd and 3rd segments are testaceous. The alar stigma is long, nearly as long as the radial nervure; it is pale in the centre, pointed at the apex from

where the radius leaves it; the radius has the basal abscissa oblique and curved; the apical is straight and is about one fourth longer than it. The 4 anterior coxæ, trochanters, tibiæ and tarsi are testaceous; the basal half of the hinder femora is coarsely rugosely striated; there is a blunt, broad, not prominent, tooth behind the middle of the hinder femora; a stout one beyond the middle, a smaller one nearer the apex and 3 short teeth between these which are fuscous below.

Stephanus Ceylonicus, sp. nov.

[Black, a pale spot below the eyes; the 4 front legs piceous; the wings clear hyaline; the nervures and stigma black; the petiole as long as the rest of the abdomen united; the hinder femora with 2 teeth: the ovipositor broadly white at the apex. ♀.

Length 28 mm.

Hab. Trincomali, Ceylon. (Yerbury).

Antennæ black; the 2nd joint of the flagellum is distinctly shorter than the 3rd, which is slightly shorter than the 4th. Vertex closely covered with stout, curved striæ, which are stouter and more regularly curved before than behind; the 3 front teeth are stout and of nearly equal size, the hinder are almost obsolete. Face irregularly transversely rugose; above the punctures run into curved striæ. The narrowed basal part of the pronotum is closely, stoutly, transversely striated, but only sparsely at the extreme base; at the end of this is an impunctate space, the apex has a band of large deep punctures in the middle; the sides have some scattered, deep punctures. Scutellum impunctate. The depression at the base of the metanotum bears stout longitudinal keels; the part behind this is covered with round clearly separated punctures; the apex is irregularly, transversely reticulated. Propleuræ covered with stout, oblique striæ; the meso- almost impunctate; the meta- smooth, below with stout curved striæ, which form almost reticulations. Petiole closely striated. There are 2 large, widely separated teeth on the hinder femora, the hinder being slightly the larger; there is a short, broad, bluntly rounded tooth, immediately behind the posterior large one; and this is followed by a much smaller one.

The wings have a steel-coloured iridescence; all the nervures are complete; the basal abscissa of the radius is distinctly shorter than the apical; it is straight, not curved, and is slightly angled near the base. The ovipositor and abdomen appear to be stouter than usual; the former is as long as the body.

In Schletterer's arrangement (Berl. Ent. Zeits. xxxiii, 117) this species would come near *S. hæmatipoda*, Mont.]

BRACONIDÆ.

BRACONINÆ.

Iphiaulax, Foerster.

1.—*Wings fuscous, the head, more or less of the thorax, and the fore legs, red.*

Iphiaulax Shelfordi, sp. nov.

Black, shining, the head, pro- and mesothorax, the front legs and the middle coxæ, trochanters and femora, red: the 1st, 2nd and basal half of the 3rd abdominal segments strongly longitudinally striated; the wings fuscous, the under side of the stigma, the upper half of the 1st cubital and the base of the radial cellule to the end of the stigma, orange-yellow. ♀.

Length 15 mm.; terebra 95 mm.

Hab. Kuching, February.

Antennæ black, shorter than the body; the scape 3 times longer than broad, of equal width throughout; the 3rd about one-third longer than the fourth. Front of vertex smooth and shining, their sides sparsely haired. Face strongly punctured, except in the centre above the clypeus, where it is depressed. Clypeus smooth, bare, except at the apex, twice broader than high, its sides above broadly rounded. Mandibles rufous, black at the apex, the middle closely and finely striated. Metanotum covered with black hair; its apical slope rather strongly longitudinally striated. The raised apical part of the petiole is depressed and smooth in the middle; the sides are stoutly, irregularly striated; the apical half of the lateral depression is stoutly transversely striated. The 2nd segment is closely, strongly longitudinally striated except on the

basal lateral depressions and in the centre at the apex; the basal area is finely and closely longitudinally striated; it is twice longer than its greatest width and becomes gradually narrowed towards the base and apex, the apical part being almost twice the length of the basal. Radial cellule long and narrow; the 2nd cubital is, on the lower side, nearly 3 times the length of the first and is distinctly longer than the 3rd. There is a small fulvous cloud on the base of the fore wing on the apical side. The ovipositor has the sheath thickly haired at the base and has a broad white band near the apex.

The legs are only shortly and sparsely haired; the parapsidal furrows are deep; the scutellar depression is shallow and irregularly striated; the hypopygium is large and projects beyond the cerci and is brownish in colour.

Comes near to *I. insignis*, Sm. *sec.* Szepligeti Termész. Fuzetek, xxiv, 372, but that species is larger (20 mm.) and has the ovipositor shorter compared with the body; has the 3rd and 4th segments striated, the 3rd antennal joint hardly longer than the 4th, the scape only twice longer than broad, etc.

Iphiaulax Kuchingensis, sp. nov.

Length 12 mm.; terebra 45 mm.

Hab. Kuching, February.

Agrees in colouration with *I. Shelfordi* but is smaller, more slenderly built and has the ovipositor shorter compared with the body, the radial cellule is not fulvous on the basal part, the apex of the petiole is not distinctly transversely striated; its central apical part is more strongly and distinctly longitudinally striated; the area on the base of the 2nd segment is not so distinctly defined and is continued as a keel to near the apex of the segment, there being no keel on *Shelfordi*; there are on it two lateral oblique keels bordering and limiting the basal half of the segment; and the apical two-thirds of the ovipositor are white.

Scape of antennæ cylindrical, not hollowed, becoming gradually wider towards the apex; its length about twice of the width at the apex. Face, except immediately over the centre of the clypeus, closely and coarsely punctured and covered with

stiff black hairs; the clypeus smooth, except on the apex, where there is band of black hair; above it is broadly rounded and has a distinct margin. Mandibles black at the apex; the base bare, the middle covered with long hair. Metanotum thickly covered with long black hair; on the apex in the middle are some irregular striæ. On the apex of the petiole are 3 irregular longitudinal keels, with one or two small ones; the 2nd segment is strongly striated; the striæ are mostly oblique and curved; the central keel is bordered by short round ones; the basal half of the 3rd segment is strongly, longitudinally straits ed; the remaining segments smooth. The fore legs are rufoulike the thorax; the middle femora and base of tibiæ of a darker rufous colour. The stigma is rufous below; there is an obscure fulvous cloud in the 1st cubital cellule; the 2nd cubital cellule is shortly, but distinctly longer than the 3rd.

Iphiaulax reticulatus, sp. nov.

Black, head, pro- and mesothorax and the anterior legs rufous; the scape below and a line on the middle femora dark rufous; the wings dark fuscous; the basal 4 abdominal segments closely longitudinally striated; the basal plate on the 2nd segment large, its length the width of the base, smooth; the apex obscurely finely striated; the keel extends to the apex; the raised part on either side of it is coarsely reticulated: the sides of the apex are more closely reticulated; at the base and middle coarsely obliquely striated. ♀.

Length 18; terebra 21 mm.

Hab. Kuching, February.

Scape of antennæ long, as long as the 4 following joints united; the 3rd joint is not much longer than the 4th. Head smooth and shining, the face covered with black hair; the clypeus shagreened, projecting, rounded behind. Front not depressed, a deep furrow with wide oblique sides above. Mandibles rufous, their teeth black. Middle lobe of mesonotum distinctly raised and separated from the lateral; its base bluntly rounded. There is an elongated fovea on the apex of the metanotum, bounded by a V-shaped keel below. Tibiæ and tarsi covered with moderately long hair. The raised part of the

petiole has a keel in the centre: it is raised and rounded at the base and does not extend to the apex; the apical half, on either side of it, is irregularly reticulated; second segment stoutly irregularly reticulated: the depression is stoutly, closely obliquely striated; the raised outer apical part is closely rugose and with some striæ. The 3rd and 4th segments are close, uniformly longitudinally striated. Wings, except for a narrow oblique cloud at the base and one below the 1st cubital cellule, dark fuscous, with a slight violaceous tinge; the 2nd cubital cellule above is slightly longer, below a little shorter than the 3rd.

Iphiaulax patrous, sp. nov.

Black: the scape of antennæ, head, thorax and forelegs ferruginous, the middle femora piceous; the wings fuscous; the 2nd 3rd and 4th abdominal segments closely longitudinally striated; the 2nd segment reticulated in the middle, the keel broad, extending to the apex; the dilated basal part broad at the base, becoming gradually narrowed to near the middle of the segment: its base smooth, the rest closely covered with twisted longitudinal striæ. Sheath of ovipositor densely pilose, broad: the apical third white; it is twice the length of the body. ♀.

Length 13 mm.

Scape of antennæ long, of equal width, longer than the 2nd and 3rd joints united; the 3rd joint shortly, but distinctly, longer than the 4th. Face closely and distinctly punctured, except in the middle, which is raised and smooth. Clypeus punctured below: it becomes obliquely narrowed towards the top which is transverse and is not dilated like the lower part. The ocellar region and the middle of the front depressed; the vertex sparsely covered with long hair. The raised part of the petiole is smooth and depressed at the base and has a shallow furrow in the middle; the apex has a keel down the middle and bears some stout, mostly transverse, keels. The lateral depression on the base of the 2nd segment is large, irregularly striated in the middle, narrowed at the base and with a large fovea at the base and on either side at the apex; the base of the 3rd segment is smooth laterally at the base and depressed there especially at

the sides; the middle of the segment is depressed and striated. The 4th segment has a large, smooth depression on the base at the sides. The legs are covered with black hair, which is longest on the posterior pair. The 2nd cubital cellule is slightly shorter than the 3rd.

This species is closely related to the species I have, with some doubt identified as *B. foveatus*, Sm. This agrees with it in colouration, but is larger and more stoutly built (16 mm.): the 2nd cubital cellule on the top is equal in length to the 3rd; the apex of the petiole is not stoutly, irregularly transversely striated; the lateral depressions on the 2nd, 3rd and 4th segments are larger and deeper, the keel on the 2nd segment is more distinctly defined and the longitudinal striation on the abdomen is stronger.

Iphiaulax mareotis, sp. nov.

Black, the head, pro- and mesothorax and the lower half of the metapleuræ ferruginous; the anterior legs, the middle coxæ, trochanters and femora rufous. the middle tibiæ dark rufous; the wings dark fuscous, the stigma and nervures black; the 1st and 2nd abdominal segments, the greater part of the 3rd and the 4th and 5th broadly in the middle longitudinally rugose; the furrows on the 2nd, 3rd and 4th segments are crenulated; the keel on the 2nd segment extends to the apex; the plate is longish and is stoutly longitudinally striated. ♂.

Length 15 mm.

Hab. Lingga.

Face thickly covered with long hair; its centre bare, smooth and shining; its lower sides have a yellowish tint. Front deeply excavated laterally; the hinder ocelli each bordered by a deep curved furrow behind. Clypeus transverse in the middle above, its sides rounded. Metanotum thickly covered with black hair. The petiole is more roundly convex than usual; the sides of the 2nd segment are not depressed at the base; the 3rd to 6th segment have a large roundish fovea on the sides near the middle, the foveæ becoming successively smaller. There is a faint curved cloud in the 1st cubital cellule at the base and a clearer, smaller pyriform one below the lower part of the 1st transverse cubital nervure; the 2nd abscissa of the radius is slightly, but distinctly, longer than the 3rd.

Iphiaulax Wallacei, sp. nov.

Black, the head, scape of antennæ, thorax and 4 front legs, ferruginous; the wings uniformly dark fuscous, the face with 2 deep short furrows in the centre immediately below the antennæ; the petiole with a narrow longitudinal keel down the centre, almost entirely smooth; the 2nd and the basal half of the 3rd segment closely longitudinally striated; the keel is broad at the base, becomes gradually narrowed to the middle, is closely longitudinally striated and extends to the apex of the segment. The suturiform articulation is deep, closely longitudinally striated and with both lateral branches deep, narrow, straight, oblique and striated. Sheaths of the ovipositor broad and thickly covered with longish black hair. ♀.

Length 15 mm.; terebra 18 mm.

Hab. Kuching.

Antennæ originating from prominent, almost biarticulate, tubercles; the scape longer than the 2nd and 3rd joints united; the 3rd and 4th joints are equal in length. Front hardly excavated; there is a narrow keel between the antennæ; the raised part, separating the furrows below the antennæ, becomes gradually narrowed above. Face in the centre smooth, the sides punctured sparsely and pilose. Clypeus depressed; the top transverse, the sides rounded. There is a short stout keel between the scutellum and post scutellum. Petiole with an irregular band of fine striæ before the middle. The depressions on the base of the 2nd segment are narrow, deep, oblique. The furrow on the 3rd segment is smooth. The hinder tibiæ are deeply grooved on the outer side from near the base to near the apex.

The 2nd abscissa of the radius is as long as the third; the apex of the middle tibiæ and their tarsi are blackish; the metanotum is broadly blackish; the hypopygium does not extend beyond the apex of the dorsal segment; the 2nd segment is square and is longer than the 3rd.

This is a broader and stouter insect than any of the other species here described.

Iphiaulax syleus, sp. nov.

Black, the head, pro- and mesothorax and the front coxæ, trochanters, femora and tibiæ, rufous; the wings dark fuscous;

the apex of the petiole with a stout keel down the centre and 2 or 3 oblique lateral ones; the area on the 2nd segment extends to the middle, becomes gradually narrowed, has raised sides and is irregularly striated; the part bordering it irregularly, stoutly reticulated; the 2nd, 3rd and basal half of the 4th closely, longitudinally striated; the ovipositor thickly pilose, the apical fourth white. ♀.

Length 11 mm.; terebra 14 mm.

Hab. Kuching, February.

Scape of antennæ about 3 times longer than broad; the 3rd joint about one fourth longer than the 4th and about twice the length of the 2nd. Face raised in the centre, flat, impunctate, transverse below, rounded above; the cheeks distinctly punctured. Clypeus raised, narrowed above; its apex as long as its length from the top to the bottom. Palpi blackish. Front not deeply depressed, the depression not including the ocelli. Scutellar depression narrow, closely crenulated, the central part of the 2nd segment is stoutly, transversely irregularly reticulated on the inner side; the outer and the apical parts longitudinally striated; the base laterally is smooth, shining and is not depressed; the outer sides are depressed and stoutly obliquely striated. The two transverse furrows are deep and closely striated; the outer furrow on the 2nd segment is long, wide, distinct and closely striated; that on the third is more curved and striated like the rest of the segment; the basal part is smooth; the curved furrow on the 4th is smaller, narrow, striated, the basal part being also striated. The 4th segment is closely striated to near the apex.

This species is not unlike *I. patrous*, but that has the scape red; the raised central part of the 2nd segment has its sides curved inwardly and is narrower at the apex, the lateral foveæ are not distinctly bordered behind by furrows and the median segment is black.

ii.—*Head, more or less of the thorax and fore legs red, the wings fuscous, yellow at the base.*

Iphiaulax sadyates, sp. nov.

Black, the head, thorax and 4 anterior legs ferruginous; the anterior wings yellowish, suffused with fuscous, the posterior

yellow, with the apical third and the lower two-thirds fuscous; the basal three segments of the abdomen coarsely longitudinally striated; the basal half of the four in the centre more finely, and the base of the 5th still more finely, striated; the 4th and 5th segments with a crenulated curved furrow at the base, the plate on the base of the second segment is small, smooth and shining; a narrow, indistinct keel leads from it to the centre. There is a cloud on the lower side of the 1st cubital cellule, which is continued downwards along the recurrent nervure on the upper half and along the cubital nervure; the 2nd abscissa of the radius is longer than the 3rd. ♂.

Length 16 mm.

Hab. Santubong, 2600 feet.

Antennæ longer than the body; the face thickly covered with long hair; the clypeus rounded above. The petiole is stoutly keeled in the middle; the striæ on the sides are stout, irregularly curved and more or less broken. The sides are depressed and irregularly striated; the striæ along the keel run into reticulations. The suturiform articulation and the keel on the third segment are stoutly longitudinally striated; that on the 4th is less strongly; there are no apical transverse furrows.

The scape of the antennæ is rufous above; it is slightly more than twice longer than wide; the 3rd and 4th joints are equal in length.

Iphiaulax varipennis, sp. nov.

Pale yellow, the back of the abdomen, the vertex, the middle of the front broadly, a mark, rounded on the top, in the centre of the face, the sides of the mesonotum and a large mark in its centre at the base, an irregular mark on the base of the metanotum, the mesosternum, a curved mark, narrowed behind, on the centre of the mesopleuræ, two marks on the prosternum and the hinder legs, black. Wings with the basal half, the 1st cubital cellule and a narrow curved spot, dilated below, underneath it, yellowish-hyaline; the rest of the wing dark fuscous, the hinder wings yellowish hyaline to beyond the middle, the apex dark fuscous, the band on the lower side extending to near the middle; the basal half of the stigma is orange-yellow. ♀.

Length 13 mm.; terebra 4 mm.

Hab. Matang, 3600 feet.

Antennæ longer than the body, black; the 3rd joint hardly longer than the 4th and twice the length of the 2nd; the scape about 3 times longer than wide and thickly pilose. Head and thorax smooth and shining. The top of the petiole stoutly, irregularly and not very closely longitudinally striated; its sides below pale orange yellow; the centre of the 2nd segment is stoutly irregularly longitudinally striated; the suturiform articulation is crenulated in the middle; the apical segments are narrowly banded with white on the apex.

The ventral surface is marked laterally with black spots; the abdomen is about twice the length of the thorax; the 2nd abscissa of the radius is shorter, but not much, than the 3rd.

Iphiaulax portius, sp. nov.

Head and thorax ferruginous, the ocellar region black, the metanotum infuscated; the 4 front legs rufous-yellow; the wings to the stigma yellowish hyaline, the rest fuscous, the base of the stigma yellow; the hinder wings yellowish to the middle below, above beyond the middle; the greater part of the 2nd abdominal segment coarsely longitudinally striated; the 3rd less strongly and distinctly to near the apex; the plate on the 2nd segment large, triangular, its keel slightly shorter than it; the part surrounding it depressed. ♀.

Length 9 mm; terebra 7 mm.

Hab. Kuching.

Antennæ black; the scape triangularly projecting on the apex below; the 3rd joint, shortly but distinctly, longer than the 4th, front and vertex smooth and shining; the face closely rugosely punctured; the clypeus depressed, almost smooth, rounded above, transverse below. The petiole behind the basal slope is irregularly punctured; near the apex it is much more strongly and distinctly punctured: the band is prolonged in the middle and does not reach to the apex, which is smooth. The second segment is smooth in the middle at the apex; the suturiform articulation is crenulated; the furrows on the 3rd and 4th segments are also crenulated, but not strongly. The recurrent

nervure is not quite interstitial, being received shortly behind the transverse cubital.

Iphiaulax halæsus, sp. nov.

Ferruginous, the abdomen, antennæ except at the base, and the hinder legs, black; the fore wings to the transverse basal nervure, the 1st cubital cellule and an oblique spot on the upper edge of the 2nd cellule, yellowish-hyaline; the petiole keeled in the centre; the 2nd and 3rd cubital cellules closely longitudinally striated, the basal plate on the 2nd segment elongated, the sides and centre keeled; the keel extends to the apex of the segment. Face sparsely punctured; there is a square depression below the antennæ. Parapsidal furrows distinct. Petiole broad, as long as the 2nd segment: its lateral keels indistinct at the base. The keel bordering the lateral depression on the 2nd segment is narrow, straight and oblique; the part bordering it on the outerside is closely obliquely striated, the apical segments are narrowly lined with pale yellow. Legs moderately pilose; the middle tarsi infuscated.

Length 16 mm.; terebra 17-18 mm.

Hab. Kuching.

Antennæ shorter than the body; the basal two joints obscure rufous: the 3rd and 4th joints are about equal in length; the 2nd abscissa of the radius is slightly shorter than the 3rd; the transverse median nervure is not quite interstitial, being received in the discoidal cellule, but almost touching the transverse basal; and therefore differs from the typical *Braconinæ* in which it is completely interstitial. In other respects the species is a typical *Iphiaulax*.

iii.—*Head, thorax and fore legs red; the wings yellow at the base, hyaline at the apex.*

Iphiaulax crassitarsis, sp. nov.

Head, thorax, anterior legs, the greater part of the middle emora and tibiæ and the scape of the antennae, ferruginous; the asal half of the fore wings yellowish hyaline, the apical clear yaline, the hinder wings fuscous, hyaline at the apex; abdomen short, ovate, broader than the thorax, closely, but not very disinctly or strongly longitudinally striated. ♀.

Length 8 mm.; terebra 6 mm.

Hab. Kuching.

Scape of antennæ fully three times longer than wide; its apex below sharply projecting; the 3rd joint is distinctly longer than the 4th. Face punctured; the clypeus convex; its base rounded; its apex below obliquely depressed; the labrum is distinctly seen below it, and is rounded at the apex. Vertex deeply depressed and with a deep furrow in the middle. Temples obliquely narrowed. The petiole rises straight from the base and forms an angle with the second segment; its base, in the centre, is rufous, its apex closely, rugosely longitudinally striated. The plate on the second segment is smooth and shining; it is large, its length slightly longer than the width at the base; it becomes gradually narrowed towards the apex with the sides curved at the apex; there is no keel issuing from it; the lateral furrows are straight, wide, moderately deep and oblique. Suturiform articulation crenulated; its apical lateral furrows wide, shallow; there is an indistinct furrow on the apex of the segment; and a more distinct, crenulated one on the apex of the 3rd, 4th and 5th segments; the apical segments are clearly separated at the edges. Legs stouter than usual, the hinder pair having the tibiæ and tarsi distinctly thickened; they are thickly pilose; the pile on the front of the middle tibiæ is rufous; the basal joint of the hinder tarsi is thickened. The 2nd abscissa of the radius is slightly shorter than the apical; the 2nd transverse cubital nervure is faint; the stigma is shorter and broader than usual.

iv. *Entirely luteous, the wings fuscous, yellow at the base.*

Iphiaulax matangensis, sp. nov.

Luteous, the head and mesonotum paler; the back of the abdomen suffused with black; the wings fuscous, the base to the transverse basal nervure, and a cloud in the 1st cubital cellule yellowish-hyaline; a small hyaline spot below the bottom of the 1st transverse cubital nervure; the stigma black, narrowly yellow at the base; the keel on the 2nd segment is not much dilated at the base, becomes gradually narrowed and extends to the apex. ♀.

Hab. Matang, 2800 feet.

Antennæ longer than the body, entirely black, the scape somewhat more than twice longer than broad, not dilated; the 3rd and 4th joints equal in length. Clypeus rounded on the top, narrow. Front not much depressed, furrowed in the centre. The 3 lobes of the mesonotum are largely fuscous. The raised central part of the petiole is not much longer than broad; is rugosely punctured on the top, its lateral slopes smooth, brownish and bearing 3 keels in the centre; the lateral furrows are wide and deep; the sides above are furrowed and striated. The 2nd segment on either side of the keel is widely reticulated; the sides at the base are depressed and bear curved stout striæ. The suturiform articulation is wide and striated; the furrow on the base of the 3rd is smooth; on the 4th closely crenulated; the apical 2 segments are smooth.

Iphiaulax annulitarsis, sp. nov.

Luteous, the head more yellowish in tint, the 3rd and following segments black, their apices pale yellow; the apex of the hinder tibiæ and of the joints of the hinder tarsi, black; the wings fuscous from the transverse basal nervure, behind it yellow; the basal half of the hinder wings yellow; the stigma black, with a small yellow spot on the base; the antennæ black. ♀.

Length 11-12; terebra 9 mm.

Hab. Kuching.

Scape of antennæ about 4 times longer than broad: the 3rd joint slightly, but distinctly, longer than the 4th. Face and clypeus rugose; the face broadly raised in the centre and with a depression near the apex, where it has an oblique slope; the top of the clypeus is transverse, its sides rounded. Centre of petiole coarsely, longitudinally punctured; the sides on the inner side at the apex, transversely striated. The 2nd segment is closely rugosely punctured; in the centre longitudinally striated; in length the plate is about twice the length of the width at the base; it becomes gradually narrowed, and a narrow keel runs from it to beyond the middle of the segment; the part bordering the sides of the plate is depressed and is stoutly transversely striated. The suturiform articulation and the fur-

rows on the 3rd and 4th segments are crenulated. The 2nd abscissa of the radius is distinctly shorter than the 3rd.

The raised central part of the 2nd abdominal segment is large and has straight sides, it being therefore of equal width; the lateral furrows are closely striated; and are wide at the base. The abdomen is slightly longer than the head and thorax united; it is wider than the latter and is ovate in form.

Iphiaulax hirpinus, sp. nov.

Luteous, the antennæ black, yellow at the base; the wings yellowish-hyaline to the transverse basal nervure, the rest dark fuscous, with the stigma black; the plate on the base of the 2nd abdominal segment not clearly defined, not narrowed towards apex and rugosely punctured. ♀.

Length 9 mm. terebra 3 mm.

Hab. Kuching.

Antennæ longer than the body, the scape rufous, black on the middle above, about twice longer than wide; the 3rd and 4th joints are equal in length. Face closely rugose, keeled below the antennæ; the clypeus rounded on the top. Median segment thickly covered with white hair. The central part of the petiole is rugosely punctured; it becomes narrowed towards the apex which is rounded. Second segment stoutly irregularly striated to near the apex; the striae are more or less twisted; the sides are broadly depressed and are finely striated. Suturiform articulation wide, deep and crenulated; the 4th and 5th segments have distinct crenulated furrows on the base; there are also transverse furrows on the apices of the 3rd, 4th and 5th segments. The sheaths of the ovipositor are black and covered with black hair. The 2nd abscissa of the radius is perceptibly shorter than the 3rd; the 2nd abscissa of the cubitus is slightly shorter than the 3rd.

Iphiaulax amestris, sp. nov.

Luteous, a broad curved black mark across the ocellar region extending to the eyes, the basal 4 dorsal segments of the abdomen more or less black; the wings yellowish-hyaline to the transverse basal nervure and on the hind wings to near the middle, the rest fuscous-black; the basal third of the stigma yel-

low; there is a cloud in the 1st cubital cellule which extends from near the top, at the base, to the lower apical corner and above extends along the top to the apex; the plate on the base of the 2nd segment extends to the centre and becomes gradually narrowed, the basal five segments of the abdomen are closely longitudinally striated; the abdomen ovate, not longer than the thorax and wider than it. ♀.

Length 11 mm., terebra 8 mm.

Hab. Kuching.

Antennæ longer than the body, black, the flagellum brownish beneath towards the apex; the 3rd and 4th joints equal in length; the scape about twice longer than broad; its apex projecting into a spine. Petiole in the centre finely irregularly longitudinally striated; the depressed sides are broad and are finely, indistinctly striated; the 2nd to 5th segments are closely longitudinally striated, the striation becoming weaker on the apical segments; on the base of the 2nd segment is a straight, narrow, deep oblique furrow, which is sparsely straited, the suturiform articulation is distinctly crenulated; the apices of the 3rd and 4th segments are depressed, smooth and have a narrow indistinct transverse furrow; the lateral furrow on the 3rd segment is broad, curved and striated.

Entirely luteous, the wings entirely yellow, long, with a black spot at the base of the stigma.

Iphiaulax laertius, sp. nov.

Luteous, smooth and shining; the suturiform articulation stoutly, but not closely, striated in the middle, the other furrows smooth; antennæ for the greater part black; the wings long, yellow, the anterior smoky round the apex of the stigma and the costa at its base, black, the posterior pair smoky at the apex and round the apical lower margin, the cloud becoming gradually narrowed on the inner side; an oblique cloud at the base of the stigma; the temples obliquely narrowed; the legs thickly covered with long fulvous hair.

Length 13; terebra 7 mm.

Hab. Kuching.

Antennæ longer than the body, the scape rufous and covered with long pale hair. Face and clypeus covered with long

fuscous hair, each originating from a pit; the clypeus behind is bordered by a rounded narrow keel. Mandibles paler coloured than the head; their teeth black. Abdomen shining, impunctate; the suturiform aticulation has 7 or 8 stout, longitudinal, clearly separated longitudinal keels in the middle; the petiole is distinctly longer than the 2nd segment and appears narrower than usual; it is depressed at the base; from the base a keel runs to near the apex. The keel on the second segment is smooth and shining; the oblique and lateral furrows on the 2nd and 3rd segments are smooth; there are no transverse furrows on the 3rd and following segments.

Ipihaulax leptopterus, sp. nov.

Luteous; antennæ dark brownish, paler towards the apex: the scape black above; the wings long, yellowish, a dark cloud at the base of the stigma along the cubitus and extending shortly beyond the middle of the 1st cubital cellule; the lower part of the apex of the front and the entire apex of the hinder wings smoky; the transverse furrows on the base of the 2nd, 3rd and 4th segments crenulated. Legs thickly covered with longish pale fulvous hair. ♀.

Length 17 mm., terebra 7 mm.

Hab. Matang, 3600 feet.

Face irregularly punctured and covered with long fuscous hair; the middle above indistinctly keeled. The top of the clypeus is transverse in the middle, the sides rounded. Frontal furrow deep. The apical lobe of the pronotum is widely and deeply depressed, the depression is rounded above, transverse at the base laterally at the base, there is a crenulated band. The 1st abdominal segment is longer than the 2nd being in length twice the width of its apex; its centre is stoutly keeled; the keel being larger at the base; the sides of the segment, on either side of it, are irregularly punctured and striated. The lateral depression on the 2nd segment is wide, deep and is irregularly striated at the base. The suturiform articulation is wide, deep and is stoutly longitudinally striated; the apical lateral furrow is smooth. The transverse furrows on the 3rd and 4th segments are distinct, narrow and longitudinally striated. There are no apical transverse furrows.

This is probably the species recorded by Smith (Journ. Linn. Soc. 1857, 122) from Sarawak as *Bracon aculeator*, Fab.; but the present is different from the Indian species I have regarded as *aculeator*, Fab., *Sec.* Brullé. According to Brullé the latter has the basal 3 segments of the abdomen finely longitudinally striated and it has a transverse furrow on the base of the 5th segment.

In colouration this species is identical with *I. laertius* here described; but that species is easily known by the head being obliquely narrowed behind the eyes.

Black, the wings fuscous, hyaline at the apex. Short broad species.

Iphiaulax trichiosoma sp. nov.

Black, thickly covered with black hair, the head, scape of antennæ and the fore femora in front rufo-testaceous, the wings dark fuscous to the base of the stigma, beyond that milk white; the stigma from near the base pale testaceous, the radial and cubital nervures pale, almost white. ♀.

Length 7-8 mm., terebra 1 mm.

Hab. Kuching.

Scape of antennæ short, about twice longer than broad. Face sparsely punctured and covered with fuscous hair. The scutellar depression is rufous. Post-scutellum irregularly longitudinally closely striated and with a smooth keel in the centre which becomes wider at the apex. The 2nd to 5th segments are closely longitudinally striated, the striæ intermixing all over; the basal plate on the 2nd segment is elongate, extends to the middle of the segment and becomes gradually narrowed; it is bordered laterally by 3 stout oblique keels. The 3 transverse furrows are wide, deep and longitudinally striated; the lateral furrows are wide and shallow; they are dark rufous in the centre. Legs thic y covered with black hair. The 1st and 2nd abscissæ are together not equal in length to the 3rd; the recurrent nervure is not quite interstitial, it being received at the apex of the 1st cubital cellule.

The eyes are distinctly margined; the ocellar region black; the temples are distinctly, roundly narrowed; the occiput is transverse; the abdomen is elongate-ovate, narrowed towards the base and apex.

Iphiaulax Carnasius, sp. nov.

Black, the head and median segment thickly covered with longish black pubescence; the wings, to the base of the stigma, black, with a violaceous tinge; beyond that milky-white; the apical two-thirds of the stigma pale yellowish-white; the apical nervures white; the abdomen ovate, much wider than the thorax; coarsely and closely rugosely punctured. ♀.

Length 7 mm., terebra 2 mm.

Hab. Kuching.

Antennæ longer than the body; the scape thickly covered with pubescence. Face irregularly punctured. Its centre slightly raised and smooth; the part over the oral incision raised above; its centre hollowed. Mandibles black; their basal half brownish below. Apical joints of the palpi fuscous. Thorax smooth and shining; the transverse furrow at the base of the scutellum shallow, straight and irregularly, stoutly crenulated. The apical abscissa of the radius is shortly, but distinctly, longer than the basal two united; the upper part of the 1st cubital cellule is hyaline. The basal segment of the abdomen is smooth and shining; the other segments are closely, rugosely punctured and more or less striated in the centre; the basal keel on the 2nd segment is smooth, shining, long and narrow; its keel is narrow and indistinct and extends to the apex of the segment, which is irregularly reticulated on either side of it; this part is obliquely bounded by a raised border: the lateral depression is, on the inner side, closely striated. The suturiform articulation is deep, clearly defined and longitudinally striated; the other furrows are less clearly defined. Legs stout, thickly covered with short, stiff black pubescence.

Iphiaulax brunneomaculatus, sp. nov.

Black: the greater part of the head and the fore part of the thorax more or less brownish; the wings to the base of the stigma dark fuscous, beyond that milky-white; the stigma, except at the base, and the apical nervures pale yellow. ♀.

Length 7; terebra 1½ mm.

Hab. Kuching.

Antennæ longer than the body, the flagellum brownish. Head shining; the vertex for the greater part black, the rest

brown; smooth. On the base of the median segment are two broad, shallow, slightly oblique furrows. Mandibles brownish-yellow, black at the apex. The apical part of the petiole is closely rugosely punctured; the 2nd segment is coarsely longitudinally punctured; the base of the keel is irregularly triangular, is shining and aciculated; the keel extends beyond the middle; the part bounding it is depressed and irregularly striated; the lateral furrows are broad, distinct and striated; the 2nd furrow is distinct and striated; the 3rd and 4th are narrower and less distinctly striated. The legs are more or less brownish and are thickly covered with black hair; the metatarsus is stouter than the other joints.

This species is very similar in form and colouration to *I. carnasius*; it may be easily separated from it by the rugosely punctured petiole and by the smooth and shining plate on the base of the 2nd segment, with its stronger keel.

Chaoilta fuscipennis, sp. nov.

Black, the head, thorax and 4 front legs ferruginous; antennæ black, the scape rufous; the abdomen, except the apical two segments, closely and distinctly punctured, its furrows striated. ♀.

Length 16 mm. terebra 17 mm.

Hab. Kuching.

Scape with a triangular hollow on the apex beneath; the corners projecting into short stout teeth. Front depressed, its centre furrowed. The frontal plate is large, becomes gradually narrowed towards the apex, which is rounded; the central keel is stout, does not reach to the apex and becomes gradually smaller. Antennal tubercles large, tuberculate on the outer side above. Thorax smooth and shining; the metanotum black to near the apex, where there are some irregular striæ in the centre. Legs thickly haired, the hinder tibiæ grooved on the outer side. The raised central part of the petiole is rugosely, longitudinally striated: the striæ are irregular and intermix; the depressed sides are longitudinally striated, more regularly and distinctly than in the centre. The 2nd 3rd and 4th segments are closely longitudinally striated; on the 4th the long-

itudinal striæ are mixed with transverse finger striæ. The sutures are closely striated. The area on the base of the 2nd segment is long and narrowed, extends to shortly beyond the middle and becomes drawn out into a fine point. The oblique depressions on the 3rd and 4th segments are shallow and not very distinct. The sheaths of the ovipositor are thickly covered with hair.

The toothed apex of the antennal scape is not so prominent as it is in the type (*C. lamellata*, Cam.) A characteristic of the genus is the long front tarsi which are more than twice the length of the tibiæ.

In Mr. Ashmead's generic synopsis of the genera of *Braconidæ* (U. S. Nat. Mus. Bull. xxiii, 137) no mention is made of the broad front plate, stress being laid on the toothed apex of the scape which is probably only of secondary importance. *Chaolta* Cam. (Manchr. Memoirs, 4th May, 1899, No. 3, p. 81) is identical with *Blastomorpha*, Szepligeti, Termesz, Fuzetek; xxiii, p. 50, 1900. To it also belong *Bracon intrudens*, Sm., from Celebes, *B. perplexus*, Sm., *B. inquietus*, Sm., from Borneo and *B. vulturosus*, Sm., from Singapore.

Elphea, gen. nov.

Abdomen long and narrow, almost cylindrical; the segments, except the apical, longer than broad, smooth without transverse furrows, the 2nd and 3rd segments separated like the others and without a suturiform articulation; the 2nd segment with a large shield-shaped plate on the base of the second segment. Hypopygium large cultriform. Antennæ long and stout, the scape large, globose. Temples large, roundly narrowed; occiput roundly incised. Eyes large, slightly incised on the inner side; the malar space of moderate length. Wings long and narrow; the transverse median nervure interstitial; the transverse basal is united to the cubital a short distance from the base of the latter, which issues from the costa and not from the transverse basal; the recurrent nervure is received at the apex of the 1st cubital cellule and is not interstitial; the anal nervure is received shortly below the middle. Fore tarsi about one-fourth longer than the tibiæ; the 1st joint of the tarsi not much longer than

the 2nd. Tegulæ large, projecting. Hind wings as in *Bracon*. Radius reaching to the apex of the wing. Thorax longish and narrow.

A genus of *Braconinæ* easily known by the long narrow body; the long abdomen without transverse furrows or suturiform articulation, large conchiform tegulæ, short thick scape. The metathoracic spiracles large and placed behind the middle. Tarsi spined. It comes near to *Campsobracon*.

Elphea lutea, sp. nov.

Luteous: the front, vertex, occiput and half of the outer orbits and the 5th and 6th abdominal segments on the back, black; the wings yellowish-hyaline; a broad cloud at base of the stigma extending to the opposite side, a shorter one at its apex extending only to the cubitus; a broader one on the apex commencing near the 2nd transverse cubital nervure and the apex of the hinder wings with 2 clouds behind, smoky; the stigma and nervures yellow. Abdomen long and narrow: smooth; the suturiform articulation crenulated; there are no other furrows. ♀.

Length 13; terebra 20 mm.

Hab. Kuching.

Antennæ as long as the body, black, brownish beneath towards the apex. Head smooth, shining and impunctate; the ocelli bordered by furrows: the face with a distinct, deep furrow down the centre; there is a furrow on the lower part of the front which becomes gradually wider towards the apex. The face has a distinct yellow tint. The 1st cloud in the wings is irregularly rounded behind, is narrowed above, behind it follows the transverse basal and transverse median nervures, at the apex the recurrent nervure; the 2nd is of almost equal width: the apical cloud commences near the 2nd transverse cubital nervure and below extends backwards to nearly opposite the lower part of the 1st transverse cubital. The raised area on the 2nd segment is large, extends to the middle of the segment, becomes gradually narrowed to the apex, with the sides rounded, not straight; its sides are depressed; at the apex is a depression which has a keel in the middle.

Elphea flavomaculata, sp. nov.

Black, smooth, and shining; the face, except for a narrow black line in its centre above, and a large black mark on its lower half below, a mark on the hinder edge of the pronotum, broadest behind the tegulæ, a broad curved mark below them, a mark under the hind wings, the apices of the abdominal segments and the greater part of the ventral surface, pallid yellow, as are also the 4 front legs, except for a black line on the tibiæ; the hinder legs black, the base of their tibiæ testaceous. wings hyaline, with a fulvous tinge; the lower part of the apex of the anterior and the whole of the apex of the posterior smoky; the stigma dark fuscous in front, pale yellow behind; the nervures fuscous. ♀.

Length 14 mm., terebra 8 mm.

Hab. Kuching.

Antennæ black, short, longer than the body. Median segment sparsely covered with long fuscous hair, its apex all round and a large mark on the pleuræ are testaceous. Abdomen smooth and shining: the base and sides sparsely haired.

Plesiobracon, gen. nov.

Median segment with a keel down the centre. Temples sharply obliquely narrowed, the occiput transverse. Malar space large. Transverse median nervure interstitial; the recurrent nervure widely distant from the transverse cubital Abdomen as in *Iphiaulax*, with distinct transverse crenulated furrows; the 4th segment produced in the middle above.

The cubitus originates from below the upper part of the transverse basal; the stigma is large; the hypopygium is large, cultriform; the antennæ are long; the mandibles are broad at the base, curved and end in a sharply-pointed tooth.

This genus is allied to *Iphiaulax* by the form of the abdomen but is readily separated from it by the recurrent nervure not being interstitial, by the stout keel on the metanotum and by the temples being sharply obliquely narrowed behind the eyes.

Plesiobracon carinata, sp. nov.

Black, the face, oral region, the inner, outer and the lower outer eye orbits narrow; the malar space and madibles rufo-

testaceous; the palpi white; the wings hyaline; the lower part of the clypeus and the nervures testaceous; the back of the five basal segments of the abdomen, striated longitudinally and closely.

Length 5-6; terebra 7 mm.

Hab. Kuching.

Antennæ longer than the body; the scape and basal joint of the flagellum black, bare and shining; the other joints brownish black. Face aciculated, almost shining; the clypeus impunctate, shining. Apex of mandibles black. Thorax covered with longish white pubescence. Legs covered with white pubescence, the front pair testaceous, the middle tarsi dark testaceous. The 1st and 2nd abscissæ of the radius are together shorter than the 3rd. Post-petiole rugosely punctured; the base smooth, its sides striated; its middle with a smooth furrow which projects into the punctured apical part. The basal plate on the base of the second segment is longer than broad, narrowed towards and longitudinally striated; the keel is narrow; the suturiform articulation and the furrow on the 3rd and 4th segments are striated closely; the 4th dorsal segment projects bluntly in the centre; the 3rd and following segments are narrowly edged with whitish-yellow on the apex.

Sigalphogastra, gen. nov.

Abdomen with 5 segments, the 3 middle ones broader than long, the basal and apical longer in proportion to the breadth; all the segments longitudinally striated; the last broadly rounded at the apex; the apical 3 with transverse crenulated furrows on the base. Median segment with a stout keel in the centre at the base and two curved narrower, sharper keels on the apical half. Temples broad, slightly roundly narrowed. Malar space large. Wings as in *Bracon*. Legs rather slender, the tibiæ and tarsi densely pilose.

This genus possesses all the characteristics of the *Braconini* except as regards the marked difference in the form of the abdomen. In the *Braconini* there are 7 segments which become gradually smaller; in the present genus there are only 5 large segments of almost equal size. The form of the abdomen reminds one of the *Chelonina*, but that group does not belong to

the *Cyclostomi*. In our genus the mesonotal furrows are complete: there is a crenulated furrow at the base of the scutellum which is moderately convex; there is a distinct curved furrow at the base of the median segment; the scape of the antennæ is long and slender, the pedicle is of equal width, broader a little than long and transverse at the apex; the first 3 joints of the flagellum are long, fully 3 times longer than wide and of equal length.

This genus clearly comes close to *Chelonogastra*, Ashmead (Bull. U. S. Mus. xxiii, 139) from Japan. It may be known from our genus by the abdominal segments being unequal in length; the 1st and 2nd occupy most of the surface, the 4th and 5th being very short; the first three joints of flagellum are scarcely longer than thick, etc.

Sigalphogastra Ashmeadi, sp. nov.

Head and thorax ferruginous, the antennæ, abdomen and hinder legs black; the fore legs rufous; the middle dark testaceous; the head and thorax smooth and shining, the metanotum with a few irregular keels in the centre; the back of the abdomen strongly, irregularly longitudinally striolated; the wings hyaline, the nervures black; the stigma fuscous below. ♂?

Length 7 mm.

Hab. Kuching.

Sides of the face sparsely punctured; the centre raised, clearly separated and smooth; it is separated from the clypeus. Tips of mandibles black; the palpi pale rufous. Front flat in the centre, bordered laterally from near the top by a blunt, stout keel which runs into the antennal scape. The centre of the petiole is raised, clearly limited; its sides raised, broad at the base, its apex narrowed; there is an irregular row of oblique keels on the sides. The area on the 2nd segment is large, broad at the base, becoming gradually narrowed to the apex; it is finely irregularly longitudinally striated, the rest more strongly transversely striated; there is an oblique keel outside this; the part on either side of this is stoutly obliquely striated; the last segment is more closely and regularly striated than the others.

RHOGADINÆ.

Dedanima, gen. nov.

Occiput, cheeks and temples margined. Temples broad. Fore wings with 3 cubital cellules; the recurrent nervure in fore wings interstitial; the transverse pobrachial received in the discoidal cellule. Radial nervure in hind wings reaching to the apex of the wings; the pobrachial nervure in it placed half way between the lower part of the præbrachial and the base of the wing; stout. Eyes large, distinctly incised on the inner side. Parapsidal furrows deep; the middle lobe of the mesonotum raised. Abdomen sessile; the basal segment longer than the 2nd, which is as long as the 3rd and 4th united; the 3rd 4th and 5th segments are equal in length and width. The suturiform articulation is distinct throughout, wide, deep. The basal 4 segments are closely punctured and obscurely striated; the apical segments are bluntly pointed; the ovipositor not projecting. There is a deep curved furrow on the lower side of the mesopleuræ in the centre. The radius originates behind the midd e of the stigma; the 2nd transverse cubital nervure is faint. The hinder coxæ are elongate; they are slightly longer than the trochanters which are long, slender and curved. The spurs are short. The hypopygium is large. The 1st abscissa one-third of the length of the 2nd.

If it were not for the absence of keels on the basal abdominal segments I should have felt inclined to have placed this genus with the *Rhogadini*. The only other group in which it can be placed is the *Rhyssalini*. Characteristic is the well-marked furrow on the mesopleuræ.

Dedanima longicornis, sp. nov.

Luteous, covered with a pale pubescence; the ocelli and the antennæ black; the wings hyaline, the stigma and nervures black; the basal 4 segments of the abdomen closely longitudinally striated. ♀.

Length 7 mm.

Hab. Kuching.

Antennæ longer than the body, densely covered with a fuscous pile. Parapsidal furrows deep; the middle lobe of the mesonotum raised and clearly separated. Propleuræ depressed and punctured in the centre. Mesopleural furrow, curved, deep, lightly widened and rounded at the apex; it occupies the central part of the pleuræ. The striation on the abdomen is strongest on the 2nd segment, whose sides are tuberculate near the base. The sheaths of the ovipositor are black and short.

Halycæa, gen. nov.

Antennæ longer than the body, filiform. The joints of the flagellum not clearly separated. Head cubital, rounded in front transverse behind, the occiput margined; the malar space large almost as long as the length of the eyes. Palpi long and filiform. Mesonotum flat; the middle lobe separated, broadly furrowed down the middle; between its apex and the base of the scutellum is a broad, shallow depression, which is irregularly longitudinlaly striated. Scutellum flat throughout. Median segment closely reticulated, long, flat above and with a short apical slope. Legs long; the front tarsi more than twice the length of their tibiæ. Wings with 3 cubital cellules: the 2nd longer than the 1st and shorter than the 3rd. In the hind wings the pobrachial transverse nervure is interstitial with the præbrachial. The costal areolet is much longer than the radial; the pobrachial nervure is obsolete. The transverse median nervure in the fore wings is not interstitial being received shortly beyond the transverse basal. Abdominal petiole long, longer than the 2nd and 3rd segments united; it is of uniform thickness throughout and is nearly as wide as the 2nd segment. The 2nd segment bears 2 narrow furrows which extend from the base to the apex; the suturiform articulation especially at the sides, and is slightly curved. The ovipositor is long. The anal nervure in the hind wings is interstitial. The hinder coxæ are not produced in front.

This genus does not fit very well into any of the tribes of the *Cyclostomi* but may, for the present, be referred to the *Doryctides*. Its characteristic features are the long filiform antennæ, margined occiput, flat scutellum, depressed mesonotum, longish reticulated median segment, long petiole of equal

width and long slender anterior tarsi whose basal joint is nearly as long as the tibiæ.

Halycæa erythrocephala sp. nov.

Black, the head rufous, the long palpi, the base of the 4 hinder tibiæ and the 4 hinder tarsi white; the wings hyaline, distinctly tinted with fuscous of a violaceous tinge, the stigma and nervures black. ♀.

Length 15 mm., terebra 18 mm.

Hab. Kuching, 25th March.

Face closely rugosely punctured and covered sparsely with long fuscous hair; the space between the keels deep; the apex bears some stout longitudinal keels. The upper part of the meso- stoutly irregularly striated at the base; the lower furrow is wide and deep and is stoutly striated, the metapleuræ are more stoutly reticulated than the base, with its base almost smooth. The basal segment of the abdomen is closely and rather strongly rugosely punctured; the punctures run into reticulations in the centre and become finer towards the apex; its base is depressed. The triangular area on the second segment is closely, finely rugosely punctured; there is a smooth line down the centre of the face with a furrow in its middle. The furrow on the base of the mesonotum is wide and smooth: the depression behind it is bordered laterally by 2 irregular keels and there is also a curved keel on the inner side at the base; the space between the 2 keels and outside them are irregularly crenulated. Scutellum depressed in the centre, finely punctured, depressed and rufous in the centre; at its base are 4 short keels. Post scutellum depressed in the centre; its sides broad. Propleuræ stoutly keeled in the centre at the base, the rest is much more finely and closely punctured; the bordering furrows are deep and rufous. The 3rd and 4th segments are alutaceous, opaque; the others smooth and shining. The apices of the tarsal joints are spinose.

MACROCENTRINÆ.

Zele filicornis, sp. nov.

Luteous, smooth and shining; the antennæ almost twice the length of the body; very slender, black, the scape rufous: the

flagellum covered with a microscopic pile; the wings clear hyaline; the nervures and stigma black: ocelli large, and in a black patch; the parapsidal furrows striated on the apical half; the metanotum shagreened and obscurely transversely striated. ♀.

Length 9 mm.

Hab. Kuching.

There is a distinct keel on the metapleuræ above the middle; a roundly curved one on the apex of the metanotum: the hinder tibiæ are long, compressed and reach near to the apex of the petiole; it is distinctly narrowed at the base behind the spiracles, which project; it is as long as the 2nd and 3rd joints united. The marginal cellule is not divided, in the hind wings, by a transverse nervure.

AGATHIDINÆ.

Balcemena, gen. nov.

Areolet narrowed at the top, the nervures, however, not touching. Second transverse cubital nervure without a process. Radial cellule long and narrow. First cubital and first discoidal cellules not separated. Front not much depressed and without keels; there are two short keels between the antennæ. Central lobe of mesonotum raised; the parapsidal furrows indistinct. Apex of scutellum with a stout transverse keel. The base of the median segment obliquely depressed; there are two longitudinal keels which form a closed longitudinal narrow area in the centre, these being the only keels on it. All the claws are bifid. The ovipositor is short; its sheaths broad. The antennæ are longer than the body and taper towards the apex; the basal joints of the flagellum are equal in length. The apical three joints of the maxillary palpi are not lentical or compressed and are not much shorter than the basal.

May be known by the long, narrow wings, with the long cubital and raidal cellules in both wings, by the very short ovipositor which hardly projects, by the single central area on the median segment, by the short, raised, distinctly separated middle lobe of the mesonotum, which does not reach to the middle, and by the long antennæ and hind legs.

Balcemena longicollis, sp. nov.

Black, smooth and shining; the head, pro- and mesothorax ferruginous; the antennæ longer than the body, black, the scape rufous below; the wings long, ample, uniformly dark fuscous, with a violaceous tinge; the nervures and stigma black; there are two small hyaline spots below the base of the stigma. ♀.

Length 14 mm.

Hab. Kuching.

The antennæ taper towards the apex; almost bare. Face and clypeus thickly covered with fuscous pubescence. Teeth of mandibles black. Prothorax elongate; the middle lobe of the mesonotum roundly raised and separated from the lateral, which are flat. Scutellum sparsely haired; its apex bounded above by a flat plate with rounded sides. Post-scutellum deeply depressed and bordered by stout keels; behind its centre is a stout longitudinal keel. Median segment thickly covered with black pubescence. There is a narrow oblique furrow below the tegulæ; the large oblique depression on the apex of the mesopleuræ below is stoutly crenulated. Legs, with the calcaria, thickly covered with short black hair. The ventral surface of the abdomen is white at the base; the sheath of the ovipositor is black, and is covered with black hair

Trotieus melamopterus, sp. nov.

Head below the eyes and the pro- and mesothorax rufous; the four front legs of a paler rufous colour; the wings dark fuscous, the base of the 1st cubital cellule and a small narrow cloud below it, hyaline; the antennæ black, thickly covered with stiff black pubesence. ♀.

Length 8 mm.

Hab. Kuching.

Face and clypeus distinctly punctured and thickly covered with fuscous pubescence. Mesonotum rufo-fuscous. The central area on the metanotum is coarsely transversly striated, extends from the base to the apex and is slightly narrowed at the base; there are two lateral areæ; a large basal one extending beyond the middle, coarsely aciculated on the outer side at the base and with two or three stout transverse keels near the centre, the lower

one being roundly and deeply curved and is united to a curved outer keel which extends to the apex of the segment; the apical area has a short upper and a longer curved lower keel; below the spiracles are 3 stout irregular keels. Abdomen smooth and shining; the 2nd segment is slightly depressed on the sides at the base.

Disophrys fuscicornis, sp. nov.

Black: the head, prothorax and mesonotum rufous; the front tibiæ and tarsi rufo-testaceous; the wings dark fuscous to the 2nd cubital cellule, beyond that, milk-white; the base of the stigma broadly black; the rest pale rufo-testaceous. ♀.

Length 9 mm.; terebra 7 mm.

Hab. Kuching.

Cheeks and clypeus thickly covered with long white pubescence; the front, vertex and occiput black. Scape of antennæ dark rufous beneath; the base of the flagellum broadly dark brown. Scutellar fovea large, deep and with four stout keels. The central area on the metanotum is obliquely narrowed at the base and apex; there are three stout transverse keels between the middle and the apex of the narrowed upper part; the upper area next to it is broader than long: the lower two are large, of nearly equal size and longer than broad; the spiracular area is large, 3-angled on the inner side, rounded and irregular on the outer, the area next to it is rounded and narrowed above, straight and oblique below. On the centre of the metapleuræ are two irregularly curved keels with some oblique keels between them. Abdomen smooth and shining; the 2nd segment is broadly depressed laterally; the suturiform articulation is broad and smooth.

ICHNEUMONIDÆ.

OPHIONINI.

Aglaophion, gen. nov.

Fore wings without dark coloured blisters; the transverse median nervure in hind wings broken shortly above the middle. Apex of clypeus broadly rounded. Ocelli not large, distinctly separated from each other and from the eyes, which are moder-

ately large and are distinctly separated from the base of the mandibles; they are slightly emarginate on the inner side.

Claws pectinated. Disco-cubital nervure originating distinctly before the discoidal nervure. Scutellum large, longer than broad, distinctly raised and separated. The median and submedian cellules in front wings equal in length; there is no stump of a nervure on the disco-cubital nervure. Meta-thorax stoutly longitudinally and transversely striated. Ovipositor short.

In Ashmead's arrangement (Bull. U. S. Nat. Mus. xxiii, 86) this genus would come nearest to the American *Thyreodon*, which may be known from it by the apex of the clypeus being sub-angularly pointed, not broadly rounded, by the transverse median nervure in the hind wings being broken near the top and by the disco-cubital nervure being broadly rounded, not sharply angled in the middle as in the present genus. The transverse median nervure is received very shortly behind the transverse basal, almost interstitial with it. The apex of the 3rd abdominal segment, on the back, is roundly narrowed towards the base and is incised in the centre above.

Aglaophion flavinervis, sp. nov.

Black, with a metallic blue tinge, the face, clypeus, the lower half of the outer orbits, the malar space, the outer edge of the mesonotum at the base, the scutellum, post-scutellum, the centre of the median segment at the base, its apical half, the lower edge of the pronotum, the base and lower edge of the mesopleuræ and the greater part of the metapleuræ, rufo-testaceous; the four anterior legs of a paler, more yellowish testaceous colour; the hinder legs black, their femora with a bluish tinge. Wings yellowish-hyaline, the nervures yellow; their apex smoky. ♀

Length 22 mm.

Hab. Matang, 3,200 feet.

Antennæ as long as the abdomen, stout, tapering towards the apex, black, covered with a microscopic down. Face closely, distinctly and uniformly punctured; the clypeus more strongly and sparsely punctured in the middle; the foveæ large, black. Mandiblular teeth black, the centre punctured. Palpi dark

testaceous. Front and centre of vertex smooth and shining; the sides of the latter closely punctured; the vertex widely and deeply furrowed in the centre. Mesonotum closely and minutely punctured; the scutellum rugosely punctured. Base of median segment with two stout wrinkled keels down the centre; the sides stoutly, irregularly transversely striated; the apical slope is stoutly, irregularly longitudinally striated; the striæ are curved. Pro- and mesopleuræ smooth; the former obliquely striated below; the meta- coarsely reticulated except on the obliquely depressed base, there is a longish black mark on the base, which becomes obliquely, gradually wider towards the apex, on the apex above there is a large, oblique, somewhat square, black mark. Abdomen smooth and shining; the sides and lower side of the petiole testaceous.

Enicospilus nigronotatus, sp. nov.

Dark luteous: the mesonotum, the base of the scutellum, the breast and the third and following segments of the abdomen black, the face and the eye orbits narrowly pallid yellow; the wings hyaline, the nervures and stigma black; the disco-cubital cellule with a small round and a narrow curved longish horny point. ♀.

Length 30 mm.

Hab. Kuching.

Face slightly blistered in the centre, the sides minutely punctured; the clypeus smooth. Mesonotum smooth and shining. Scutellum obscurely punctured at the base, the rest minutely, irregularly longitudinally striated. Median segment at the base behind the keel smooth; the rest in the centre stoutly, longitudinally striated; the striæ being curved; laterally it is stoutly obliquely striated and irregularly reticulated. Pro- and mesopleuræ smooth; the lower half of the latter finely and closely longitudinally striated. The basal half of the meta-pleurae bears some curved narrow striae; the rest is stoutly obliquely striated. Abdomen smooth and shining; the apical segments covered with a white down; the sheath of the ovipositor black. Tibiæ and tarsi thickly covered with short stiff fulvous pubescence.

PIMPLINI.

Rhyssa maculipennis, Sm.

This fine species has been taken at Kuching by Mr. Shelford. It varies in size from 20 to 27 mm. and the yellow markings on the thorax vary in size and number, as does also the amount of black on the legs.

Epirhyssa nigrobalteata, sp. nov.

Luteous; the vertex, occiput, the front broadly in the middle except for a square mark in the centre. The mesonotum, except for a squarish mark in the centre, the apical slope of the scutellum, a curved line on the apex of the median segment, the propleuræ broadly in the middle, the base of the mesosternum, an oblique mark on the lower side of the mesopleuræ at the base, the base and lower side of the metapleuræ and the base and apices of the abdominal segments, black. Legs coloured like the body; a line on the femora above, the knees, the apical joint of the four front tarsi; the apices of the other joints of of the apex of the hinder tibiæ and the whole of the hinder tarsi, black. Wings hyaline, with a faint cloud in the apex of the radial cellule; the stigma and nervures black. ♀.

Length 17; terebra 17 mm.

Hab. Kuching.

Antennae black, fuscous underneath. Face punctured, transversely in the centre. Mandibles black. The basal slope of the middle lobe of the mesonotum is smooth and has a plumbeous hue; so also is the apical slope which is oblique. Scutellum closely transversely striated in the middle. The middle segments of the abdomen are punctured and finely transversely striated in the middle. The black basal band on the 2nd and 3rd segments are incised in the middle, on the others it becomes prolonged down the middle, the prolongation becoming gradually longer, until on the penultimate segment it extends to the apex; on this segment it is of equal width throughout; the last segment is entirely black. The recurrent nervure in the fore wings is interstitial.

To *Epirhyssa* clearly belongs *Macrogaster flavopictus* Sm. (Proc. Linn. Soc. 1857,121) from Singapore.

Epirhyssa bimaculata, sp. nov.

Luteous: the vertex and front broadly, the occiput, the mesonotum, except for two small lines in the centre, the apex of the scutellum and post scutellum, a mark on the lower side of the propleuræ, the sides and apex of the 2nd segment and the others, except for a transverse band near the apex, black. The femora more or less brownish above; the base of the 4 posterior tibiæ and the apex of the hinder tibiæ, the apices of the fore and hinder tarsi and the middle entirely, black. Wings hyaline, with a fulvous tinge, the stigma testaceous, the nervures darker. ♀

Length 12 mm. terebra 13 mm.

Hab. Kuching.

Mandibles black. Face closely transversely punctured. The basal lobe of the mesonotum is more strongly transversely striated than the others and is widely depressed at the base. The scutellum is not distinctly transversely striated. Pleuræ smooth. The recurrent nervure is not quite interstitial, being received very shortly beyond the transverse cubital, which is longer than usual; the transverse median nervure is received shortly beyond the transverse median. The basal segment of the abdomen is short and broad and of uniform breadth.

Echthromorpha laeva, sp. nov.

Black, smooth and shining: the face, clypeus, mandibles, palpi, outer orbits, the inner more narrowly, two lines on the mesonotum, dilated at the base, scutellum, post-scutellum, the median segment except for a broad band in the centre, the base of the propleuræ, the tubercles, the mesopleuræ broadly and the apices of all the abdominal segments, pale yellow. Wings hyaline, the stigma testaceous, the apical cloud extends half way into the cubital cellule. Antennæ black, the scape yellow, the base of the flagellum brownish beneath. ♂

Length 12 mm.

Hab. Singapore.

Antennæ longer than the body; the middle and apical joints are dilated at the base and apex and are covered with short stiff pubescence; the apical joint is flattened and is distinctly

longer than the preceding. The front is raised in the middle; the raised part has oblique sides. Parapsidal furrows obsolete. Scutellum roundly convex, distinctly raised above the mesonotum; its sides are not margined. The transverse furrows on segments 2 to 5 of the abdomen are distinct and smooth. There is a black mark on the apex of the hinder coxæ above; the hinder coxæ are broadly lined with black above on both sides and below; the hinder tibiæ are black at the base; the hinder tarsi black. The black line on the metanotum has the basal half dilated.

Comes near to *E. ornatipes*, Cam., which may be known by the punctured thorax and abdomen, etc.

Trichiothecus, gen. nov.

Wings uniformly dark fuscous; the areolet oblique, the apical abscissa twice the length of the basal, shortly, but distinctly appendiculated; the recurrent nervure is received near the apex. Clypeus not separated from the face; its apex depressed and roundly emarginated. Transverse median nervure in hind wings broken shortly below the middle. Abdominal segments closely rugosely punctured; segments 2 to 5 with rounded furrows at base and apex. Claws large, simple. Metathorax smooth without keels.

Eyes large, the malar space moderate; the temples are also moderate and are obliquely narrowed; the occiput roundly incised, above obliquely narrowed. Antennæ moderately stout, as long as the abdomen; its last joint is distinctly shorter than the preceding two united. Eyes entire, diverging very slightly above. Metatarsus nearly as long as the other joints united. Ovipositor long.

A genus easily known by the incised apex of clypeus, by the black wings with the appendiculated irregular areolet and by the peculiar colouration. It comes near to *Erythropimpla*, Ashm., and *Charitopimpla*, Cam. The latter may be known from it by the clypeus being separated from the face by a transverse furrow, by the areolet being small, triangular, not appendiculated or oblique, by the hyaline wings, and the abdominal segments are wider than long, not longer than wide. There are two bullæ on the 2nd transverse cubital and two on the recurrent nervure.

To this genus probably belongs *Pimpla viridipennis*, Sm. from Celebes. It has the same general colouration as our species, but with the hinder femora red; the median segment being also red.

Trichiothecus ruficeps, sp. nov.

Black; the head pro- and mesothorax and the 4 anterior legs ferruginous: the wings uniformly fucous-violaceous. ♀.

Length 18 mm. terebra 15 mm.

Hab. Kuching.

Antennæ black, the scape rufous. Head smooth and shining; the face sparsely covered with black pubescence; the clypeus with longer hair. Mandibles ferruginous, their teeth black. Metanotum covered with black pubescence, its base rufous. Petiole smooth and shining; its centre broadly raised in the centre which bears some large scattered punctures. The 2nd to 5th segments are closely and somewhat strongly punctured, except on their apices; the depressions have a stout keel in the middle. Tibiæ and tarsi thickly covered with stiff black pubescence. Sheath of the ovipositor thickly covered with short, stiff black pubescence.

Xanthopimpla latebalteata, sp. nov.

Rufous-yellow; the vertex, the front broadly in the middle, the upper part of the vertex to the middle, the mesonotum except at the base, the base of the metanotum to shortly below the middle of the areola and broad transverse bands on all the abdomial segments—occupying more than the basal half of the segments and the whole of the apical one—black. Wings hyaline, the apex slightly infuscated. Areola large, longer than wide. Legs immaculate. Antennae black, brownish beneath; the scape yellow beneath. ♂.

Length 14 mm.

Hab. Kuching.

Face distinctly punctured, thickly covered with white pubescence. The basal central part of the mesonotum is more distinctly raised than usual; the furrows do not extend beyond the basal third. Scutellum and post-scutellum stoutly keeled laterally. Areola distinctly longer than wide, the basal two thirds obliquely narrow; the lateral keel is received shortly, but clearly, beyond its middle; the apex is transverse. The

tooth-bearing area is 4-angled, and is narrowed on the inner side.

Would come into Krieger's section G, if it were not for the black mark on the occiput.

Xanthopimpla nigritarsis, sp. nov.

Yellow, a triangular mark enclosing the ocelli, a broad band on the mesonotum, trilobate at the apex, between the base of the tegulæ and the base of the mesonotum; its apex and the scutellum on the lower part of the basal slope, a line of almost equal width throughout on the base of the metanotum; a large mark on the 1st and apical two segments and two large broad marks on the others, black. A line on the under side of the hinder femora, their apex narrowly, the base of the hinder tibiæ and the four hinder tarsi, black. Wings hyaline, their apex slightly infuscated, the stigma and nervures black. ♂.

Length 12 mm.

Hab. Kuching.

Face and base of clypeus closely, but not strongly, punctured. The 3 lobes of the black line on the mesonotum are rounded. The parapsidal furrows are deep at the base and extend near to the middle. The scutellar keels are narrow, leaf-like and become narrowed towards the apex. The areola is large, 6-angled; the base obliquely narrowed, the apex transverse; the tooth-bearing area is 4-angled, transverse of equal width and is not much smaller than the area at its base. The basal abdominal segment smooth, its keels stout; the other segments are closely and distinctly punctured, with their furrows striated. The black mark on the 1st segment is large, incised at the base and apex in the centre; the basal incision is small, the apical larger and wider and with oblique sides. The ten intermediate marks are large and wider than long; the 1st and last pair are smaller than the others.

Belongs to Krieger's section G. *l. c.* p. 92.

Xanthopimpla maculifrons, sp. nov.

Luteous: the ocellar region, the occiput in the middle, the middle of the front, the mesonotum, except for a large squarish mark in the middle, close to the apex, the base of the meso-

notum—the mark narrowed in the middle—a large mark on the 1st and on the apical two segments and two large marks, broader than long, on all the others, a mark on all the tibiæ at the base, a large mark on the hinder coxæ, one on the outer and inner side of the hinder trochanters, a large line on the outer and inner side of the hinder femora and on the base of the last joint of the four hinder tarsi, black. Wings hyaline, the apex with a distinct smoky cloud. Areola large, 6-angled, of almost equal width at base and apex and projecting angularly in the middle. Ovipositor shorter than the hinder tibiæ. ♀.

Length 14 mm.; terebra nearly 3 mm.

Hab. Kuching.

Antennæ black: the scape yellow below: the base of the flagellum beneath and the apical joints brownish. Face closely punctured and thickly covered with white pubescence. The parapsidal furrows are deep and distinct only on the basal third of the mesonotum. The scutellum is distinctly keeled on the sides, not so sharply behind; the post-scutellum is distinctly keeled laterally. The tooth-bearing area is large and is of equal width. The black on the areola does not reach to its middle, on the sides it extends near to the middle of the tooth-bearing area. The keel on the metapleuræ does not reach the base. The middle segments of the abdomen are closely punctured.

Comes into Krieger's Section E, *l. c.* p. 81.

Xanthopimpla brunneciornis, sp. nov.

Luteous, the ocellar region, three roundish marks on the base of the mesonotum, the central being broader than long, the lateral longer than broad, two marks on the 1st, 2nd, 3rd, 4th and 6th abdominal segments and a mark on the base of the hinder tibiæ, black: the wings hyaline, the nervures and stigma black; the areola is wider than long and gets gradually wider towards the apex; the spiracular area is triangular; the ovipositor is longer than the hinder tibiæ. ♀.

Length 12 mm. ovipositor 4 mm.

Face, clypeus and labrum closely and finely punctured, the face more strongly than the clypeus and it is thickly covered with pale pubescence. Thorax smooth and shining; the parapsidal

furrows do not reach to the centre of the mesonotum. The areola is 4-angled; it becomes gradually, but not much, widened towards the apex, which is transverse; it is moderately large, is wider than long and is transverse at the apex; the tooth-bearing area is longish, oblique, triangular, the keels uniting on the inner side. The keel on the metapleuræ is narrowed at the base. Abdomen smooth at the base and apex; the 2nd and 3rd segments are closely, but not strongly punctured; the apical transverse furrows are longitudinally striated. The marks on the 3rd segment are larger and more oval than the others; on the 4th they are smaller; on the 5th they are longer and broader, the last pair are oval. The antennæ are brownish-red below; the scape largely black above.

Comes near to *X. ruficornis*, Krieger.

Pœcilopimpla, gen. nov.

Abdominal segments smooth, impunctate, broader than long, without transverse or oblique depressions; the petiole broad, scarcely narrowed at the base. Scutellum roundly convex: its basal slope only keeled. Median segment with three large areæ on the base. Temples moderately large, roundly narrowed. Occiput rounded inwardly, margined. Vertex obliquely, roundly depressed. Eyes emarginate on the inner side, large, reaching near to the base of the mandibles. Clypeus short, separated from the face, depressed obliquely below and with the apex distinctly margined. Labrum not projecting. Mandibular teeth large and of equal size. Parapsidal furrows only indicated at the base. Areolet small, oblique, 5-angled, narrowed above. Transverse median nervure not interstitial, being received shortly beyond the transverse basal. The transverse median nervure in hind wings broken shortly above the middle. Legs stout; the claws long, simple. The apical abdominal segment is broad, not narrowed as usual, at the apex; it is furrowed down the middle, this being also the case with the 2nd segment.

The antennæ are stout, as long as the body and hardly taper towards the apex. The apical abscissa of the radius is not curved upwards; there is a short stump of a nervure on the cubito-disco nervure.

Comes near to *Xanthopimpla* which may be known from it by the orbits being straight and oblique, not rounded, by the occiput being transverse, not roundly incised, by the abdomen being distinctly punctured and marked with transverse furrows and by the scutellum being keeled along the sides. The middle vein in the hind wings is, like the others, distinct to the apex.

Pœcilopimpla lucida, sp. nov.

Luteous, the ocellar region, the vertex broadly behind them, three broad marks on the mesonotum, occupying almost all the lobes, a small central and a larger mark on either side on the base of the metanotum, all three rounded at the apex, the base of the propleuræ, the abdominal segments broadly, the base and apex of the four hinder femora and tibiæ and the hinder tarsi, black. Wings hyaline, the nervures and stigma black. Antennæ black, the scape yellow, the flagellum brownish beneath. ♂.

Length 10 mm.

Hab. Kuching.

Face closely punctured, roundly concave, keeled in the middle. Parapsidal furrows distinct at the base only. Median segment smooth and shining, the areola square, the tooth bearing area confluent with that at the base. Abdomen smooth and shining; the 2nd segment is deeply furrowed in the middle at the base; its oblique lateral furrows are smooth.

XORIDINI.

Cyanoxorides, gen. nov.

Antennæ stout, densely covered with short stiff pubescence: the 3rd joint hardly longer than the 4th, the apex from the 20th joint geniculated, bent back and separated from the rest like the lash of a whip. Clypeus short, broad, clearly separated from the face, depressed; its apex transverse. There is a stout keel between the antennæ. Occiput not very distinctly margined. Mandibles edentate, broad at the base, becoming gradually narrowed towards the apex. Mesonotum trilobate. Median segment areolated; the central area extends from the base to the apex and has the apical half much wider than the basal. Spiracles linear. The apical half of the mesosternum separated from

the pleuræ by a curved furrow. Areolet in fore wings absent; the transverse cubital nervure is short, the recurrent nervure is received shortly beyond it; the transverse median very shortly behind the transverse basal, almost interstitial. In the hind wings the cubital nervure is broken below the middle. The basal segment of the abdomen is large, becoming gradually wider from the base to the apex; the spiracles are placed shortly behind the middle; the basal three segments bear curved or oblique depressions; the last segment is larger than the preceding and bears distinct cerci; the hypopygium is smooth; the ovipositor is not quite so long as the body.

The prothorax is long, the tegulæ being placed not far from the middle of the thorax; the sides, at the base, project into teeth; there is an oblique keel near the base of the propleuræ; the ocelli are widely separated from the edge of the vertex; the tarsi are short, compared with the tibiæ; the basal joint of the hinder is slightly longer than the others united; the four front tibiæ are sharply contracted at the base, as is also the case, but to a less extent, with the posterior; the claws are smooth and simple. The temples are large and there is a distinct malar space.

To this genus probably belong *Glypta fracticornis*, Sm., from Mysol and *Xylonomus fracticornis*, Sm., from Batchian.

Cyanoxorides Brookei, sp. nov.

Metallic blue, thickly covered with white pubescence, the antennæ black with a white band beyond the middle; the wings hyaline, the nervures and stigma black; there is a narrow fuscous cloud bordering the transverse basal and the transverse median nervures behind; and a broader cloud on the basal half of the radial cellule, extending along the inner side of the recurrent nervure to the opposite side of the wing. ♀.

Length 16 mm.; terebra 11 mm.

Hab. Kuching.

Front and vertex smooth and shining, with a few scattered punctures; the outer edge of the vertex and the temples thickly covered with white hair. Face closely punctured, its upper part finely transversely striated and covered with white pubescence; the clypeus impunctate; the labrum fuscous, smooth, with a row of long hairs on the middle and apex. Mandibles

black. Apical half of the middle lobe of the mesonotum coarsely transversely reticulated, its apex stoutly longitudinally striated; the basal half is sparsely punctured. Scutellum sparsely punctured laterally; the post-scutellum is furrowed on the inner side of the lateral keels. The metapleuræ at the base are sparsely punctured; the rest of them on the upper half are closely and rather strongly punctured, the punctures forming rows. The basal 3 segments of the abdomen are closely punctured, except on the central depression on the petiole; the oblique furrows are finely striated. The apical segments are smooth. The anterior tarsi are black; thickly covered with white pubescence; the anterior tibiæ are black in front; the rest of the legs are of a darker blue than the body.

Spiloxori les, gen. nov.

Antennæ slender, short, ringed with white, the apical four joints geniculated and angularly bent back from the others; the 3rd joint is distinctly longer than the 4th. Face raised in the centre, clearly separated from the lateral part; its apex rounded. Occiput distinctly margined. The apex of the scutellum distinctly keeled on the sides; the post-scutellum stoutly keeled laterally. The areola is widened at the apex and is separated from the posterior median by a stout transverse keel. The transverse median nervure is placed behind the transverse basal; the recurrent nervure is received distinctly beyond the transverse cubital by a greater distance than the length of the latter. The cubital nervure is broken shortly below the middle. The 1st segment of the abdomen is roundly convex and is without any depressions or furrows; the 2nd and 3rd segments have oblique depressions on the base. The basal joint of the hinder tarsi is shorter than the following joints united.

This genus may be separated from *Cyanoxorides* as follows:

Antennæ short, slender, not densely pilose, the 3rd joint distinctly longer than the 4th; the lash of the antennæ only 4-jointed, the face clearly separated from the orbits; the body not metallic blue: the areola separated from the posterior median area by a stout transverse keel; the basal joint of the hinder tarsi shorter than the other joints united. *Spiloxorides.*

Antennæ long, stout, densely pilose, the 3rd joint not much longer than the 4th; the lash of the antennæ many jointed; the face not clearly separated from the orbits; body metallic blue; the areola not separated from the posterior median area; the basal joint of the hinder tarsi longer than the other joints united. *Cyanoxorides.*

Spiloxorides ruficeps, sp. nov.

Black, the head, the scape of the antennæ and the greater part of the fore legs, red; the base of the flagellum and a band beyond its middle and the apices of the 3rd to 6th abdominal segments narrowly and a broad band on the sheath of the ovipositor, white; the wings hyaline, the base of the stigma broadly white; there is a large fuscous band at the base of the stigma where it is narrow and it becomes gradually wider towards the end; there is a smaller fuscous cloud on the transverse cubital nervure extending into the radial cellule to the end of the recurrent nervure on its inner side. ♀.

Length 11 mm.; terebra 6 to 7 mm.

Hab. Kuching.

Vertex smooth and shining; the front keeled down the centre and closely and finely transversely striated. The centre of the face is broadly raised; this raised part is slightly narrowed and rounded at the apex, is bordered laterally by a keel and is coarsely, irregularly transversely striated; the depressed sides have a paler, more yellowish tint and are finely transversely striated on the inner side. The clypeus is separated from the malar space by a furrow; its apex is obliquely depressed and is transverse. The labrum is slightly rounded from the middle and is thickly covered with long golden hair. Mandibles black, narrowly dark rufous at the base. Mesonotum shining, aciculated crenulated, round the edges. Scutellum smooth and shining; the post-scutellum is broadly depressed and has the lateral keels much stouter than those on the scutellum. The metanotum is aciculated; its keels are bordered by short broken ones on either side. Pro- and mesopleuræ smooth and shining; the upper half of the meta- coarsely reticulated. Abdomen thickly covered with white pubescence; closely, minutely

punctured, more strongly on the basal than on the apical segments; the depressions are minutely striated. The ventral surface is pale brick-coloured. The front legs are dark rufous, the trochanters and tarsi darker coloured; the tibiæ have a pale yellow streak in front; the middle femora are bright rufous in front, dark behind.

Lethulia, gen. nov.

Areolet absent: the recurrent nervure united with the transverse cubital. Antennæ long and slender, the flagellum broadly ringed with white. Head cubital; the occiput margined, temples large, the malar space wide. Clypeus clearly separated from the face, depressed, its apex transverse and with a distinct margin, below which it is obliquely depressed. Mandibles broad; they have a short blunt subapical tooth. Parapsidal furrows wide, deep, the mesonotum distinctly trilobate. Metanotum with 3 distinct areæ at the base; spiracles linear, placed distinctly behind the middle. The hind legs longer than the others; their coxæ large, their trochanters long and distinctly narrower than the femora which are stouter than usual; their tibiæ are much longer than them; calcaria short; the 2 hinder claws are simple. The anterior tarsi are twice the length of the tibiæ; their claws and those of the middle bifid; the basal joint of all the tarsi is shorter than the 4 following united. If any thing, the recurrent nervure is received on the outer side of the transverse cubital; there is no stump of a nervure on the cubito-disco nervure.

This genus comes near to *Fislistina*; it may be known from it by the transverse, not rounded, apex of the clypeus and by its being clearly separated from the face, by the antennæ being longer, more slender and broadly ringed with white, by the very long hinder trochanters, by the petiole being more slender and longer than the 2 following segments united and by the hinder tibiae being much longer compared with the tarsi.

Lethulia flavipes, sp. nov.

Black, the legs yellow, with the hinder coxæ and femora black; the antennæ white, broadly black at the base and apex;

the abdomen yellow broadly banded with black; the wings hyaline, with a narrow cloud below the stigma, and the apex is narrowly smoky. ♀.

Length 15 mm.; ovipositor 12 mm.

Hab. Kuching.

Head black, the face and clypeus and the malar space yellow, the face with a black mark in the centre; the inner orbits are yellow to near the upper ocelli. Front and vertex smooth and shining; the front with a distinct keel down the middle, extending from the ocelli to the base of the antennæ. Mandibles black, the base with large elongate punctures. Palpi yellow. Thorax smooth; the centre of the propleuræ striated; the lower part of the meso- obscurely and the meta- more distinctly punctured. Parapsidal furrows and the depression at the apex of the middle lobe transversely striated. The part behind the basal areæ on the median segment is irregularly longitudinally striated and there are some irregular transverse keels down the sides; the centre at the apex is depressed; the depression becomes gradually wider to beyond the middle, it then becoming gradually obliquely narrowed to the apex, this part being bounded by distinct keels. Legs thickly covered with white pubescence. The basal two-thirds of the 1st and the basal halves of the 2nd to 5th abdominal segments black.

CRYPTINA.

MESOSTENINI.

Skeatia flavipes, sp. nov.

Black; the middle of the flagellum of the antennæ broadly white; a large mark of equal width throughout on the centre of the face, a small mark on the vertex touching the eyes, the tegulæ, scutellum, post-scutellum, a minute mark on the tubercles, a triangular mark under the hinder wings, the sides of the metanotum, a narrower line round the top and the spines, lemon-yellow. Legs lemon-yellow; the hinder trochanters, apical third of hinder femora, and the apical fourth of the hinder tibiæ black. The abdominal segments banded with yellow at the apex; the last segment is entirely yellow. Wings hyaline, the nervures and stigma are black. ♀.

Length 13 mm.; terebra 3 mm.

Hab. Kuching, April 25th.

Face rugose, on the lower side obscurely longitudinally striated. Front with a distinct keel down the middle; the sides with irregularly twisted longitudinal or oblique keels. The ocelli are bordered laterally by a furrow. Mesonotum aciculated, closely and finely transversely striated along the furrows, which bear some transverse striæ. Scutellar depression with a stout, longitudinal keel in the centre. Scutellums smooth. Behind the postscutellum is a curved keel, with a more distinct longitudinal one running down from its centre. The basal area on the mesonotum is slightly longer than its width at the base; it becomes narrowed towards the apex which is transverse. The base behind the keel is strongly aciculated; the rest of the segment is longitudinally reticulated; the apical slope transversely so; the spines are long and project obliquely outwardly. Propleuræ stoutly in the middle and at the apex longitudinally striated. Mesopleuræ stoutly obliquely reticulated, except at the apex above; the furrow is crenulated. Metapleuræ closely and rather strongly obliquely striated; the striæ are more or less curved. Petiole smooth and shining; the 2nd and 3rd segments are aciculated; the others smooth. The 4 front tarsi are black.

Skeatia varipes, sp. nov.

Black; the inner orbits, the outer broadly from near the top, the face and clypeus, a line on the pronotum, a mark in the centre of the mesonotum, the scutellar keels, the scutellums, the sides of the metanotum, a curved line on its top uniting the lateral lines, the spines, the tubercles, the lower part of the mesopleuræ broadly—the mark with a curved incision in the middle above—the mesosternum, a mark under the hind wings and a large oblique mark in the centre of the metapleuræ, yellow. The 4 front legs pale yellow, their femora lined above with black, as are also the middle tibiæ behind; the hinder coxæ yellow, largely marked with black on the outer side; the hinder femora rufous, black from shortly beyond the middle, the tibiæ; and tarsi yellow, with the apical third of the tibiæ, black. Wings hyaline, the stigma and nervures fuscous black. ♀.

Length 14 mm.

Hab. Matang.

Antennæ black, the 5th to 6th joints white. Face strongly, but not very closely, punctured; the centre above closely transversely striated; the clypeus is more sparsely punctured. Mandibles black, broadly pale-yellow at the base. Front irregularly transversely striated and keeled down the centre. Mesonotum closely rugosely punctured; the parapsidal furrows transversely striated; the apex is more strongly transversely striated. The basal area on the median segment is smooth and shining; the rest of the metanotum is coarsely irregularly reticulated and punctured. The upper part of the propleuræ is punctured in front, striated behind; the lower part is stoutly distinctly striated. Mesopleuræ strongly and closely striated; obliquely below, more irregularly at the base above. Metapleuræ irregularly obliquely striated. Post-petiole irregularly punctured, the 2nd and 3rd segments closely and regulary punctured.

May be known from *S. flavipes* by the large yellow mark on the mesopleuræ, by the yellow mesosternum, by the mark on the mesonotum, by the rufous hinder tibiæ, by the yellow line on the metanotum, being semicircular, not transverse, etc. It is a much more robust species.

Skeatia carinata, sp. nov.

Black; the face, clypeus, inner orbits narrowly, the malar space, the pleuræ, the scutellum, post-scutellum, the space at their sides, the apical slope of the metanotum, a semicircular mark in the middle above it, the spines and the apices of the abdominal segments, yellow; the four front legs pale yellow; the hinder legs black, their coxæ for the greater part yellow, the tarsi white; the wings hyaline, the nervures and stigma black. ♀.

Length 13 mm.; terebra 5 to 6 mm.

Hab. Kuching.

Antennæ black; the 5th to 14th joints white. Face punctured, and obscurely transversely striated in the middle; on the top is a longitudinal keel which extends upwards between the antennæ. The lower part of the front is yellow; the black upper part is wrinkled in the middle. Middle lobe of mesono-

tum coarsely transversely straited, the lateral irregularly rugosely punctured; the apex is rufous and bears four stout longitudinal keels. There are 4 longitudinal keels on the scutellar depression; the scutellum is broadly black on the base. The lateral scutellar depressions and the depression on the base of the metanotum are stoutly striated. The basal area on the metanotum is raised, smooth and open at the sides on the base; the rest of the metanotum is closely, strongly striated; the striæ are straight at the base, on the rest they are curved downwards in the middle. Mesopleuræ on the lower side obliquely striated at the base; the meta- stoutly obliquely striated and broadly depressed in the middle. The spines are short, broad and rounded at the apex. Abdomen smooth and shining.

**Melcha maculipennis*, sp. nov.

Black; the median segment for the greater part red; the tegulæ, scutellum, post petiole, the apical third of the 2nd abdominal segment and the whole of the apical two whitish-yellow; the four front legs rufo-testaceous, the coxæ paler, the middle joints of their tarsi white, the base and apex black; hinder coxæ rufous; the trochanters, femora and base of tarsi blackish; the apical and basal joints of tarsi black, the middle joints white. Wings hyaline; there is a brownish cloud between the base of the stigma and the areolet and extending nearly to the opposite side of the wing where it becomes fainter and narrower; the apex is faintly clouded. ♀.

Length 9 mm.; ovipositor 2 mm.

Hab. Kuching.

Antennæ long, black, the 7th to the 11th joints white except above, the scape dark rufous. Front above obscurely longitudinally, below obscurely transversely striated. Thorax shining; the mesopleuræ alutaceous; the furrows more or less crenulated. Scutellum smooth and shining. Base of median segment smooth and shining; the part between the two keels rugose, the apical slope reticulated, the upper part more distinctly than the lower. Abdomen shining; the 2nd and 3rd segments are closely punctured; the gastroceli smooth and rufous.

* *Melcha*, Cam. Ann. and Mag. Nat. Hist. Ser. 7, Vol. IX, 153.

The metanotal area does not reach to the base of the segment; it is open behind, almost square and of almost equal width throughout.

Melcha annulipes, sp. nov.

Black, shining, the apical slope of the median segment, the apices of the 1st, 2nd and 5th in the centre and the whole of the 6th and 7th segments above, white; the base and sides of the petiole rufous; the 4 anterior coxæ and trochanters; the femora rufous, the tibiæ pale, fuscous behind, the anterior tarsi blackish, the middle fuscous, white in the middle; the hinder coxæ rufous; the apical joint of the trochanters black; the femora rufous black above; the tarsi white, the last joint black; the basal third of the hinder tibiæ white. Wings hyaline with a faint cloud behind the areolet and a fainter one on the apex; the stigma and nervures dark fuscous. ♀.

Length 8 mm.; terebra 3 mm.

Hab. Kuching.

Face rugose, the clypeus smooth and shining. Mandibles white, rufous in the middle, the apex black. Palpi white. Front keeled, in the middle obscurely striated, the sides smooth and shining. Mesonotum shining; the tegulæ, tubercles, scutellum and post scutellum white. Base of median segment smooth; the area small, triangular, the nervures uniting before reaching the keel; the rest of the segment closely reticulated; the centre of the apical slope has a rufous tint. Propleuræ striated in the middle; the meso- more closely longitudinally striated, except at the apex above; the meta- closely, somewhat obliquely striated and reticulated. Abdomen very smooth and shining.

Friona varipes, sp. nov.

Black, shining; the scutellum, the post-scutellum, a large mark at its sides behind the wings, a large mark, rounded above, transverse below on the metapleuræ, the apices of the basal 6 abdominal segments and the whole of the 7th, pale yellow; the four anterior legs pale fulvous, the middle pair with a rufous tint; the hinder coxæ dark rufous, broadly yellow at the base above; the trochanters black; the tibiæ blackish, dark rufous at the

base; the tarsi white; the wings hyaline, the stigma and nervures black. ♀.

Length 13 mm.

Hab. Singapore.

Antennæ slender, black, the 11th to 19th joints white. Face coarsely alutaceous, a short mark on it under each antennæ; opaque sparsely covered with short white pubescence. Clypeus roundly convex, smooth and shining. Mandibles broadly white at the base. Labrum and palpi white. Front pro- and mesopleuræ striated, as with the other species of the genus; the metanotum from the transverse keel is transversely, but not very strongly, striated; in the centre of the striated part is a broad yellow line, which unites with a transverse one on the apex. The median segment is thickly covered with long white hair. Abdomen smooth and shining. The coxæ, trochanters and femora are covered with long white; the extreme base of the hinder tarsi and their apical joint black.

ICHNEUMONINA.

JOPPINI.

Cratojoppa maculiceps, sp. nov.

Black; largely marked with pale yellow; including the sides and apex of the scutellum narrowly, the areola and two oblique marks on the apex of the median segment; the legs pallid yellow; the four front femora above, the hinder entirely; the apical half of the middle tibiæ behind, almost the apical two-thirds of the hinder and a narrow band on their base, black; the wings hyaline, the nervures and stigma black. ♀.

Length 17 mm.

Hab. Kuching.

Antennæ black; the 9th to 23rd joints white. Head smooth and shining; the face and clypeus sparsely punctured; on the face are two black lines which become wider below and run into the foveæ. Mandibles and palpi whitish-yellow; the mandibular teeth black. On the thorax, a narrow line on the pronotum, the tubercles, the mesopleuræ below, two small spots on the centre of the mesonotum, the sides and apex of the scutellum narrowly, its keels, the post-scutellum, a conical mark behind

the spiracles, the elongated areola, two oblique marks on the apex of the metanotum outside the posterior median area and the apices of all the abdominal segments (the line on the 2nd being broader than the others), pallid yellow. Mesonotum distinctly and irregularly punctured, except at the apex; the scutellum is more strongly punctured, with a smooth line in the middle on the basal half. Metanotum strongly, deeply and irregularly punctured; the basal areæ on the base and inner sides smooth; the areola has two elongated closely punctured spots in the centre; the posterior median area is stoutly, transversely striated, as is also the spiracular area beyond the spiracles. Pro- and mesopleuræ smooth; the meta- above the keel closely rugosely punctured. Petiole smooth and shining; the 2nd and the 3rd segments are closely punctured, the 2nd mort strongly than the 3rd; their base closely longitudinally striaded in the centre; the gastrocoeli smooth and shining.

The colouration of the body is almost identical with that of *C. robusta*, Cam., but that species may be known from it by the four front legs being without black; and the hinder femora are rufotestaceous, with the apical third black.

ACULEATA.

FOSSORES.

Mutilla attila, sp. nov.

Black, the basal two segments of the abdomen ferruginous; the wings dark fuscous-violaceous paler at the base; the apex of the clypeus transverse, the tegulæ large, black; the outer edge turned up and paler in tint. ♀.

Length 13 mm.

Hab. Lingga.

Front and vertex almost uniformly rugosely punctured; sparsely pilose; the face, clypeus and cheeks thickly covered with long griseous hair. Apical half of clypeus convex, the base flat; its apex transverse. Middle of mandibles rufous. Pronotum and upper part of propleuræ closely rugosely punctured; the rest of pleuræ smooth. Mesonotum shining; bare; the furrows deep; there is an impressed line down the centre. Scutellum coarsely rugosely punctured, the punctures large and

almost forming reticulations; it is not much raised and there is no smooth space. Median segment coarsely reticulated; the basal area reaches to the middle of the segment; it is not much widened at the base and there is a large, wider area on either side at the base. The 2nd cubital cellule is not much shorter than the 3rd; the 2nd cubital nervure is broadly, roundly curved outwardly; the apex of the radius is straight and oblique. The 2nd abdominal segment is narrowed at the base and bulges roundly outwardly; the ventral keel is not very prominent and is narrowed at the apex. The last segment is smooth in the middle; its apex is distinctly raised.

Mutilla Cæcina, sp. nov.

Black, thickly covered with white hair; the 1st and 2nd abdominal segments ferruginous; the wings fuscous with a violaceous tinge: the extreme base of the front and almost the basal half of the posterior pair hyaline, the nervures and stigma black; the apex of clypeus incised. ♂.

Length 12 mm.

Hab. Lingga. November.

Front and vertex some what strongly longitudinally striated; the vertex behind and between the ocelli much more finely striated. Antennal tubercles bright red. Face and clypeus smooth, thickly covered with soft white hair; the apex of the clypeus with a round incision; its middle flat. Mandibles black, rufous in the middle; the palpi black, mixed with fuscous. Pronotum strongly rugosely, closely punctured; its apex thickly covered with depressed dark grey pubescence; the mesonotum is more shining, and more strongly but not so closely, punctured. Scutellum strongly rugosely punctured and covered with long black hair. Median segment strongly reticulated; its central area not quite reaching to the middle; its basal half dilated. The basal half of the propleuræ rugosely reticulated; the apical smooth, with some obscure longitudinal striæ. Mesopleuræ closely rugosely punctured. Metapleuræ irregularly reticulated except in the middle and at the base above. Legs thickly covered with white hair; the spurs pale. The basal abscissa of the radius is slightly curved outwardly; the apical broadly, roundly curved and is longer than the middle two unit-

ed; the 3rd cubital cellule above is distinctly shorter than the 2nd. The 2nd abdominal segment becomes gradually wider towards the middle, it is not being dilated in the middle, nor narrowed at the apex; the last segment has a broad, smooth glabrous band extending from near its base to the apex and becoming gradually wider towards the apex. The ventral keel is slightly dilated at the apex. Tegulæ black on the inner side, the middle rufous, the outer edge paler.

This is a more slenderly built species than *M. attilla*; it may be known from it by the incised apex of the clypeus and by the front and vertex not being uniformly rugosely punctured.

Discolia ocina, sp. nov.

Black; the vertex and the upper half of the outer orbits pale orange; the wings uniformly dark purple-violaceous; the apical half of middle lobe of the mesonotum almost impunctate; the median segment strongly punctured except laterally at the base. ♀.

Length 13 mm.

Hab. Java.

Vertex smooth; the upper part of the front strongly irregularly punctured; the lower opaque, shagreened and distinctly furrowed in the middle. Clypeus smooth, flat, slightly narrowed towards the base; its depressed apex stoutly longitudinally striated. The scutellum is more strongly and closely punctured than the mesonotum. Post-scutellum punctured at the base and the sides. Pleuræ closely punctured. Meso- and metanotum thickly covered with stiff black hair. Abdomen smooth and shining and sparsely covered with short black hair. The hair on the legs is long, stiff and black.

Comes near to *D. humeralis*.

Triscolia crassiceps, sp. nov.

Black, shining, above covered with black hair; the front closely and strongly punctured, the vertex almost impunctate; the temples large, nearly as long as the front half of the head; their sides broadly rounded; the clypeus raised in the centre, flat; its apex with a row of small punctures, the central part of the metanotum and the outer part of the lateral parts closely

and strongly punctured; the abdomen shining, finely punctured on the base of the segments; the hair fringe black; it has a violaceous tint in certain lights; the wings uniformly fuscous-violaceous. ♀.

Length 15 mm.

Hab. Matang, 3600 feet.

Characteristic of this species is the large head, largely developed behind the eyes and as wide as the thorax. Antennæ short, thick and bare. Mandibles almost impunctate, fringed below with long rufous hair. The centre of the prothorax is smooth and shining; the sides strongly and closely punctured. There is a distinct, deep longitudinal furrow on the sides of the mesonotum, which is strongly, but not closely, punctured and has two smooth longitudinal bands near the centre. Scutellum with a band of large punctures round the edges and with a curved row in the middle. Post-scutellum strongly punctured, most sparsely in the centre. The apical slope of the median segment is impunctate. The raised middle part of the mesopleuræ is strongly punctured; the upper and apical parts of the metopleuræ sparsely and not very strongly punctured. Pygidium covered thickly with long black hair.

Comes near *T. Kollari*, Sauss., and *T. macrocephala*, Grib.

Agenia acilla, sp. nov.

Black, shining, smooth, covered with a silvery pile; the wings hyaline; a narrow cloud along the transverse basal and the transverse median nervure (the larger part of it on their outer side) and a wider cloud extending from the base of the stigma to shortly beyond the middle of the 2nd cubital cellule and backwards extending to the discoidal nervure. ♀.

Length 9 to 10 mm.

Hab. Kuching.

Head opaque, alutaceous, the apex of the clypeus smooth and shining. Mandibles rufous behind the apex. Palpi black, the apical joints fuscous; the hair bundle long and black. Hinder ocelli separated by a slightly less distance from each other than they are from the apex. The scutellum and post scutellum shining. The apical half of the median segment is

obscurely transversely striated and thickly covered with silvery pubescence. The tibiæ are not grooved and are sparsely covered with short spines; the tarsi are more thickly spined; there is a straight tooth near the middle of the claws. The 1st transverse cubital nervure is rounded, obliquely bent on the top; the 2nd abscissæ of the radius and cubitus shorter than the 3rd; the 1st recurrent nervure is received almost in the centre of the cellule; the transverse median nervure is received distinctly beyond the transverse basal; the accessory nervure in the hind wings is distinctly appendiculated.

The temples are well developed and rounded broadly behind; the median segment is longer than usual, has an obliquely rounded slope and is indistinctly furrowed down the middle; the pronotum is as long as the mesonotum and is rounded at the apex; the pygidium is thickly covered with long fuscous hair, is opaque, with a shining line in the centre.

Pompilus panyasis, sp. nov.

Black; thickly covered with silvery pile; the wings fuscous-hyaline, the apex from the base of the stigma much darker and with a distinct violaceous tinge; the base of the mesonotum with the sides straight and oblique, the apex of the pronotum therefore not rounded. ♀.

Length 12 mm.

Hab. Penrissen.

Apex of clypeus broadly rounded. Eyes parallel, very little converging above. Hinder ocelli separated from the eyes by more than double the distance they are from each other. temples very little developed; the occiput transverse. Pronotum moderately large, the sides rounded. Median segment short, rounded; pilose and thickly covered with long pale hair. Tibiæ and tarsi stoutly, but not thickly, spined. Second cubital cellule about one-third shorter than the third; the 1st transverse cubital nervure is oblique and rounded; the 2nd is not oblique and is broadly, roundly bent towards the apex of the wing; the 1st recurrent nervure is received shortly beyond the middle; the 2nd near the apex of the basal third of the cellule; the accessory nervure in the hind wing is interstitial. The transverse basal nervure is roundly curved.

Salius robertianus, sp. nov.

Black; the head, the pronotum, mesonotum, tegulæ, scutellums, the scape of antennæ, the under side of the flagellum and the legs, except the coxæ and trochanters, fulvous; the wings dark yellowish-hyaline, the radial, the apical 3 cubital cellules, the apical two discoidal and the apical cellules, fuscous, with a distinct violaceous tinge. ♂.

Length 23 mm.

Hab. Kuching.

The joints of the flagellum are roundly curved below. Head and fore part of the thorax covered with a short golden pile. Apex of mandibles black. The front, vertex and occiput are infuscated; the front is distinctly furrowed down the centre. Post-scutellum prominent, broadly roundly convex, not raised above the level of the scutellum, and not raised in the centre. The median segment transversely, but not strongly striated, except on the apical slope. The 2nd and 3rd abscissæ of the radius are almost equal in length; the 1st discoidal cellule is almost hyaline, and has an elongated fuscous streak in the middle; the 3rd transverse cubital nervure has its upper half straight and oblique; the apical abscissa of the radius is straight and oblique; the basal nervure is roundly curved. The eyes are only slightly curved on the inner side and only slightly converge above and not at all below. The prothorax does not project outwardly above in the middle; the base of the mesonotum is broadly rounded, its sides not straight and oblique, as in *S. flavus*. The fore coxæ are only black behind; the hinder femora are blackish at the base.

Belongs to the group of *S. flavus*, except that the yellow colour in the wings is not clear.

Salius brookei, sp. nov.

Fulvous-yellow: the pleuræ dark fuscous, the apex of the median segment black; abdomen black; the ocelli in a black mark; the wings clear yellowish-hyaline; the stigma and nervures fulvous-yellow. ♀.

Length 14 mm.

Hab. Kuching. February.

Head in front longer than usual. Eyes distinctly curved on the inner side. Pronotum with a distinct wide furrow in the centre. The post-scutellum is more narrowed towards the centre than is the scutellum. The striation on the median segment is indistinct on the basal half. Tibiæ and tarsi distinctly, but not thickly, spined; the claws have a stout tooth at the base. The 2nd cubital cellule at the top is about two-thirds of the length of the first; below not much shorter than it; the 3rd transverse cubital nervure is roundly curved; the first recurrent nervure is received close to the base of the apical third of the cellule; the transverse basal nervure is straight and sharply oblique; the transverse median nervure is straight and sharply oblique and is separated by almost its own length from the transverse basal. The accessory nervure in the hind wing is not interstitial. The apex of the abdomen is dark fulvous and is thickly covered with pale fulvous hair.

Stizus Borneanus, sp. nov.

Black; the face below the antennæ, the clypeus, except for a large mark beneath, the labrum, the lower side of the scape a narrow line on the apex of the pronotum, interrupted in the centre and not extending to the outer edges, the tubercles, the outer edge of the tegulæ—their base entirely—a large oval mark on the sides of the scutellum, a small mark behind it, the greater part of the post scutellum, the sides of the median segment in the middle; a large mark, much broader than long, on the apex of the first abdominal segment, a line on the apex of the 2nd segment, dilated at the sides, a narrower one on the 3rd and 4th, a mark on the sides of the 5th and the sides of the 2nd and 3rd ventral segments—the marks narrowed on the inner side—yellow. Legs black, the apex of the 4 front femora, and the greater part of their tibiæ and tarsi anteriorly; and the basal half of the hinder tibiæ behind, yellow. Wings hyaline, the nervures and stigma black. ♀.

Length 11 mm.

Hab. Kuching.

The basal seven joints of the antennæ are brownish beneath. The black mark on the clypeus is narrowed towards the top; its centre above is roundly incised. The centre of the front is

shagreened; the sides bear silvery pubescence and the lower inner orbits are yellow; the vertex is impunctate and is, as is also the occiput, thickly covered with long fuscous hair. Thorax shining, impunctate, thickly covered with pale pubescence, which is longest on the median segment. Abdomen shining; the apices of the middle and apical segments covered with stiff black hair; the last smooth and bare in the middle. The posterior angles of the median segment are broadly rounded; the front is narrowed beneath; there is no violet iridescence on the thorax or abdomen.

Belongs to the group of *S. semperi*, Hand. *S. socius*, Hand. has been taken at Sarawak by Mr. Shelford.

Ampulex foveifrons, sp. nov.

Green, largely marked with blue, the lateral lobes of the mesonotum, and the basal areæ of the metanotum purple; the pleuræ brassy; the four posterior femora red; the antennæ short and thick; the 3rd joint distinctly longer than the 4th; the apex of the median segment bluntly rounded and without teeth on the apical lateral margins; the keels on the metanotum short, not extending much beyond the middle and three in number; the outer united at the apex with the central. Wings fuscous with a violaceous tinge; the apex of the radius broadly rounded, extending slightly beyond the top of the apical transverse cubital nervure. ♀.

Length 18 mm.

Hab. Kuching.

Antennæ stout, black, nearly as long as the thorax. Head large, nearly as wide as the mesothorax. Temples largely developed, not narrowed behind the eyes and rounded behind. Front closely and distinctly, but not strongly, punctured; the vertex more sparsely punctured; behind the ocelli are three large, elongated and two small foveæ in a row; the eyes are separated by about four times the length of the antennal scape. Clypeus broadly keel; its apex roundly projecting below. The raised part of the pronotum is broader than long, slightly narrowed and rounded at the base and about one fourth shorter than the mesonotum; the lower depressed part is coarsely longitudinally

punctured and deeply furrowed in the centre. Parapsidal furrows complete; deep and crenulated. The scutellar depression narrow, deep, crenulated. The central keel of the metanotum is straight; the lateral are curved and become united to the central, forming a large curved area, broader at the base than at the apex and marked with seven stout transverse keels; outside it is a large curved depression not bounded on the outer side by a keel and ending at the inner apical part in a round fovea; the middle part of the apical slope on the sides are irregularly punctured; the lower transversely striated. Pleuræ sparsely punctured; the upper part of the meta- bordered by a wide longitudinal furrow, which is irregularly striated. The anterior tibiæ and all the tarsi are brownish; the fore femora are black, green above; the middle tibiæ black, marked with green behind; the hinder bluish-green. Tarsal joints thickly spined; the joints narrow, longish; the claw-tooth broad at the base, becoming gradually narrowed towards the apex, which is sharp-pointed. The basal segment of the abdomen above is large, rounded, but not narrowed, at the base above, slightly broader than long and not very much shorter than the 2nd segment; the 3rd segment is not much shorter than the 2nd. The base of the 2nd segment projects straight downwards; the apex of the 1st segment in front of it projects roundly, but not much, downwards.

There are only two transverse cubital nervures; the upper three-fourths of the 2nd is straight and oblique, the lower is also straight, but without an oblique slope; it is united to the radius at a short distance from its apex.

This species is easily known by the broadly rounded, toothless apex of the median segment; by the short central keels on the metanotum and by there being no lateral ones, by the broad head and thorax, by the short, thick antennæ, by the straight, obliquely bent 2nd transverse cubital nervure and by the basal three segments of the abdomen being of almost equal length.

It is possible that this species may be *A. hospes*, Sm. (which Kohl thinks may be a var. of the Javanese *A. cognata*, Kohl,) but Smith's descriptions are not sufficient to enable me to decide this; as is unfortunately the case with too many of his Malay species.

Ampulex rufo-femorata, sp. nov

Green; largely marked with blue, the pleuræ with brassy tints; the antennæ black, the 3rd joint about one half longer than the 4th; the temples sharply obliquely narrowed; metanotum closely transversely striated; all its keels reach close to the apex of the segment; the central one bifurcates obliquely at the apex, the end keels uniting to the apex of the 3rd keel; all the trochanters and femora and the fore tibiæ are red; the tarsi black; the wings infuscated; the apical third darker cloured; the 1st transverse cubital nervures obliterated; the 3rd is received at a short distance from the apex of the radius; the 2nd segment is distinctly longer than all the following united; at its base below it has a rounded oblique slope. ♀.

Length 14 mm.

Hab. Mount Sibou.

Front and vertex sparsely punctured; the latter depressed broadly in the middle; the inner orbits are margined; the keels leading into the antennæ are long, stout and oblique; between them, below, are some curved furrows: the eyes at the top are separated by the length of the antennal scape and pedicle united. The raised part of the pronotum is shortly, but distinctly, longer than its breadth at the apex and is slightly narrowed at the base. The metanotum is not much shorter than the mesonotum; its teeth are stout and long; its apical slope is covered, except in the centre above, closely with curved striæ and is thickly covered with white pubescence. Mesopleura strongly punctured under the wings; the upper part of the meta obliquely striated, the striæ becoming closer and extending lower down on the apex. The abdomen, seen from the back, is as in *A. spectabilis*, cf. Kohl's fig. Ann. Hof. Mus. Wien. VIII, pl. XII, f. 35.

The ventral segments are as in his figure 36 pl. XII, but with the slope not quite so gradual. The hinder tibiæ are blue behind.

In Kohl's table this species would come in near *A. erythropus*.

Trirogma nigra, sp. nov.

Black, shining; the head and thorax thickly covered with long white hair, as are also the coxae, femora and ventral sur-

face of the adomen; wings hyaline, infuscated towards the apex, the nervures and stigma black. ♂.

Length 12 to 13 mm.

Hab. Santubong.

Antennæ as long as the body, black; the apical joints slightly curved. Vertex strongly, but not closely, punctured, more sparsely behind the ocelli; the front closely reticulated; both are sparsely covered with long white hair. Face and clypeus thickly covered with long depressed white hair, which hides the texture. Prothorax smooth and shining; the pleuræ with some striæ in the middle; the pronotum at the apex cleft, the sides rising into large, oblique pyramidal, oblique tubercles. Base of the mesonotum is coarsely rugosely punctured, and in the middle irregularly striated; its middle at the apex is smooth, shining and roundly convex. Scutellum not much raised, smooth and shining. Metanotum shining; in the centre is an oblong area, with straight sides and apex; from its apical angles issues a short curved keel, and from the sides, near the middle, two curved longer ones; outside this are two oblique keels; united at the apex by a shorter one, which is roundly curved inwardly; from these keels the segment slopes obliquely to the tubercles, to which they are united by some keels; there being also some keels behind them. From the tubercles a keel runs round the sides and apex. Abdomen smooth and shining; the petiole, sides and ventral surface thickly covered with long white hair. The first transverse cubital nervure is obliquely bent at the top; the second is roundly curved.

This species is easily separated from the known species by its black body. The metathoracic spines, too, are more prominent than usual.

Cerceris malayana, sp. nov.

Black; the face, clypeus, the scape, 2 broad marks on the pronotum, tegulæ, post-scutellum, two large marks, irregularly oval in shape, on the apex of the median segment, a large broad mark on the base of the 2nd abdominal segment; a broad band—widest on the sides—on the apex of the 3rd segment; and a narrow band on the apices of the 5th and 6th, yellow. The four front legs yellow, with a broad band on the femora behind; the

hinder femora, the base of the hinder tibiæ narrowly, their apex more broadly and the hinder tarsi black. The area on the metanotum smooth, with a deep crenulated furrow in the centre. Wings hyaline, the radial cellule and the apex of the 4th cubital cellule smoky; the stigma dark fuscous. ♂.

Length 8 mm.

Hab. Kuching.

Flagellum of antenn below and the apical joint also above brownish-red; the pedicle entirely black. Front and vertex closely and strongly punctured; the face and clypeus less closely and covered with white pubescence; the yellow on the face is obliquely, sharply narrowed above; laterally it extends along the eyes to the base of the antennæ. Thorax strongly and closely punctured, except the metanotal area which is smooth and shining except at the apex; its central furrow does not commence at the base which is obliquely depressed. Abdomen strongly punctured; the pygidium is only slightly narrowed at the base and apex; its basal half strongly punctured, its apex transverse; the apex of the hypopygium is roundly incised.

* *Pison Sarawakensis*, sp. nov.

Black; densely covered with silvery pubescence; the apex of the median segment with a rather steep slope, its base closely and finely obliquely striated, the striæ springing from the central furrow, which is shallow, the wings hyaline, the nervures blackish, the tegulæ and calcaria testaceous.

Antennæ black, thickly covered with silvery pubescence. Front and vertex alutaceous; the rest of the head thickly covered with silvery pubescence. Mandibles for the greater part rufous; the palpi brownish. The thorax is thickly covered with silvery pubescence, closely, minutely punctured: on the centre of the mesonotum are two shining, longitudinal lines. The furrow on the metanotum is wide and shallow; in its centre is a thin irregular keel: the base of the segment is obscurely obliquely striated; the apical furrow is wide. Abdominal segments banded with silvery pubescence; closely, microscopically

* *Pison* is treated by Bingham as a neuter word. It is, however, a masculine word—the name in fact of some Biblical or Classical personage, I forget which.

punctured. The wings are slightly infuscated at the apex; the first recurrent nervure is received in the 1st cubital cellule, distinctly in front of the transverse cubital nervure; the 2nd in the centre of the 2nd; the pedicle is distinctly longer than the branches of the transverse cubital nervures.

Trypoxylon annulipes, sp. nov.

Black; the head and thorax thickly covered with golden pubescence, the anterior tarsi and the base of the tibiæ testaceous; the front stoutly keeled above the antennæ: the 2nd and 3rd segment more or less rufous; the wings hyaline. ♀.

Length 17 mm.

Hab. Matang, 2500 feet.

Antennæ black; the scape on the under side covered with white pubescence The head, except on the front, is thickly covered with golden pubescence; the front is alutaceous; its upper part is obscurely furrowed in the centre; its lower stoutly keeled. Clypeus keeled in the middle. Mandibles piceous at the base. Palpi white. Thorax thickly covered with long golden pubescence; smooth and shining. The furrow on the base of the metanotum shallow, indistinct and becoming wider towards the apex; on the apical slope it is deeper, wider and with obliquely sloped sides. Legs covered with a pale pile. Abdominal petiole as long as all the other segments united.

There are no lateral furrows on the base of the metanotum.

VESPIDÆ.

Montezumia flavobalteata, sp. nov.

Black; the clypeus, except for a broad line in the middle, not reaching to the apex and obiliquely narrowed below, the eye orbits—the inner entirely and the outer from near the top—the mandibles, except on the inner side, the prothorax, except on the basal slope, and an oblique mark—narrowest below—on the propleuræ, two narrow lines on the mesonotum, the basal half of the scutellum, except narrowly in the centre, the postscutellum, the median segment except for a curved mark at the base, a line down the centre and an irregular mark on the centre of the metapleuræ above, yellow. Wings hyaline, the apex

slightly infuscated, the stigma fulvous. Legs yellow; the apices of the four front femora above, the hinder almost entirely, the base and lower side of the hinder tibiæ and the basal joints of the hinder tarsi, black. Abdominal segments narrowly lined with yellow; two longish lines near the base of the petiole and two long, curved, somewhat pyriform, (the narrow end at the base) marks on the base of the 2nd segment and the whole of the apical segment, yellow. ♀.

Length 14 mm.

Hab. Penrissen.

Front and vertex strongly and closely punctured; the lower part of front reticulated. Clypeus broadly but not deeply incised. Mandibles on the top and at the apex black. The clypeus is as long as its greatest width. Thorax strongly and closely punctured; the longitudinal and the vertical furrows on the base of the mesopleuræ are deep; the furrow on the median segment is deep and is keeled in the centre. The petiole is about one fourth longer than the 2nd segment; it becomes gradually wider towards the apex. The 2nd cubital cellule is much narrowed at the top, the nervures almost touching there; the 2nd recurrent nervure is almost interstitial; if anything it is received in the 3rd cubital cellule. Petiole distinctly punctured; the other segments smooth.

The wings are longer than usual and extend beyond the apex of the abdomen the 2nd segment of the abdomen is broad at the base and is not contracted there. Maxillary palpi apparently four jointed; the last joint minute; the joints bearing stiff long hairs.

This is not a tyyical *Montezumia*, but it fits better into that genus than into any other. It has also some affinity with *Pterochilus fulvipennis*, Cam. (which is not a typical *Pterochilus*), having the palpal characters of that species (cf. Manchr. Memoirs, 1898), the joints being sparsely covered with stiff hairs and the last minute. Characteristic is the greatly narrowed at the top 2nd cubital cellule and the interstitial 2nd recurrent nervure.

Zethus rufofemoratus, sp nov.

Black; the four hinder coxæ, trochanters and femora red, the clypeus, except for a black mark in its centre, which is pro-

duced slightly in the middle above and largely and roundly in the middle below, a small square mark in the middle above the antennæ, a line on the under side of the scape, a line on the apex of the pronotum, narrowed in the centre, two marks on the centre of the scutellum, two of similar size on the post-scutellum, a small oval mark on the sides of the median segment, two large oblique ones on its sides, which become gradually wide towards the apex and a large longish mark, broader on the upper than on the lower half, on the pleuræ below the tegulæ and a narrow line, slightly interrupted in the middle, on the apices of the 1st and 2nd segments, yellow. Wings almost hyaline, with a distinct violaceous tinge; its apex and the apex of the costal cellule smoky-violaceous, the nervures and stigma black.

Length 14 to 15 mm.

Hab. Kuching.

Front and vertex strongly and closely punctured, except on the former on the sides below. The clypeus is as strongly but not so closely, punctured; its apex, sides and a mushroom-like mark in the centre are black; it is wider than long; its apex is about half the width of the top and is slightly, broadly incised, not transverse. Pronotum smooth and shining. Mesonotum, except on the sides at the apex, strongly and closely punctured. Scutellum flat, somewhat strongly, but not closely, punctured; on the basal depression are five stout keels. Metanotum with a large, triangular punctured band in the centre at the base; the central depression becomes gradually wider from the upper third, which is a little narrowed at the base and is bounded by a stout transverse keel at the apex. Pro- and mesopleuræ coarsely rugosely punctured. Metapleuræ coarsely shagreened and sparsely punctured. The basal three segments of the abdomen are closely punctured. The fore femora are broadly yellow beneath and there is a line, narrowed above, on the upper half of the fore tibiæ. The 2nd cubital cellule is triangular, the nervures almost touching above; the 2nd transverse cubital nervure is interstitial. When fresh the body was probably thickly covered with pale pubescence.

Comes nearest *Z. 4—dentatus*, Cam., "Entomologist," December, 1902, 314. There is a smooth longitudinal line on

the centre of the vertex behind. There are two longish subapical closely united, not very distinct, subapical teeth on the mandibles; there is a distinct raised transverse keel on the base of the petiole; near it on the sides is a tubercle.

Odynerus rugifrons, sp. nov.

Black; the clypeus, mandibles except at the apex, a line on the front broadly dilated below and not reaching to the ocelli, the inner eye orbits, broadly below, narrowly above the sinus, the outer orbits, the prothorax broadly in front, two narrow lines on the mesonotum, two large marks on the scutellum, postscutellum, the greater part of the mesopleurae, the median segment, except for a black band down the centre, the apices of the abdominal segments narrowly and two large, somewhat pyriform, marks—the narrow end at the base—near the base of the 2nd segment, yellow. Legs similarly coloured; a line on the apical half of the middle femora, a shorter one on the base of the middle tibiæ, the hinder femora and tibiæ broadly above and the base of the hinder tarsi black. Wings hyaline, the apical three-fourths of the radial cellule and the cubital cellules in front below it and the apex of both wings more faintly all round, smoky. ♀.

Length 12 to 13 mm.

Hab. Kuching.

Front and vertex closely and strongly punctured, the front much more strongly than the vertex, which is almost smooth in the middle; the punctures on the front run into reticulations above. Clypeus sparsely punctured; it has an oblique slope from the middle towards the base and apex; the apex has a wide, round incision; the apical angles stout. Thorax above coarsely, strongly rugosely punctured. The postscutellum is separated from the post-scutellum by a moderately, almost smooth, furrow and is not clearly separated from the metanotum, which has a rather steep, oblique slope. The 2nd cubital cellule is narrowed above; the 1st transverse cubital nervure is oblique and roundly curved downwards; the 2nd is broadly roundly curved outwardly; the 2nd recurrent nervure is almost interstitial. Abdomen shining, the 2nd segment large, longer than its width at the apex and more than twice its width at the base.

The head is large and is well developed behind the eyes; the temples are broadly rounded; the base of the thorax is rounded, not transverse; the sides of the median segment are rounded, without any angles and the stigma is fulvous.

This species has the colouration of *O. hyades*; that species may be known from it by the apex of the clypeus being transverse, by the temples not being rounded, by the base of the thorax being transverse and by the sides of the median segment projecting and its apex transverse.

Odynerus hyades, Cam.

This species (described Journ. Str. Br. R. A. Soc., 1902 112), is variable as regards the amount of yellow on the body and of the black on the legs. The pronotum is transverse, not rounded.

Odynerus 7—fasciatus, Sm.

This species has been taken at Matang, 3,600 feet and at Sabras. It is easily known by the body being thickly covered with black erect hair, and by all the abdominal segments being banded with yellow. It is probably a variable species as regards the quantity of yellow on the head and thorax and also as regards the amount of black on the legs. The ♂ has the clypeus entirely yellow; not broadly marked with black in the centre as in the ♀; it is also slightly roundly incised at the apex, not transverse as in the ♀. Characteristic is the fact the first two transverse cubital nervures are almost united at the top.

The species has a close resemblance in from and colouration to a *Vespa*. It is probably of wide range in Malaya and has been recorded from Sumatra by Gribodi who describes it in full in Bull. Soc. Ent. Italiana, XXIII.

Odynerus carinicollis, sp. nov.

Black; the prothorax red; the clypeus, except for a black transverse mark in the middle, the eye incision, a mark, roundly dilated at the apex on the lower part of the front, a line on the upper half of the eye orbits, the edge of the median segment and

of all the abdominal segments, yellow. Wings hyaline, the greater part of the radial cellule smoky, the cloud projecting into the upper part of the cubital cellules. ♂.

Length 7 mm.

Hab. Kuching.

Scape of antennæ yellow beneath; the flagellum brownish, black above. Front and vertex closely and strongly punctured, on the front running into reticulations; the front keeled between the middle. Clypeus sparsely punctured; its greatest width slightly greater than the length; the apex depressed and slightly, roundly incised. Base of thorax transverse, sharply keeled; the scutellum is more widely punctured than the mesonotum. The apex of the median segment is transverse, keeled and with a slight incision in the centre; the yellow line is dilated on either side of the incision. The lower half of the base of the meso- and the greater part of the base of the metapleuræ smooth, impunctate. The basal three abdominal segments are obscurely punctured; the base of the first is indistinctly bordered. The hinder tibiæ are for the greater part black, the four anterior greater part yellow; all the tarsi are for the greater part yellow.

Odynerus Robertianus, sp. nov.

Black; the clypeus except for a broad curved black mark above the narrowed part, a minute spot behind the eyes and a line on the apex of the 1st and 2nd abdominal segments, yellow; the legs black, with the four anterior tibiæ yellow in front; the wings almost hyaline, the apical two-thirds of the radial cellule and the anterior half of the apical cubital cellule smoky; the petiole keeled at the base. ♀.

Length 9 mm.

Hab. Kuching.

Head above the antennæ coarsely rugosely punctured and covered with a pale pubescence; the outer orbits sharply keeled; the clypeus sparsely punctured, its greatest width as great as its length; its apex longitudinally depressed in the centre: the apex black, widely, but not deeply, incised; the sides not projecting into teeth. Thorax rugosely punctured; the post-scutellum and metanotum more coarsely than the rest, the punctures

almost forming reticulations; the apex of the median segment slightly projects on the top; the sides have a straight, slightly oblique slope from the top to the bottom. The 1st and 2nd abdominal segments are closely and strongly punctured; the 1st is cup-shaped, broader than long; its base is stoutly, irregularly keeled; the 2nd is longer than its width in the middle and is narrowed at the apex.

The clypeus is not bordered laterally by a keel as in *O. Sicheli*; the antennal keel is not so stout nor so well defined as it is in that species, which has not the apex of the fore wings clouded.

Rhynchium Matangense, sp. nov.

Black; the apex of the thorax and the basal segment of the abdomen dark rufous; the under side of the scape and a large mark, roundly narrowed above, on the clypeus, yellow; the ventral surface and the apex of the abdomen densely covered with silvery pubescence; the wings hyaline, radial and the apical cubital cellules fuscous with a distinct violaceous tinge; the greater part of the hinder femora and a line on the middle, rufous. ♂.

Length 13 mm.

Hab. Matang.

Flagellum of the antennæ brownish beneath; the apical spine stout, slightly roundly curved. Front and vertex closely rugosely punctured; the eye incision more widely and strongly punctured than the rest; the clypeus is less strongly and closely punctured; its apex is slightly roundly incised, broad. There is a white mark on the base of the mandibles. Thorax coarsely rugosely punctured; the scutellums more coarsely than the mesonotum, and the median segment more coarsely—running into reticulations—than the mesonotum. The apex of the median segment has an almost vertical slope; its centre furrowed; the sides broadly rounded and without spines forming two broad lobes. Mesonotum covered with short fuscous pubescence. First segment of abdomen cup-shaped, with a short, but distinct, neck; the 2nd segment is barrel-shaped; obscurely rugose; the 3rd and 4th segments are more strongly and distinctly punctured.

Ischnogaster fuscipes, sp. nov.

Black; the clypeus except for a somewhat elongated pyriform mark on its upper half in the centre, yellow; the legs dark fucous; the wings hyaline, with a violaceous tinge, highly iridescent and infuscated at the apex; the 3rd abscissa of the radius is somewhat more than one-half the length of the 2nd and about one-third longer than the 4th; the 3rd transverse cubital nervure has the upper half almost straight, the lower has an oblique slope towards the recurrent nervure.

Length 25 mm.

Hab. Klackang.

Antennæ black, only slightly infuscated at the apex beneath. Clypeus covered with a silvery pubescence; the black mark is rounded and shortly stalked at the base; at the apex it is joined to the eyes by a transverse line; its upper half is closely, minutely and distinctly punctured; the face is more strongly and less closely punctured and projects slightly in the centre. Vertex sparsely punctured. There is a short yellow line, dilated in the middle on either side of the apex of the pronotum. Mesonotum closely and distinctly punctured; the punctures at the base form almost reticulations and there is there a distinct central and less distinct lateral keel on either side of it; it is thickly covered with longish fuscous pubescence. Scutellum less strongly and more sparsely punctured than the mesonotum and thickly covered with long brownish hair, this being also the case with the post-scutellum. The furrow on the centre of the mesopleuræ is curved; rounded on the basal half, straight and slightly oblique on the apical.

The clypeus is not so distinctly separated from the face as usual; the wing nervures are black; the stigma is fuscous; the clypeus is longer compared to its breadth than usual. It is readily known from the other Bornean species by the absence of yellow markings on the meso- and metathorax.

Icaria Malayana, sp. nov.

Black; the scape beneath, the sides of the clypeus broadly—the black central mark pyriform with a short broad pedicle at the base—the upper part of the pronotum narrowly, the upper

part of the sides broadly, the tegulæ, two large marks on the scutellum, transverse at the base, rounded at the apex and almost united, the post-scutellum, the metanotum, except in the centre; the apex of the 1st abdominal segment broadly, of the 2nd more narrowly, and of the 3rd still more narrowly, yellow. Legs black; the fore coxæ beneath broadly, a narrow line on the outer side of the middle and a broader one on the hinder pale yellow; the tibiæ and tarsi rufo-testaceous. Wings clear hyaline; the anterior half of the radial cellule smoky; the stigma and nervures dark fuscous. ♀

Length 7 mm.

Head and thorax covered with a pale pile. Front and vertex distinctly, but not very closely punctured; the punctures round and shallow; the clypeus is much more shining, more sparsely punctured, its greatest width greater than its length; its sides rounded above, its apex ending in a sharp tooth; its centre above is lightly roundly curved downwards. Mandibles shining, there is a yellow mark, longer than broad near the base; their apices piceous. Thorax closely and uniformly punctured except on the apex of the meso- and the base and lower part of the metapleuræ which are only sparsely punctured; the upper part of the latter bears some stout, curved striæ. Abdominal petiole short and stout; the 2nd segment as long as its width at the apex. Flagellum of antennæ black.

The head is larger than usual; the temples being broader and less obliquely narrowed than in most of the oriental species; its front, too, projects more broadly and roundly. The tegulæ are pallid yellow, darker on the inner side; there are two small yellow marks on the mesopleuræ.

A distinct species. Characteristic are the deep black body and large head, with well developed temples and almost transverse occiput.

Icaria maculifrons, sp. nov.

Head and thorax black, the petiole brownish, a longish line —narrowed below, transverse above—between and above the antennæ, a line on the inner orbits, commencing on the inner side of the lower part of the incision and becoming broader and

rounded, the side and apex of the clypeus—the black central mark, becoming gradually roundly, narrowed towards the apex—the prothorax, except the lower half of the propleuræ, tegulæ, scutellum, post-scutellum, a large oblique mark on the mesopleuræ two elongated pyriform marks on the metanotum, the apical fourth of the 2nd segment and the greater part of the others, yellowish. The legs black; the apices of the femora narrowly and the tibiæ and tarsi testaceous; the radial cellule lightly smoky, except at the base; antennærufo-testaceous. ♀.

Length 9 mm.

Hab. Santubong.

Front and vertex closely, but not deeply punctured, except over the antennæ. The clypeus is much less distinctly punctured; it is slightly longer than its greatest breadth; rounded downwards; the apical tooth is indistinct. Thorax closely punctured, the punctures, in places, running into reticulations; the apex of the post scutellum and the metanotum impunctate; the metanotum is widely and deeply furrowed in the centre; the sides of the furrow are oblique; the side sparsely, finely, obscurely striated. The abdominal petiole is elongated as in *I. variegata;* only about the basal third is narrowed; the 2nd segment is distinctly longer than its width at the base; it is brownish at the base. The 2nd cubital cellule is narrowed at the top, being there about one-fourth of the length of the 3rd.

Comes near to *I. marginata and I. variegata.* The Bornean species of *Icaria* seem to have the clypeus broadly black in the middle, e. g. *Malayana* and *latebalteata*, Cam.

Mr. Shelford has taken at Kuching *I. ornaticeps*, Cam., hitherto only known from the Khasia Hills in Assam.

ANTHOPHILA.

Megachile Cæcina, sp. nov.

Black; the front, face and clypeus thickly covered with long fulvous hair, as are also the mesonotum, scutellum, the sides of the metanotum, the upper part of the mesopleuræ and the basal segment of the abdomen; the hair on the rest of the body is pale; the wings hyaline, with a slight violaceous line, the stigma dark testaceous, the nervures black. ♀.

Length 10 mm.

Hab. Trusan.

The vertex is strongly and closely punctured, the punctures all clearly defined; the sculpture on the front and clypeus is hid by the dense hair. Base of mandibles punctured; the apical tooth is long and sharp-pointed; the two subapical are of almost equal size. Mesonotum and scutellum closely punctured. The area on the metanotum is bare, opaque and is bordered by broad curved, shallow furrows. The basal segments of the abdomen are obscurely punctured; the penultimate segment is strongly and closely punctured and is covered with longish black hair; the last segment is much more closely and uniformly, but not so strongly, punctured; its base has an almost vertical slope; the apex projects and has a wide shallow incision in the centre above which is a spot of golden pubescence. The hair on the legs is long and pale, on the base of the hinder tarsi below, golden.

Megachile Borneana, sp. nov.

Black, the pubescence on the front, upper part of the thorax and on the apices of the dorsal segments of the abdomen, fulvous; on the clypeus and pleuræ pale; the apex of the abdomen with a broad, rounded incision; the wings hyaline, the radial and cubital cellules infuscated, the stigma fuscous, the nervures darker. ♀.

Length 10 mm.

Hab. Kuching,

Front and vertex rather strongly and closely punctured; the clypeus is quite as strongly, but not so regularly punctured and has an irregular, smooth line in the centre of the upper two-thirds. Mandibles rugosely punctured, smooth at the apex; the apical tooth is long; the 2nd and 3rd short, bluntly pointed; the 2nd is much shorter than the 3rd. Mesothorax, with the scutellum, closely and uniformly punctured; the median segment is not so strongly or closely punctured; the basal area is strongly aciculated and finely striated. Abdominal segments, including the transverse depressions, closely punctured; the last is more strongly punctured than the others; the basal segment is covered entirely with fulvous pubescence; the others

with narrow bands only. The hair on the legs is pale, on the under side of the base of the tarsi fulvous.

Megachile esora, sp. nov.

Black; the head, pro- and sides of mesonotum thickly covered with rufo-fulvous pubescence, the median segment laterally thickly covered with long white hair; the abdominal segments with narrow bands of white pubescence; the wings almost hyaline to the transverse basal nervure, beyond it fuscous violaceous; the scape white; the apex of clypeus bidentate. ♀

Length 11 mm.

Hab. Kuching.

Head rugosely, closely punctured; on the temples the punctures are larger and more distinctly punctured. The apex of the clypeus in the middle ends in two short, broad shining teeth; the part between them is roundly curved; the front and vertex are thickly covered with long rufous hair; the clypeus with pale fulvous pubescence, which is only visible when looked at laterally or from above. Mandibles strongly punctured on the apical half, the punctures are large and clearly separated; the base is rugosely punctured; there are only two teeth; the apical is large, the 2nd shorter and broader, more broadly rounded at the apex; the inner part forms two shallow curves. Pro- and mesothorax closely and strongly punctured and covered with rufous pubescence; the pleuræ more sparsely with longer, pale hair. The basal area on the median segment is smooth; the furrow at the base is crenulated, the rest closely punctured and covered with long white hair. The abdominal segments are fringed with white hair; the ventral scopa is white; the basal three segments are closely punctured all over; the 4th is smooth at the base and more narrowly at the apex, the intermediate space irregularly punctured; the 5th is irregularly punctured near the apex which is sparsely covered with long black hair; the 6th is thickly covered with short, stiff black pubescence. The apical part of the fore wings, from the transverse basal and the transverse median nervure (the cloud following their curves), dark fuscous-violaceous; the part behind clear hyaline; the hind wings are hyaline to shortly beyond the middle, the apex fuscous, with a violaceous tint.

Is not unlike *M. faceta*, Bing., but that species has the apex of the clypeus transverse, not incised in the middle of the apex.

Megachile gadara, sp. nov.

Black; the hair on the head, thorax and on the abdominal segments, white; the mesonotum closely covered with small, round punctures; the white bands on the abdomen are narrow; the apical segment has a rounded, shallow incision in the middle; the wings hyaline, slightly infuscated at the apex; the stigma and nervures dark fuscous. ♂.

Length 9 to 10 mm.

Hab. Kuching.

Head in front thickly covered with long, pale fulvous hair; the clypeus closely and strongly punctured, as are also the front and vertex; the outer orbits thickly covered with long white hair. Mandibles at the base closely, but not very strongly, rugose; the top with irregular, scattered punctures; the teeth smooth and shining; the apical tooth is long, narrowed and rounded at the apex; the 2nd is shorter and bluntly pointed; the 3rd triangular, broad at the base, becoming gradually narrowed towards the apex and it is distinctly longer than the 2nd. Thorax strongly closely punctured; the median segment finely rugose; the thorax is thickly covered with long white hair. Legs covered with long white hair; on the under side of the tarsi the pubescence is golden; on the hinder part of the posterior tibiæ is a thick line of depressed white pubescence. There is a shallow, curved incision on the base of the fore tibiæ, the part at its base projecting into a small tooth; the incision at the base of the tarsi is larger and deeper. Abdomen closely, but not strongly, punctured; the basal transverse furrows are smooth, the apical closely punctured the last segment has a rounded shallow incision on the apex; above it is a large deep fovea, which is rounded and narrowed above. The penultimate segment is narrowed at the sides and has a broad, rounded incision at the base in the middle.

Nomia violaceipennis, sp. nov.

Black, shining; the thorax closely and strongly punctured, except on the centre of the median segment; the hair white; the

area on the metanotum closely longitudinally striated; the wings dark violaceous, darker at the apex; the tegulæ rufous. ♀.

Length 12 mm.

Hab. Kuching.

Clypeus and face strongly, but not closely, punctured, the clypeus slightly depressed in the centre and with a thin irregular keel down the centre; the face convex in the centre; the front and vertex are strongly and closely punctured, except at the ocelli; they are, as are also the outer orbits, thickly covered with long soft hair. Mesonotum closely, strongly and uniformly punctured; the scutellum is more strongly, but not so closely, punctured as is also the metanotum, except for a triangular smooth space near the top and a line down the centre; the furrow on its top is long, narrow and is closely, stoutly longitudinally striated. Propleuræ smooth, above thickly covered with white hair; the meso- closely and uniformly punctured and covered sparsely with short white hair; the meta- thickly covered with long white hair. Abdomen shining above, the segments, except at the apex, closely, minutely punctured. Ventral segments fringed with white hair. Legs thickly covered with long, soft white hair. The wings are paler in the middle and darker at the apex than at the base.

The basal slope of the 1st abdominal segment is thickly covered with long white hair; the apices of the segments are glabrous; the apex of the clypeus is transverse; the median segment has a vertical slope; the scutellum and post-scutellum are sparsely covered with long black hair; the median segment has a vertical slope; the hinder tibiæ and tarsi are not densely pubescent on the inner side and have a castaneous hue; the under side of the flagellum is fuscous.

Comes near to *N. fuscipennis*, Sm.

Nomia bicarmata, sp. nov.

Black; covered with pale pubescence; the head and thorax closely punctured; the apical half of the median segment deeply furrowed; the sides from shortly above the middle keeled; the apices of the abdominal segments covered with depressed white pubescence; the wings hyaline; the stigma fuscous. ♀.

Length 7 to 8 mm.

Hab. Kuching.

The scape of the antennæ appears thinner and longer than usual; the flagellum is brownish beneath. Head closely and distinctly punctured, the front more strongly than the rest; the clypeus is broadly, roundly raised in the centre, where it is bare, smooth and shining; its top and the face above it are bordered by smooth lines, mandibles rufous, black at the base; the hair is long and pale; the occiput is sharply margined. Mesonotum closely and strongly punctured, the hair on it is thicker and whiter round the edges; the scutellum has the hair longer and thicker; the post-scutellum is thickly covered with white pubescence, the furrow at the base of the scutellum is longitudinally striated. Median segment with an oblique slope; the centre on the apical half is furrowed; the sides on the apical half are distinctly keeled. The flocus on the hinder tibiæ is long and pale; on the tarsi it has a rufous tint. The basal four segments have a band of depressed white pubescence; the hair on the ventral surface is long and white. Characteristic of this species is the smooth, roundly convex, shining clypeus and the two keels on the sides of the median segment.

Nomia iridescens, Sm.

This species has been taken at Kuching. It has been recorded from India and Sumatra.

Ctenonomia, gen. nov.

Fore wings with three cubital cellules, of nearly equal size. Head narrow, the temples short, ocelli in a curve. Abdomen short, ovate; the ♀ with a dense ventral scopa; its apical segment with a rima. Pronotum keeled; the keel widest on the sides. Metonotum large, transverse, flat, stoutly keeled on the sides and apex and longitudinally striated; its apex with a perpendicular slope. Legs densely covered with long hair; the spurs toothed; the claws cleft unequally. The body is short and broad. The wings are large: their stigma thick; the basal nervure is roundly curved; the transverse median nervure is received shortly behind it; the 1st recurrent nervure is received

near the apex; the 2nd not quite so close to the apex. The eyes are large, reach close to the base of the mandibles and converge distinctly on the top. The face is roundly convex; the clypeus is nearly as long as it, is broader than long and transverse at the apex. The tegulæ are moderately large. The scape of the antennæ is long and slender; the flagellum thick.

The affinities of this genus appear to be with *Nomia* from which it may be known by the pectinated spurs, by the large, keeled median segment, by the ventral surface being thickly covered with long hair, by the distinct anal rima and by the stoutly keeled collar. Having only a single specimen I have not been able to make an examination of the trophi, but the maxillary palpi appear to be 6-jointed.

Ctenonomia carinata, sp. nov.

Black; the head and thorax sparsely covered with short, the legs and ventral surface thickly with long white hair, on the under side of the tarsi it has a fulvous tint; the wings hyaline the nervures and stigma black. ♀.

Length 6 to 7 mm.

Hab. Matang.

Head opaque, the vertex more shining and smoother; the front has a narrow keel down the centre; the clypeus is irregularly punctured on the apex. Mesonotum opaque, closely, minutely punctured; in the centre are three impressed longitudinal lines. The striæ on the median segment are stout, clearly separated, irregular, and mostly reaching to the apex of the basal part; the bounding keels project as teeth at the apical angles; it is bare, shining and impunctate as is also the apical slope. Abdomen shining: the apices of the segments brownish and bare; their base covered with close white pubescence; the anal rima is brownish.

Xylocopa caerulea, Fab.

Mr. Shelford has taken the rare ♂ of this species. The head is narrower than in the ♀; and instead of the head, thorax and base of abdomen being covered with blue pubescence, they are covered with light soot-coloured hair; the hair on the abdo-

men is darker soot coloured; and the antennæ and legs are piceous. The wings are lighter coloured, wanting the deep violaceous tint found in the ♀.

Smith (Trans. Ent. Soc. 1874, 269) appears to have had a ♂ with blue hair on the head and thorax. Mr. Shelford's example is only 17 mm. in length. The species is common all over the Oriental Region, but no author, except Smith, *l.* c., has described the ♂.

Xylocopa (Koptortsoma) Sarawakensis, sp. nov.

Black; the head, thorax and basal segment of abdomen thickly covered with olive-green hair; the 2nd abdominal segment with darker olive-green pubescence; all the tibiæ and the four front tarsi fringed with long pale olive-green hair; the hair on the hinder tarsi black mixed with dark olive hairs on the under side; on the base of the 3rd and following dorsal segments of the abdomen are two patches of whitish depressed hair which are rounded at the apex; the part underneath them is brown and shining; the apex of the last segment is fringed with whitish hair. The hair on the ventral segments is black; paler on the edges and on the sides of the basal segments. Wings dark fuscous, with a distinct violaceous tinge ♂.

Length 22 mm.

Hab. Matang.

Flagellum of antennæ brownish beneath; the base of the scape fuscous. Clypeus closely punctured, a black hair issuing from each tubercle; its centre is not keeled; its apex is smooth, shining and raised. Mandibles shining, shagreened in the middle to near the apex: they have only one tooth which is long and roundly curved on the inner side. The 3rd transverse cubital nervure is roundly curved outwardly; the 2nd recurrent nervure is received at fully the length of the 2nd transverse cubital nervure from it. The fore femora and tibiæ are slender; the upper spur is long and curved and below has a broad white, rounded at the apex, membranous projection. The base of the hinder femora projects oblique downwards into a stout triangular tooth; in front of this is a shorter, more slender tooth, which is roundly curved at the apex The fore trochanters project triangularly behind.

Comes near to *X. malayana*, Cam. The white patches on the back of the abdomen may be hidden under the apex of the preceeding segments.

On a Collection of Coins from Malacca.

By R. Hanitsch, Ph. D.

(*With two plates.*)

About three years ago, during some excavations near the mouth of the Malacca river, a considerable number of coins was found scattered in the mud. These were collected together and handed over to the Hon'ble W. Egerton, Resident-Councillor of Malacca at the time, and presented by him to the Raffles Museum. The collection has proved to be of the greatest interest. It contains coins of both Asiatic and European origin, the European coins, Portuguese, Dutch and English, embracing practically the whole history of the various European occupations of Malacca, covering thus a period of about four hundred years. The most interesting of the coins are those of Portuguese origin, all of tin. They are probably quite unique: the British Museum does not possess any, and numerous enquiries I have made about them in various places, including Lisbon, have remained without result. With regard to their discovery Mr. Egerton writes:—

"The Malacca Coins were found in digging a channel from the mouth of the river seawards. Outside the mouth there is a deep pool, and beyond that a bank submerged at high water, extending some half mile or more seawards. It was in this bank the coins were found scattered here and there, not in large pockets. The bank contained quantities of household detritus, broken crockery and old ironware, bricks, earthenware, etc. I think it is quite possible buildings on piles, like those now seen on the foreshore, may have been built on this bank, or possibly all this rubbish was thrown out of ships at anchor, or washed down out of the river. Most of the coins were found in the first hundred yards outside the big pool referred to above. There must be many still there."

I. THE ASIATIC COINS.

That tin coins, struck by the inhabitants of the place, existed in Malacca before the arrival there of the Portuguese is

proved by certain accounts in Albuquerque's Commentaries (*2*)*, but the fact seems to have almost escaped numismatologists, for Millies (*12*), p. 140, speaking of the currency of the Malay Peninsula says: "Même l'état malai si célèbre de Malaka, qui était parvenu à son apogée au commencement du XVI^e^ siècle, lorsqu'il tomba sous la force matérielle majeure et l'héroisme des Portugais, ne nous a laissé aucun monument numismatique connu, et nous ne savons même pas, si ce état malai possédait déjà une monnaie propre." In this Millies is certainly wrong, for in Albuquerque's Commentaries (*2*), Vol. III, p. 77, we find a mention of native coin which tells how King Xaquendarxa (i. e. Iskander Shah), ruler of Malacca, went to see the king of China, wishing to become his vassal and took with him many presents, receiving in return, amongst other privileges, permission to coin small "money of pewter, which money he ordered to be made as soon as he reached Malacca; and to it he gave the name of Caixes which are like our (i. e. Portuguese) ceitils, and a hundred go to the calaim, and each calaim was worth, to an appointed law, eleven reis and four ceitils. Silver and Gold was not made into money, but only used by way of merchandise." The fact that Malacca possessed native pewter coins on the arrival of the Portuguese becomes indisputable when we read that Albuquerque after the occupation of Malacca minted coins under the name of his king, D. Manuel, "in order to withdraw and suppress the coinage of the Moors and cast their root and their name out of the land," and that when the new coinage was ready, he gave orders "that all the Moors who held coin of the King of Malacca should convey it thither" (i. e. to the mint) "without delay under pain of death; and so great a quantity of money was thus carried there out of fear of the penalty which had been appointed to them, that the officers could not dispatch their business fast enough." (Vol. III, p. 138).

I am sorry I cannot furnish absolute proof that the collection really contains coins of that early period. There are about 150 tin coins with Arabic inscriptions, but those few which are clear enough to be deciphered are of a much later date. It may be that the most worn and defaced coins belong to the period

*These numbers refer to the list of Literature at the end of the paper.

before the arrival of the Portuguese. Their average size is 21mm = $\frac{3}{4}$ in., and their weight 2.5 grammes. It is noteworthy that the collection does not contain any of the well-known perforated tin coins which are still current in Trengganu and Kelantan.

The coins which have been partly or wholly deciphered are:—

(1) a coin with the date 1173 in Arabic characters, ١١٧٣ which would correspond to the year 1757 A. D.

(2) two coins with the date 1174 ١١٧٤ i. e. 1758 A. D.

(3) two coins with the inscription on the obverse

سلطان i. e. Sultânu

العادل i. e. 'l-'âdil (=the just)

on the reverse

احمد بن i. e. Ahmad Bin

محمود i. e. Mahmûd

In one of these two coins, this inscription is delicate, but exceedingly sharp and clearly defined.

(4) a coin with the inscription on the one side

خان i. e. Khan

محمود i. e. Mahmûd

The letters on the other side are too much worn to be deciphered.

I am indebted to Captain R. P. Jackson, S. C., 13th Madras Infantry, for having kindly identified these six coins for me.

(5). There is an exceedingly well preserved coin, with one side quite smooth, but bearing on the other side the inscription

ملك i. e. maliku

العادل i. e. 'l-'âdil

which means 'The just king.' Its size is 24mm = $\frac{15}{16}$ in. and its weight 3.3 grammes (See pl. I, fig. 5). Mr. R. J. Wilkinson kindly identified this coin for me, and I subsequently found it figured and described by Netscher and Van der Chijs (*13*,) p. 179, pl. XXVI, fig. 245, and by Millies (*12*,) p. 148, pl. XXIII, fig. 250. The specimen described by the former two authors has also one side entirely smooth, and they state that the title maliku 'l-'âdil is used by several rulers of Western Borneo. According to them the coin would have come from Sambas or Mampawa in West Borneo and date from the year 1822. Millies, however, refers the coin to Trengganu.*

(6). The coin figured on pl. II, fig. 2, seems to bear only a portion of the inscription maliku 'l-'âdil on the one side, whilst the characters on the other side are too indistinct to be deciphered.

Some of these tin coins may possibly have come from Sumatra. Marsden (*9*), p. 401, speaks of tin coins current in Acheen, and Netscher and Van der Chijs (*13*), p. 162, too describe such coins from Acheen, as well as from Palembang, Jambi and the neighbouring island of Banka, but I have not been able to identify any fo the Malacca coins with them.

The collection also contains a few Chinese coins, cash, which, however, are too much corroded to be identified.

II. THE EUROPEAN COINS.

1. The Portuguese Coins.

The European coins found at Malacca are Portuguese, Dutch and English, and, as I stated before, their dates embrace the whole period of the occupation of that place by these three nations.

*Since writing the above I have seen a paper by Lt. Col. Gerini, 'A Malay Coin,' Journal, Royal Asiatic Society, April 1903, pp. 339-343, in which certain small gold coins, found in Jaring, near Patani, are described. Their obverse is 'an imitation of a Southern Indian fanam bearing the figure of a maneless lion,' whilst their reverse bears the inscription العادل, reminding thus strongly of the tin coins described above. Dr. Codrington is of opinion that those gold coins had come from Acheen.

Malacca was taken by the Portuguese under Albuquerque in 1511 and held by them until 1641. The kings of Portugal during that period were:—

Emmanuel,	1495—1521
John III,	1521—1557
Sebastian,	1557—1578

and four others to whom it will not be necessary to refer in this paper. From 1641 to 1795 the Dutch held possession of it, from 1795 to 1818 the English, from 1818 to 1824 the Dutch again, and since then the English.

The coins in the collection which date from the time of the first Dutch occupation are nearly all well known, but it is otherwise with a large number of tin coins struck by the Portuguese in Malacca itself; in fact as I said before, it seems doubtful whether any more of these coins exist at the present day. However, the record of the first mint established by Albuquerque in Malacca, as given in his "Commentaries," and quoted below, leaves no doubt as to their identity.

This mint was the only one ever established in Malacca by Europeans. This was in 1511, immediately after the conquest of the place. In the previous year, 1510, Albuquerque had conquered Goa, and had established a mint there, and as the circumstances under which those two mints were founded were very similar, and since, as will be shown below, the Malacca coins were struck after the same pattern as those in Goa, although not of the same metals, it may be well first to shortly narrate the history of the founding of the mint in Goa.

Soon after Goa had been taken in 1510 the principal Moors and Hindus of the country went to Albuquerque and told him how the trade of the people suffered because there was no proper currency, begging him to coin some money or at least to permit the coinage of the Cabaio, the former ruler, to pass current, which he had forbidden. Albuquerque thereupon called a meeting of the goldsmiths, some Portuguese experts, and the native merchants, and discussed the matter, after which he gave orders for the coinage of money in gold, silver and copper, and on the one side they were to stamp a cross of the order of Christ, and on the other a sphere,—the device of the King D. Manuel. And when the money was ready (March 12th,

1510), Albuquerque "gave the word to take the royal flag, and the trumpets and kettle drums, and assemble all the men in the fleet, and ordered Tristao Déga to go and proclaim it; and he went with all this company of people all round the city, and at each proclamation that was made they scattered quantities of the new money over the heads of the crowds, which were great, and they went on proceeding in this manner round the city." (Vol. II, p. 131).

When a few months afterwards Goa had been retaken by the Moors, and Albuquerque had reconquered it, he established a new mint at Goa (Vol. III, p. 41).

Albuquerque arrived before Malacca in the middle of June 1511, made the first attack on July 25th, conquered it in August, and then took speedy measures for restoring order in the place, Ninachatu, a rich Hindu merchant, being of the greatest service to him in this matter. Ninachatu and some of the "Governors of the land" soon approached Albuquerque and told him what inconvenience the people suffered from the want of a currency, and begged he would give orders for some system of coinage. Albuquerque thereupon called together the merchants, governors, and principal men of the city, and arranged with them that gold, silver, and pewter coins should be struck, substituting thus pewter for the copper coins of Goa and utilizing the natural wealth of tin in the Malay Peninsula. We saw above that the native coinage before the arrival of the Portuguese had been pewter, just as now-a-days coins of that metal are current in Trengganu and Kelantan.

The gold coin, called *Catholico*, should weigh a quarter of a tundia which, amongst the Portuguese, was worth a thousand reis. The silver coins, called *Malaqueses*, i. e. Malacca pieces, should have the same value of a quarter tundia. The pewter coins were to be of three different demoninations, viz:

1. *dinheiro* (i. e. money), the smallest coin, equal to two of the previously existing caixes of the ruler of Malacca, bearing the sphere of the King D. Manuel,
2. *soldo*, equal to ten dinheiros,
3. *bastardo*, equal to ten soldos.

A mint was immediately established, and orders were given that under pain of death the old coinage of the King of Malacca

should be delivered there to be reminted. When this had been done, and sufficient money had been coined, Albuquerque fixed a day for the proclamation of the new currency, and the principal men of the people met Albuquerque with the Captains, Fidalgos and Cavaliers of the fleet in the fortress to form a procession through the town. The account given of this procession and proclamation is so interesting and picturesque, that I give it literally:

"There went first, in front of all the people, one of the principal Governors of the City mounted upon an elephant with his castle caparisoned with silk, and carrying in his hands a flag of the arms of the King of Portugal upon a long spear, and behind him went all the people on foot on one side and the other, as it were in procession; and in the midst of these people there went a Moor mounted upon another elephant, likewise caparisoned with silk, making the proclamation; and behind this one came the trumpets; and after them the Governors of the City, and all the Merchants, and principal men thereof; and at the rear of this throng there went Antonio de Sousa the son of Joao de Sousa of Santarem, and the son of Ninachatu, both together upon a large elephant, which had been kept for the King's own use, with his castle caparisoned with brocaded cloths, and they carried with them a large quantity of gold, silver, and copper * coin, which they kept on throwing out over the heads of all the people at each publication of the proclamation which the Moor made. The crowd was so great that the streets could scarcely contain it, and with many songs and blowing of horns, according to the native custom, the people gave great praise to Afonso Dalboquerque for giving orders for this distribution of money by the advice and in accordance with the opinions of their natives." (Vol. III, p. 141). Accounts of this first mint in Malacca are also given by Danvers (*5*), Vol. I, p. 230, and Stephens (*15*), p. 162.

Besides these two mints at Goa and Malacca, others were established by the Portuguese in Ceylon, Cochin, Diu, Bassein, Damao and Chaul. The following are the mint marks of six of

* This is probably an error: no copper coins of Malacca are previously mentioned. Probably pewter coins are meant.

these towns according to Da Cunha (*4*), part 1, p. 273; part 3 p. 202; part 4, p. 21.

G or G—A	... ...	Goa
M or M—A	... ...	Malacca
C—LO	... ...	Ceylon
D	... ...	Damao
D or D—O	... ...	Diu
B	... ...	Bassein

Finally the letter A which is found on some coins, is supposed to stand for 'Asia' (see Da Cunha, part 1, p. 271), but 'Albuquerque' has also been suggested.

Da Cunha, the first authority on this subject, alludes to the many difficulties which the study of the coins issued by these mints presents, he states that the coins were issued by the viceroys or even by the officers of the mint in the most capricious fashion, that they frequently bore effigies and legends which had no connection whatever with the reigning monarchs of the periods when they were issued, that some of them were struck years after the kings, whose busts they bore, had ceased to live (*4*, part I, p. 267). Da Cunha continues: "But these difficulties are increased tenfold by an absolute want of examples of the early periods of the Portuguese rule in India, their place being but inefficiently supplied by some written official reports and private memoirs. The coins of the seventeenth and eighteenth centuries are not only scarce, but even the written documents relating to them are rare or deficient." To Valentyn (*16*) they seem to have been entirely unknown. Millies (*12*), p. 140, says: "Un des monuments même de la victoire du grand Alfonso d' Albuquerque, la monnaie qu'il fit frapper à Malaka, a tellement disparu, que nous n'avons nullepart pu en decouvrir un exemplaire." Birch (*2*), in a foot note to Albuquerque's 'Commentaries,' Vol. II, p. 130, refers for descriptions of the earliest Portuguese coins to the works of De Faria (*6*) and Fernandes (*8*) and states that "the coins themselves are so rare that they may almost be described as no longer extant," and that those writers had not figured any of them. I have not been able to see the works of De Faria and Fernandes, but I am glad to say that the collection unearthed in Malacca does contain some of those earliest

coins, in fact some of them may be the identical specimens which Albuquerque threw out over the heads of the admiring crowd during his procession and the proclamation of the new coinage ni Malacca in 1511.

The oldest specimens are three coins in excellent condition belonging to the reign of King Emmanuel who was reigning when Malacca was captured. Their diameter is 30 mm.= $1\frac{3}{16}$ in., their weight 10.3 to 10.8 grammes, and they are probably bastardos. They bear on the obverse the Portuguese coat-of-arms, and around it the inscription:

EMANVEL: R: P: ET: A: DOVINE.

The second and fourth letters of the first word are inverted, and the last word, consisting of five or six letters, is less distinct than the rest. It might stand for DOMINE. The meaning of the other letters is of course 'Emanuel Rex Portugaliæ et Algarbiorum. The Algarves were first conquered by the Portuguese about 1188, and their name is still mentioned on the coins of the present day. The reverse of the coin bears the sphere, the "device of the King D. Manuel," like the coins struck at Goa. The device of the sphere, by the way, is used as a symbol of the glorious world-wide conquests of Portugal (see pl. I, figs. 2 and 2ª).

Albuquerque died off Goa on Dec. 16th 1515, and King Emmanuel in 1521. From the reign of the next king, John III, 1521-1557, between fifty and sixty coins are in the collection. The first kind, probably the Soldo (size 24mm. = $\frac{1}{16}$ in; weight 3.2 to 3.9 grammes), is of a very clear stamp, bearing on the obverse a cross, and around it the inscription

IOA: III: POR: ET: AL: R.,

i. e. Ioannes III Portugaliæ et Algarbiorum Rex, on the reverse the usual sphere. This tin coin therefore tallies exactly with the description of the gold, silver and copper coins struck at Goa, which bore on the one side "a cross of the Order of Christ, on the other a sphere—the device of the King D. Manuel." Of this coin there are only three specimens (pl. II, figs. 9 and 9ª)

Another kind, of which there are fifteen specimens, resembles this last in all details except that it is of a much ruder make and that the cross is slightly different: thus

Of a smaller size of this coin, possibly the Dinheiros, there are about forty specimens, some in excellent condition. Size 19mm = $\frac{3}{4}$ in; weight 2 to 2.3 grammes. The obverse bears around the cross the inscription

IOA: III: POR: ET: AL.

The reverse has the sphere (pl. II, figs. 10 and 10ª).

There are some coins which on the obverse round a coat-of-arms merely bear the inscription.

IOANNES. R. P. ET. AL. D. G.,

i. e. Ioannes Rex Portugaliæ et Algarbiorum Dei Gratia, and on the reverse the sphere. Although not clearly assigned to the reign of John III, still there is no reasonable doubt that they too belong to his time, and not to that of John IV, 1640-1656, during the second year of whose reign Malacca was lost to the Portuguese, nor to the time of John V, 1706-1750. There are about twenty specimens of it, but most of them in a very indifferent condition. Size 24 mm. = $\frac{15}{16}$ in; weight 6.3 to 6.4 grammes. (pl. II, figs. 8 and 8ª).

A smaller coin, of which there are two specimens, has on the obverse a cross, with the letters I S M A in the four angles of the cross, and on the reverse again the sphere. These letters probably stand for 'Ioannes, Malacca,' shewing that the coin was struck at Malacca during the reign of a King Ioannes, probably again John III. The cross is very like the cross on certain coins figured by Da Cunha (part 1, pl. I, figs 3, 4 and 7) from the mints of Goa and Diu and belonging apparently to the eighteenth century. Size 17.5 mm. = $\frac{11}{16}$ in; weight 3.8 to 3.9 grammes (pl. II, figs. 13 and 13ª).

Belonging probably to the reign of the next king, Sebastian, 1557-1578, there are six specimens of a large coin which has on the reverse the two letters S. B. with three crossed arrows between them, and on the reverse the coat-of-arms. The S. probably stands for 'Sebastian', and the letter B. may stand either for

for 'Bassein,' one of the mint towns, or for 'Bastardo,' the name of the largest tin coin. The arrows are symbolic of the martyrdom of St. Sebastian after whom the king was called. The size of the coin is 30 mm. = $1\frac{3}{16}$ in; weight 11.3 to 11.9 grammes (pl. I, figs. 4 and 4ª).

Another coin, which very probably also belongs to this reign, bears on the obverse the letters B and A, with three crossed arrows between them, and on the reverse the sphere. The coin is too small for the letter B to stand for 'Bastardo,' and it is probably the mint mark of Bassein, whilst the letter A may stand either for 'Asia' or 'Albuquerque' (see above p. 190). The three crossed arrows show that the coin was struck during the reign of Sebastian, like the previous coin, and the two dots above them probably indicate its value in dinheiros. Eight specimens were found: size 17 mm. = $\frac{11}{16}$ in; weight 3.5 to 3.7 grammes (pl. II, figs. 12 and 12ª).

The coin pictured on pl. I, fig. 1, of which there is only one specimen, was probably struck at Goa, as its obverse bears a device very like the wheel, the symbol of the martyrdom of St. Catherine, the patron saint of Goa. This wheel is often found on coins struck at Goa, as it commemorates the conquest of Goa by the Portuguese on St. Catherine's Day, November 25th, 1510. Its reverse is entirely smooth. Size 27 mm. = $1\frac{1}{16}$ in.; weight 8.9 grammes.

A small coin, represented by five specimens, shows on the obverse a coat-of-arms, and on the reverse a ship, but no inscription whatever. Size 18 mm. = $\frac{3}{4}$ in.; weight 2.2 to 2.4 grammes (pl. I, figs 6 and 6ª).

A considerably larger coin shews on the obverse the coat-of-arms, and on the reverse the sphere, but has no inscription either. There are five specimens of it. Size 28 mm. = $1\frac{1}{8}$ in.; weight 10 to 11.2 grammes (pl. I, figs. 3 and 3ª).

Finally there is a coin represented by only one specimen shewing on the obverse a small coat-of-arms surrounded by large and deeply impressed Roman letters, and on the reverse the sphere. Notwithstanding that the letters are deeply impressed and only little worn, they are so very rough, that my efforts to decipher them have not been successful. Size 24 mm. = $\frac{15}{16}$ in; weight 3.7 grammes (pl. II, fig. 7).

2. The Dutch, French and English Coins.

The Dutch during their possession of Malacca (1641-1795, and 1818-1824) never minted any coins especially for that place, but naturally used the coinage current in Java. That island has changed its rulers several times since the end of the sixteenth century, viz :

{1594-1602 :	Compagnie van Verre te Amsterdam.
{1597-1602 :	Compagnie van Verre te Middleburg.
1602-1799 :	Vereenigde Oost-Indische Compagnie
1800-1807 :	Batavian Republic.
1807-1811 :	French Government.
1811-1816 :	British Government.
1816 :	Dutch Government.

Coins belonging to four of these epochs were discovered at Malacca.

The two Companies van Verre seem to have issued silver coins only, but none are in the collection.

The Dutch East India Company issued gold, silver and copper coins. The first copper coins were minted in 1644, but in the Malacca collection which contains no gold or silver coins, the earliest copper coins date from 1729. From the fact that the earliest copper coin figured by Netscher and Chijs (*13*) dates from 1726 we may conclude that still earlier ones are rare in numismatic collections.

The Batavian Republic issued gold, silver and copper coins, but the collection does not contain any. The Raffles Museum, however, possesses a copper coin of that period. The obverse shows the Dutch coat-of-arms consisting of a crowned shield enclosing a lion rampart, with the figures 5 and $\frac{1}{16}$ to the right and left of the shield respectively. The reverse bears the inscription INDIÆ BATAV. 1802.

The French Government issued silver and copper coins, and two of the latter were found at Malacca.

The British Government issued gold, silver, copper and lead coins during its occupation of Java, but the Malacca collection contained none of them. The Raffles Museum, however, possesses silver Rupees of the years 1812 and 1816, half Rupees of 1813, copper Stuivers of 1814, half Stuivers of all the years

1811 to 1815, copper Duits of the years 1811 to 1813 and lead Duits of 1814.

The Dutch Government of Java has so far issued no gold coins. The first silver coins, Guilders, seem to have been struck in 1821, the first copper coins in 1817 or 1818. The Malacca collection contains four copper coins.

In addition to coins current in Java also some of the well-known tokens issued by British merchants and traders in Sumatra were found, further some coins struck by the British East India Company for Penang, and finally a coin from India and one from Holland.

(*a*). *Coins of the Dutch East India Company* (*1602-1799.*)

Most of the coins issued by this Company bear the monogram VC, formed of the letters V. O. C., standing for 'Vereenigde Oost-Indische Compagnie,' i. e. United East India Company.

1. Copper. One Duit.
   Obv. Coat-of-arms consisting of a crowned shield containing two lions passant.
   Rev. VC 1729.
   See Netscher and Chijs, p. 103. No. 21; pl. IV, No. 21[c]
2. Copper. One Duit.
   Obv. Coat-of-arms consisting of a crowned shield containing one lion rampant.
   Rev. VC 1730.
   Except for date similar to Netscher and Chijs, pl. III fig. 21[a].
3. Copper. One Duit.
   Dated 1731. Otherwise similar to No. 1.
4. Copper. One Duit.
   Obv. Coat-of-arms with two lions rampant. Around it the legend 'SP NOS IN DEO' (i. e. Spes nostra in Deo).
   Rev. VC 1732.
   Except for date similar to Netscher and Chijs, pl. IV, No. 21[d].

5. Copper. One Duit.
   Obv. Coat-of-arms with two lions rampant. Around it the legend 'SPES NOSTRA IN DEO' (written in full).
   Rev. VOC (Date effaced).
6. Copper. One Duit.
   Obv. Coat-of- arms with one lion rampant; no legend.
   Rev. VOC 1735.
   Except for date similar to Netscher and Chijs, pl. IV, fig. 22[a].
7. Copper. One Duit.
   Date 1737. Otherwise identical with No. 6.
8. Copper. One half Duit.
   Obv. Coat-of-arms consisting of a crowned shield without lions. The shield is divided by a diagonal line, a bende, the upper and sinister portion of the shield being argent, the lower and dexter portion gule.
   Rev. VOC 1753.
   See Netscher and Chijs, pl. IV, fig. 22[c].
9. Copper. One half Duit.
   Date 1754. Otherwise identical with No. 8.
10. Copper. One Duit.
    Obv. Coat-of-arms consisting of a shield similar to that of Nos. 8 and 9, but supported on the left and right by two rampant lions.
    Rev. VOC 1786.
    Except for date similar to Netscher and Chijs, pl. IV, fig. 21[c].
11. Copper. One Duit.
    Obv. Coat-of-arms consisting of a crowned shield, the lower half of which contains three horizontal wavy lines, the upper half a demi-lion.
    Rev. VOC 1786.
    Except for date similar to Netscher and Chijs, pl. IV, fig. 22[b].
12. Copper. One Duit.
    Dated 1790. Otherwise similar to No. 10.

13. Copper. Two Duits.
Dated 1790. About twice as large as No. 12, but otherwise similar to it.

14. Copper. One Duit.
Obv. Coat-of-arms, consisting of a crowned shield containing two lions passant.
Rev. VOC 1792.
Except for date similar to Netscher and Chijs, pl. IV, fig. 22c.

(*b*). *Coins of Java under French Rule (1807-1811.)*

1. Copper. One Duit.
Obv. 'JAVA, 1810'. Below this the letter 'Z.'
Rev. A monogram of the two letters 'L. N.', standing for Louis Napoleon.
See Netscher and Chijs, p. 112, No. 60; pl. VII, fig. 60a.

2. Copper. Two Duits.
Obv. 'JAVA'. Date effaced.
Rev. 'L. N.'

(*c*). *Coins of Java under Dutch or British Rule?*

The Malacca collection contains a copper coin, probably one Duit, of the following description:

Obverse: Coat-of-arms consisting of a crowned shield enclosing a lion rampant, with the figures '5' and '$^{1}/_{16}$' to the right and left of the shield respectively.

Reverse: the legend INDIÆ BATAV. 1816.

In 1816 Java was handed back by the British to the Dutch, and as the coin bears a coat-of-arms used by the Dutch East India Company throughout the eighteenth century, there is no reasonable doubt that the coin is of Dutch, not British origin. Coins identical with it, except for the date, were issued by the Batavian Republic previous to the English occupation of Java, and by the Dutch Government after the English occupation, and the Raffles Museum contains such coins of the years 1802, 1818, 1819, 1821 and 1824. But the Museum also contains a coin of 1815, that is a coin struck in Batavia with the Dutch coat-of-arms during the time of the English rule. Therefore it is just

possible that the above coin of 1816, found at Malacca, may also have been struck under English rule. I cannot offer any explanation of this.

A coin of this kind, but of the year 1802, is figured by Netscher and Chijs, pl. VI, fig. 39. The figures '5' and '$\frac{1}{16}$' to the right and left of the shield respectively are somewhat mysterious. Netscher and Chijs (p. 108) say that they are not able to offer any explanation of their meaning, nor am I in a position to do so.

(*d*). *Coins of Java under Dutch Rule (from 1816).*

1. Copper. $\frac{1}{8}$ Stuiver.
   Obv. A coat-of-arms consisting of a crowned shield enclosing a lion rampant, with the figure $\frac{1}{8}$ to the right and the letter S to the left of the shield.
   Rev. NEDERL. INDIE 1823.
   See Netscher and Chijs, pl. IX, fig. 85.
2. Copper. $\frac{1}{4}$ Stuiver.
   Date 1826. Except for size, date and the figure $\frac{1}{4}$ instead of $\frac{1}{8}$, similar to No. 1.
3. Copper. One Cent.
   Obv. The usual coat-of-arms enclosing a lion rampant with '1' and 'Ct' to the right and left of the shield respectively.
   Rev. NEDERL. INDIE 1838.
4. Copper. One Cent.
   Date 1856. Identical with the currency of the present day.

(*e*). *Tokens of the British East-India Company of Sumatra.*

1. Copper. One Keping.
   Obv. The Company's coat-of-arms, and around, in Roman characters, the legend 'Island of Sumatra, 1804.'
   Rev. The legend, in Malay characters, 'Satu Keping, 1219.'
   See Rodgers (*14*), Vol. II, pl. VIII, No. 12081; Ellis (*7*) p. 9, No. 1; Atkins (*1*), p. 204, No. 24.

2. Copper. One Keping.
   Obv. A Bantam Cock, with the legend, in Malay characters, 'Tanah Malayu' (i. e. the Land of the Malays).
   Rev. In Malay characters: 'Satu keping, 1247,' (i. e. 1831 A.D.)
   See Rodgers (*14*). Vol. II, pl. VIII, No. 12083; Millies (*11*), pl. II, fig. 23.
3. Copper. One Keping.
   Obv. As in No. 2.
   Rev. A star of sixteen points, with the legend, in Bugis, 'The Land of the Bugis, One Keping, 1250' (i. e. 1834 A. D.)
   See Netscher and Chijs. p. 188, No. 254; pl. XXVII, fig. 254.

(*f*). *Coins of the British East India Company struck for Penang.*

1. Copper. Three Kepings.
   Obv. A heart-shaped shield diagonally divided into four sections with the letters V. E. I. C. respectively (i. e. United East India Company). The shield is surmounted by the figure '4'. Below the date 1798.
   Rev. 'Tiga Keping, 1213'. in Malay characters.
   See Netscher and Chijs, p. 123, No. 100; pl. X, fig. 100b.
2. Copper. Four Kepings.
   Obv. The Company's coat-of-arms with the legend 'East India Company' in Roman letters around it. Below, the date 1804.
   Rev. 'Ampat Keping, 1219', in Malay.
   See Netscher and Chijs, p. 123, No. 99; pl. X, fig. 99.
3. Copper. Two Kepings.
   Obv. Smaller than, but otherwise identical with, No. 2.
   Rev. 'Dua Keping, 1219,' in Malay.
   See Millies (*11*), p. 93, No. 14; pl. I, fig. 14.

III. OTHER COINS.

There are two more coins which belong to none of the above sections.

1. A copper coin of the East India Company, struck in the name of Shah Alam II. The obverse shows an inscription in Arab, the reverse in Bengali, Malay and Hindostani. See Rodgers, Vol. II, p. 124, No. 12138; pl. VII, No. 12138.
2. Copper. Two Stuivers.

This is the only coin of European origin found in the collection, coming from Zeeland in Holland.

Obv. The Dutch coat-of-arms consisting of a crowned shield. The lower half of the shield has three horizontal wavy lines, the upper half a demi-lion, therefore exactly similar to the coat-of-arms of the coin No. 11 of the Dutch East India Company described above (p. 196). The figure 2 to the right and the letter S to the left of the shield indicate its value, two Stuivers.

Rev. The legend

ZEE
LAN
DIA
1730

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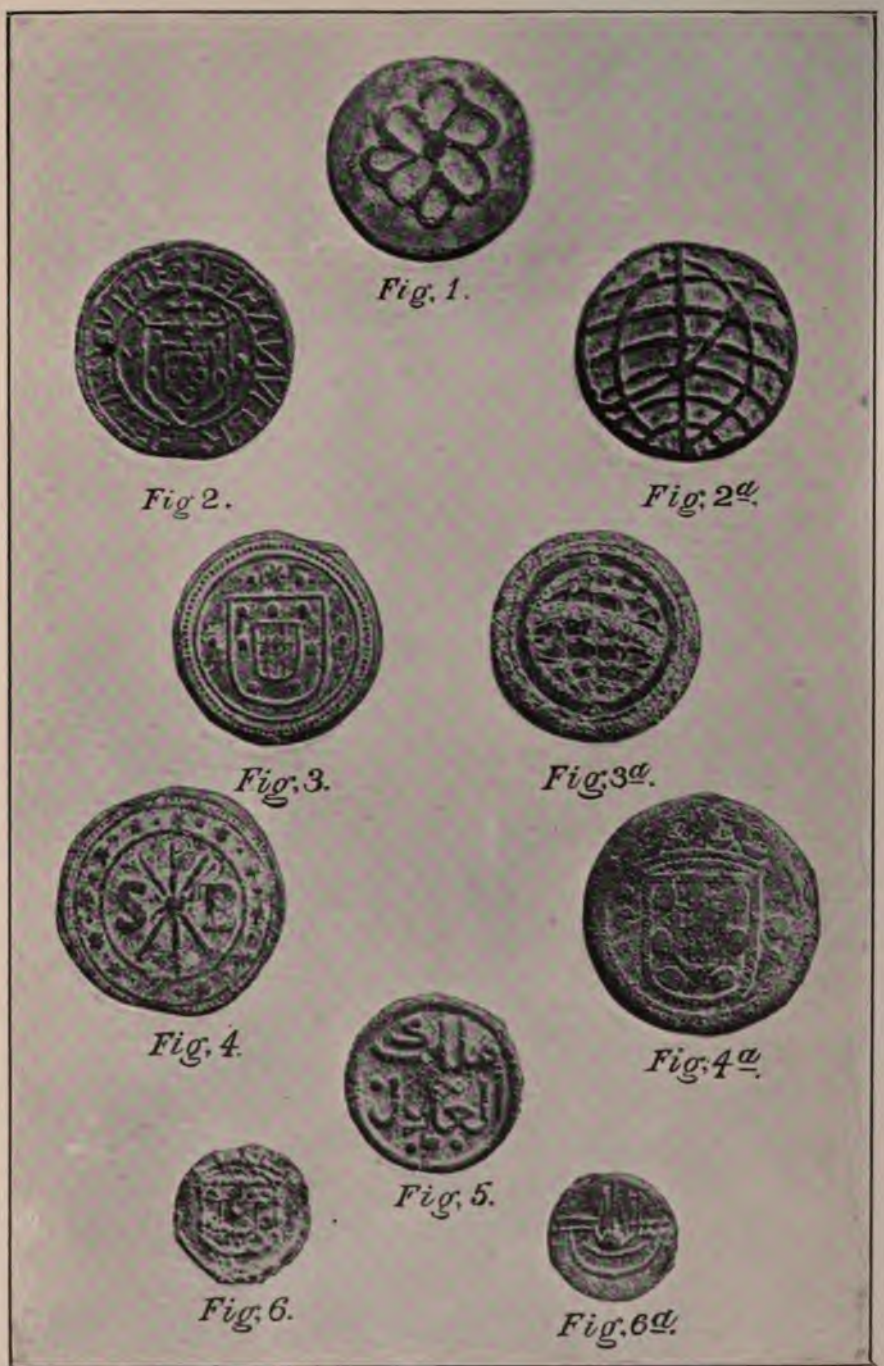

Fig. 1.

Fig 2.

Fig. 2a.

Fig. 3.

Fig. 3a.

Fig. 4.

Fig. 4a.

Fig. 5.

Fig. 6.

Fig. 6a.

Tin Coins from Malacca.

against the average 75.17 inches) and to this comparative drought perhaps may be indirectly attributed the abnormal numbers of this butterfly—*Cirrochroa bajadeta*. That the monsoon has been an exceptionally favourable one for insects is shewn also by the following occurrences:—(1) The number of swarms of social wasps and bees has been greater than usual during the past 3 months. (2) Captain A. Balser of the s.s. "Rajah of Sarawak" reports that on the 20th January ult., a swarm of dragon flies came aboard his ship when about 50 miles west of the island of St. Pierre; the wind was very unsteady at the time; the insects appeared to be making their way North. (3) Mr. H. B. Crocker, officer-in-charge at Paku, Upper Sarawak, informs me that on January 27th ult., he noticed a swarm of some Pierine butterflies (species not identified, probably *Catopsilia crocale*, Cram.) flying in a solid phalanx some 20 fathoms long by 8 fathoms wide in a westerly direction.

R. Shelford.

Work on Sakais by Messrs. Skeat and Blagden.

In a letter from Mr. Blagden lately received he states that the important work on the wild tribes of the Malay peninsula by Mr. W. D. Skeat and himself will shortly be out. It is an attempt to combine in one work all that is of any permanent value in previous publications both books and periodicals, as well as Mr. Skeat's own independently collected matter collected during the Cambridge Exploring Expedition, in the Northern States of the Peninsula and in Selangor, Mr. Blagden's own notes, and the various information collected by Mr. D. F. A. Hervey, Hugh Clifford, Vaughan Stevens and others. The book which will be well illustrated will be found to be as complete as it is possible to make it, and should prove of the greatest interest to all Europeans in the Malay peninsula. It is unnecessary to point out that in many cases the language and customs of these most interesting tribes are gradually disappearing so that a good record of them is of the greatest importance, and the names of the authors are a guarantee of the excellence of the work.

H. N. R.

A Buddhist Votive Tablet.

Some years ago the late Mr. H. Vaughan Stevens discovered in Kĕdah in a cave, nine feet below the floor, a number of fragmentary clay tablets stamped with inscriptions. These he forwarded to the Singapore Museum, where they now are, accompanying them with a letter explaining where he had found them.

By the courtesy of the Curator I have been enabled to submit a photograph of the largest and best preserved of these tablets to Professor Kern of Leyden, who in reply to my request was good enough to examine it and writes as follows:— "After repeated attempts I have given up the hope of deciphering the whole. The writing is Nāgarī of the 10th century, approximately, and therefore the tablet is from *Northern* India. At the top I discern parts of the well known Buddhist formula:

ye dharmā hetu prbha, etc.,

The first line shows *hetuprabha;* the second *sām hetu-tathāga-;* the third *tesām . . ca (?) yo nirodha-*; the fourth . . *vādī manah sarve;* the fifth *sams Kārā*. Further I can distinguish some letters, but without being able to make out an intelligible context. Most probably the whole tablet is filled up with the common formula of the Buddhist creed."

The formula here referred to is clearly the one which occurs also in certain other inscriptions found in Kĕdah and Province Wellesley, which will be found in Indo-Chinese Essays, Series I, Vol. 1. These were dealt with, by Professor Kern, in Verslagen en Mededeelingen der Koninklijke Akademie van Wetenschappen, Afdeeling Letterkunde, 3de Reeks, Deel 1. He assigns them to the period 400 A. D. These however are in a *South* Indian form of alphabet (and from such form the existing Far Eastern alphabets are in the main derived), whereas the clay tablet now dealt with points to influences from *Northern* India.

Evidently, therefore, both Northern and Southern India have contributed something towards the civilization of the Malayan regions.

I take this opportunity of pointing out, as regards the date to which this Indian influence can be traced, the following few acts:—

(1) In the 2nd century, Ptolemy gives Indian place names to several of the islands of the Archipelago, notably Java, which he calls Iabadios i. e. Yava-dvipa "the island of Java" (or the island of millet," if that is what the name meant) as well as to certain ports on the coast of Indo-China and the Peninsula.

(2) Early in the 5th century, Fa-Hian going from Ceylon to Java, finds in the latter island "heretical Brahmans, but no Buddhism worth mentioning." He was a Buddhist pilgrim himself and stayed five months in Java and after spending some years in India, so he may be supposed to know what he was talking about.

(3) Late in the 7th century I. Tsing, another Chinese Buddhist, found Buddhism (of the Sanskrit-using variety) flourishing in South-eastern Sumatra.

The inscriptions found in the Peninsula, though few in number and of little intrinsic interest, supply further links in this chain of evidence, and negative Mr. Hugh Clifford's assertion (Encyclopædia Britannica supplement s. v. Malays) that the traces of Hindu influence do not extend to the Peninsula. They are only fainter there than in Java and Sumatra, not absent altogether.

Unquestionably Indian influence was by far the most potent of the forces which have led the Javanese and Malays to such civilization as they have attained. It has made a far deeper impression upon them than the Arab and European teaching by which it has been succeeded.

C. O. Blagden.

A new Balanophora from Tenimber Islands.

When Mr. H. O. Forbes visited the Tenimber islands in 1882, he obtained among his collections, specimens of a Balanophora which however perished in the disastrous conflagration by which the greater part of his collections were destroyed. No other person has since visited this group with a view of collecting botanical specimens though Orchid collectors have lately taken to exploring the spot usually for the sake of the beautiful *Dendrobium Phalaenopsis*. Mr. Micholitz during a recent visit came across the *Balanophora*, and brought a quantity of it preserved in Formaline which he has kindly given me, and I may here remark that this seems to be about the best way of preserving these fleshy plants. If preserved in ordinary spirit, not only does the spirit become black, though often changed, but the plants which are ordinarily red, yellow or white also become black. The specimens in formaline retain to a considerable extent the yellowish white color which they possessed in life.

B. Micholitzii, n. sp.

Rhizome rather small about ½ inch through, rounded and shortly lobed, minutely irregularly pustulate. Stems two or three on a rhizome, 2 inches tall thick, leaves about 8. orbicular to orbicular ovate, apex rounded ½ an inch long, ½ to ¾ inch wide white. Capitulum ovoid globose 1 inch long yellowish bisexual.

Male flowers in two or three whorls at the base, pedicels ⅛ inch long thick. Sepals 4 oblong fleshy, apices thickened incurved, shorter than the pedicel, reflexed, androecium thick, anther-capitulum rounded, anthers 4 horse-shoe shaped. Female portion broad globose rounded. Flowers obconic clavate, apex rounded tessellate, spadicels numerous nearly as long as the pistil, base and apex slender filiform centre swollen.

This plant is nearly allied to *B. Zollingeri* Fawcett, Trans. Linn. Soc. Ser. ii. Vol. ii. p. 234. Plate 34 figs 11-14 which was collected by Zollinger in the island Salayer, south of Celebes. It is however much larger in all its parts, and the female flowers are more club shaped with a longer stalk armed with large well developed spadicels.

H. N. Ridley.

On the supposed evil influence exercised by ghosts in the Malay Peninsula.

Some four years ago when I was engaged in certain prospecting operations in the highlands of Pahang on the borders of that State with Perak, I had occasion to make a somewhat lengthy stay at a place called Kampar on the Tué river, one of the tributaries of the Betok, in its turn a tributary of the Jelai, the principal feeder of the Pahang River. I selected this spot because it had already been cleared of large trees and had only recently been in occupation as a Sakai Settlement, from the remains of which, we reared our unpretentious little camp. The Sakais however strongly advised us to go elsewhere alleging that this place was haunted by elephant ghosts and that they had been the direct cause of a number of deaths among them, principally among their children, whose remains lie buried there. It is necessary to explain that at the back of this place, not fifty yards away, is to be seen one of those peculiar muddy pools which animals of all kinds frequent for their saline properties, this particular one being known as the Kubang Gajah Hantu (the mud pool of the ghostly elephants). These salt licks are also known as *genuts* in Malay. When the Sakais refer to this place it is usually with bated breath and a mysterious and awesome gesture. These men declared that almost nightly elephants are seen and heard breaking twigs and branches and wallowing in this mud pool, and yet in the morning, not a vestige of their spoor can be seen anywhere. Of this I am certain, the prints of deer and pigs were always plentiful and fresh, but no elephant could have been within miles of the place during my residence in that locality. My mandor's wife, an oldish person, who always followed her husband in his journeys doing the cooking for my followers, declared that the first night we slept there, she and all my men heard continued long drawn wails, like a long wee-ê-ê-ê which went on without intermission until almost daylight. This noise they said came from those Sakai children buried there.

This account is interesting from an ethnological standpoint in so far as it illustrates the beliefs and superstitions of a race of very primitive people. As for the number of children dying

at the time, this would only seem natural when it is remembered that an epidemic of measles was then and had been for some time after raging.

A. D. Machado.

Malay Witchcraft.

Towards the end of 1901 while I was in charge of a country district in Alor Gajah, complaints were made to me of a certain Pawang Musah who was said to bewitch children by means of a familiar spirit called a Polong. One man stated that one of his children had died from the effects and that another was affected. As his house was only about a mile from where I lived, I and the colonial surgeon from Malacca, who happened to be with me on one of his periodical visits decided to go and see the child. When we arrived at the house we found a large number of people in the house and lying at one end of the verandah, the child (a little girl of 7 or 8 years old) in a semi-unconscious state. The doctor examined it and found that it was in a high fever and evidently dying. While we were there the father sat down and spoke to the child. She opened her eyes and when asked by the father "who sent you here and who is your father" or words to that effect, she replied "Pawang Musah." This was taken by the bystanders to be the voice of the Polong speaking through the child. We were also told that the child had been asked who would be the next victim and had pointed out her older sister a girl of 18 or 19 years old. This girl was examined by the doctor and found to have nothing the matter with her. We assured her she had nothing to fear, and as far as I know she is still alive, at any rate she was alive in February 1902 when I left Malacca. The dying child was suffering from malarial fever, enlarged spleen and starvation and though we sent up stimulants they were of no avail and she died a very few hours after we left. Pawang Musah lived about 2 miles from were the child lived and had a bad reputation as a wizard. He originally came from the other side of Malacca about 30 miles away and had moved about from village to village everywhere getting the credit for the deaths of child-

ren being driven out. I have very little doubt that he traded on the reputation as the people were quite willing to give him anything he asked for through fear that he would otherwise bewitch their children. The explanation appears sufficiently obvious. If any person thought he had in any way offended the Pawang the next case of sickness in his house would in all probability be attributed to him, the illness then being considered supernatural no ordinary remedies would be tried and incantations alone would be used to drive out the evil spirit. The result to the patient is very easy to imagine and as he or she being familiar with the story of the Polong, it is not surprising that the answers given to the well known formulæ coincide with the suspicion of the relations especially when it is remembered that the patient is a young boy or girl in high fever.

H. Marriott.

Corrigenda in Mr. C. O. Blagden's paper "A Malayan Element in some of the Languages of Southern Indo-China, Journal No. 38, pp. 1-27

Page 1, line 4, *for* Khmet *read* Khmer.
„ 5, *for* hand *read* Land.
„ 2, „ 11, *for* dua *read* dva.
„ 5, „ 8 from bottom, *after* and *insert* the.
„ 6, „ 5, *for* leureux *read* heureux.
„ 8, „ 13, *for* sĕmbilon *read* sĕmbilan.
„ 3 from bottom, *for* of *read* cf.
„ 11, „ 1, *for* tamov *read* lamov.
„ 16, *for* hagaton *read* hagatou.
„ 20, *for* dita *read* ditá.
„ 13, „ 11, *after* rarely *end the bracket.*
for iu *read* in.
„ 3, *delete* van.
„ 4, *for* metoyam *read* metyoam.
„ 14, „ 5 from bottom, *insert* a *before* Malayan.
„ 19, „ 13 from bottom, *for* dewatan *read* dewătau.
„ 20, „ 14, *for* chin chin *read* chinchin.
„ 15, *for* ainbau *read* ambau.
for ainbang *read* ambang.
„ 21, „ 6, *for* being *read* bring.
„ 22, „ 4, *for* Papuan *read* Melanesian.
„ 24, „ 2, *for* southeast *read* south-east.
„ 2 from bottom, *for* ; everything *read* . Everything.
„ 25, „ 3, *for* wards *read* words.
„ 27, „ 6, *for* Himby *read* Himly.
„ 11, *for* Landen *read* Land- en.

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