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PROVISIONAL LIST AND REFERENCE CATALOGUE
OF THE ANOPHELINI.

Part I.—PROVISIONAL LIST OF SPECIES

Part II.—DESCRIPTIVE SYNOPSIS.

BY

LIEUT.-COL. S. R. CHRISTOPHERS, C.I.E., O.B.E., I.M.S.

(Central Research Institute, Kasauli.)



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PART I.

PROVISIONAL LIST OF SPECIES.

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I.—INTRODUCTION.

THIS provisional list of the Anophelini, originally drawn up as a necessary preliminary to studying the geographical distribution of species, has been published in the belief that, as a handy means of reference to the known species with their correct names, it would be useful to medical men and others.

The synopsis, which is ancillary to the list, is intended to give, in a convenient form, particulars about the chief characters of the species, the points of distinction between nearly related species and such like matters; it can, however, be used as a guide to identification of the Anopheles of any country by disregarding those species noted as not occurring in the area and it may be found useful for ready reference in respect to the differentiation of the less well known forms, the author

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having made a point of giving in such cases, as far as practicable, all the distinguishing characters (when considered valid) mentioned in the literature or that he has himself observed. The synopsis also serves to indicate the natural classification of the group according to present ideas.

It was originally intended to issue a catalogue in three parts ; Part I. Provisional List of Species ; Part II. Descriptive Synopsis of Species ; and Part III. Reference Catalogue to the Literature. The completion of Part III has had, however, to be postponed for the present, and as Parts I and II are ready they have been published. To anticipate criticism I may say the absence of information on many points, such as details of distribution, breeding habits, adult and larval characters and relation to malaria transmission, is intentional, or rather, obligatory. It was found that to do justice to such headings more work was required than the author is for the moment able to give to the subject, and the more it was attempted to include only the more important points in such connections, the more certain it seemed that the present publication was not the place for such treatment, which to be at all adequate clearly requires a book or monographic study. The list, with the synopsis, must therefore be taken for what it is worth in its own particular line only.

It ought perhaps to be made clear that the provisional list given is not merely the result of a survey of the literature, but is based on the critical study of types and other material, my acknowledgments for help received in this respect being given at the end of this introduction. For this reason therefore the list substantially represents the actual state of knowledge regarding the various species and varieties to date, and though in some of the details other authors may not perhaps always agree, I believe the list has gone as far as is at present possible in giving a precise and categorical tabulation of the actual forms in nature so far as known.

At the beginning of the list is the index of generic and specific names with the page reference in the former and the number reference to the species in the latter. The index is important as it is the place where a desired reference to any name should first be sought for. Omitting 9 specific and varietal names not identified, there are 124 valid species listed and 42 varieties of more or less probable geographical significance. Altogether there are 331 names that have been used in the description of species or varieties.

In the list itself valid species, arranged as far as possible in order of affinity, are in bold type with the generic letter, and subgenus in brackets, preceding the specific name. To each species is given a number by which it is always referred to in the index and synopsis, etc. Varieties are given the species number plus a distinguishing letter. As far as possible varieties of definite geographical significance only, such as may be supposed to be species in the making, are retained; but as it is impossible in many cases to say whether a variety described is, or is not, of significance in this respect, no evidence as to this very often being given by the describer, a certain number of forms so listed may merely be "variants" a term that may suitably be applied to various effects produced by melanism or flavescence, the demonstrable result in some cases of food supply, or to various other individual departures in markings, etc., that are not in any sense racial. The point at which an entry is to be treated as a variety or distinct species is in some cases difficult to decide. With such doubtful forms nothing more can perhaps be done than is attempted here, viz., they are assigned a position, either as species or varieties, in their proper context, and apparently must remain indeterminate until more information regarding them is available. Such cases are indicated in the catalogue by an asterisk, which signifies in regard to any entry that its exact relationship to the preceding valid species is uncertain. Close similarity of appearance is no absolute guarantee of specific identity as may be seen for example in the case of *umbrosus* and *novumbrosus* and of *turkhudi* and *hispaniola* and of many other instances that might be given.

Some importance attaches to the definition of a synonym. The definition here adopted is that it shall be a name given to a species supposed to have been new, or a new name given to a species considered to have required renaming. The usual method of placing among the synonyms various mis-spellings, erroneous identifications and generic changes of position (the last, as referring to the scale characters, now of no great importance or significance) is it is thought rather apt to obscure the information most required; errors of identification, spelling, etc., do not therefore find a place in the list of synonyms given marginal prominence. It follows from this procedure that synonyms as here formally listed are in all cases (given certain circumstances) possible of re-erection as valid species; but the names not so given are not capable under any circumstances of re-erection as they are always necessarily preoccupied. The method has the advantage of shewing clearly what

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are the synonyms worthy of further study as regards validity. Some of the more important mis-identifications, however, cannot be altogether neglected and they will be found, along with certain MSS. names, etc., in the text beneath the species to which they refer.

To revert to the information given in the list. After each specific name or synonym is given the describer's name and date of description, followed by the reference in which the original description will be found. Under 'locality' is given the locality from which the type was described or from which the material on which the original description was drawn up was obtained; this is followed by any information available as to the number and sex of the specimens on which the description was based, and the present location, if known, of the type. In the case of a synonym the authority first recognising the synonymy is given.

A word is required about the classification employed. My personal bias is towards the recognition, as *genera*, of five distinct stems, *Chagasia*, *Bironella*, *Anopheles*, *Nyssorhynchus* and *Myzomyia*. Each of these is precisely determinable by the male genitalic characters, so much so that in no case yet recorded is there a single intermediate form known; nor is it easy to see how any of the known types could directly pass from one condition to another. These stems have a distinctive distribution, such as is seen for example in genera of mammals. The single species representing the peculiar form *Chagasia* is South American, that representing *Bironella* is from New Guinea. Of the remaining three genera, each represented by numerous species, *Anopheles* is world-wide, *Nyssorhynchus* is purely Neotropical, and *Myzomyia* is unknown in the New World. If evidence of isolation shewn by the Neotropical fauna may be taken as indicating separation since say, early tertiary times, then *Nyssorhynchus* has been separated as a stem from this early period; and the other groups are no less distinctive in structural evidence than is *Nyssorhynchus*. It would not therefore seem to be too high an appreciation of the facts to accord to these divisions the rank of genera.

There are, however, some practical objections to such a course, one such being that with only 120 species or so it is troublesome not to be able to treat of them as a whole, and especially in the naming of new species it is desirable not to duplicate names within the tribe. In treating the groups *Anopheles*, *Nyssorhynchus* and *Myzomyia* as subgenera I am moreover in accordance with the views of Edwards and probably with most of those whose work on insects covers a wide field. But if these three groups are subgenera, then it is anomalous to retain *Chagasia*

and *Bironella* as genera. The difference between *Bironella* and *Chagasia* and the others is perhaps somewhat greater, but it is essentially of the same order, viz., each of them forms a distinct stem. The use of five subgenera, the names of which can be given when required, or not as the case may be, seems then on the whole the best and most convenient plan to adopt in the classification of this group. Only one change in the nomenclature is necessitated by such a course, viz., that on being placed in the genus *Anopheles* the specific name of *Bironella gracilis* becomes preoccupied by *gracilis* Donitz, 1902. By giving the specific name *bironelli* no confusion should occur. *Neivai* Howard, Dyar and Knab, is also perhaps strictly preoccupied by *neivae* Cruz, 1906, but as the first is a synonym and the latter now recognised only as a variety, and the spelling is not quite the same, perhaps it is unnecessary to make any change.

Whilst the subgenera referred to above are very satisfactory both in precision of definition and naturalness as shewn by larval and other characters, any further subdivision of these subgenera on a natural basis is difficult owing to the absence of definitive characters that do not overlap in occasional instances. Dr. Root, however, (*Amer. Jour. of Hyg.*, May, 1922) has been able to distinguish on genitalic characters two main groups of the subgenus *Anopheles*, viz., group *Anopheles* and group *Arribalzagia*, and also two main groups of *Nyssorhynchus*, viz., group *Nyssorhynchus* and group *Dendropaedium* (*Kerteszia*). In *Myzomyia* five groups, the characters of which, however, are perhaps not so precisely definable as Dr. Root's subdivisions of *Anopheles* and *Nyssorhynchus*, can be distinguished on general characters, viz., *Myzomyia Pseudomyzomyia*, *Neocellia*, *Cellia* and *Neomyzomyia*. Lopped and sifted, in fact, many of the old genera are clearly to a certain extent natural subdivisions and their names may still perhaps be found useful in a loose and general sense. Nevertheless such a degree of subdivision is clearly not required for ordinary systematic purposes and is only necessitated in the course of research on phylogeny and distribution, etc. The names of 'groups' given in brackets in the list and synopsis, are therefore merely intended to illustrate what is known of the relationship of forms included in the larger definitely named systematic divisions and as such may be neglected except by those concerned in special study of the affinities, distribution and origin of species.

In conclusion I am much indebted to many officers who have sent me specimens from outlying regions of the Indian Empire, notably to

1923.

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Major Sinton, v.c., I.M.S., Lt.-Col. Browse, I.M.S., and Capt. Clyde, I.M.S., for material from Eastern Persia and the Quetta area, to Lt.-Col. Gill, I.M.S., for material from Kashmir and to Major Shortt, I.M.S., and Dr. Strickland. As regards areas outside India I am most deeply indebted to Dr. Dyar for specimens of many of the North American forms and to Dr. Lutz for specimens from Brazil. To Dr. Hacker, in addition to specimens of *A. asiaticus*, *A. watsoni* and *A. aurostris*, I am particularly indebted for named and bred specimens with the larval skins of the different *umbrosus* like species occurring in the Malay States. To Capt. Brug I am indebted for specimens of *Bironella* and a series of *A. punctulatus* forms including Donitz's type form. To Capt. Barraud I am much indebted for valued material from Palestine, and to Lt.-Col. Archibald, R.A.M.C., for specimens from Egypt. Dr. Tiedemann has sent me very perfect specimens of Philippine species including what is evidently Miss Ludlow's *A. philippinensis*. I am also indebted to Dr. Hill for specimens of *A. bancrofti* and *A. annulipes* from Australia, and to Dr. Lonkhouzen for specimens of inland *ludlowi* from Sumatra, as well as to Dr. Rodenwaldt for valued information about the Celebes form of *A. ludlowi*, and to Dr. Walsh for photographs of *A. sinensis* wings.

When recently in England I worked at the collections at South Kensington and at the Liverpool School of Tropical Medicine and I am indebted to the authorities for permission to do so. I also cannot too deeply thank Prof. Newstead and Miss Evans at Liverpool and Mr. Edwards at South Kensington for their very kind help and assistance with material and much appreciated information given in the course of conversation. I must also thank Dr. Annandale for permission to examine the types in the Indian Museum, Calcutta, and Mr. M. O. T. Iyengar for kindly copying out for me the description of *A. folquei* from a Portuguese publication.

II.—INDEX OF NAMES OF HIGHER VALUE THAN SPECIES.

(a) *retained.*

ANOPHELINI	(tribe)	.	.	15
ANOPHELES	(genus)	.	.	15
ANOPHELES	(subgenus)	.	.	16
✓ BIRONELLA	(subgenus)	.	.	16
✗ CHAGASIA	(subgenus)	.	.	15
MYZOMYIA	(subgenus)	.	.	43
NYSSORHYNCHUS	(subgenus)	.	.	36

(b) *discarded.*

Aldrichia	.	.	43	*	Kerteszia	.	.	36
Aldrichinella	.	.	44		Laverania	.	.	36
Anophelina (sub-family)	.	.	15		Lophomyia	.	.	17
Anophelina (section)	.	.	15		Lophoschelomyia	.	.	17
Anophelinae (sub-family)	.	.	15		Manguinhosia	.	.	36
* Arribalzagia	.	.	17		1915 ✓ Memnemyia	.	.	18
Calvertia (nec. Anop.)	.	.	76		Myzorhynchella	.	.	36
Calvertina (nec. Anop.)	.	.	73		Myzorhynchus	.	.	17
* Cellia	.	.	43		* Neocellia	.	.	44
Christophersia	.	.	44		* Neomyzomyia	.	.	44
* Christya	.	.	17		Neostethopheles	.	.	17
Coelodiaezis	.	.	17		1915 ✗ Notonotricha	.	.	17
Misspelling- Cyclolepidopteron	.	.	16		Nototricha	.	.	17
Cyclolepteron	.	.	16		Nyssomyzomyia	.	.	44
Cyclophorus	.	.	18		Patagiamyia	.	.	17
Dactylomyia	.	.	44		Proterorhynchus	.	.	18
1915 ✓ Dendropaedium	.	.	36		* Pseudomyzomyia	.	.	44
Epialurgi (section)	.	.	15		Pyretophorus	.	.	43
Feltinella	.	.	43		Rossia	.	.	16
Grassia	.	.	43		Stethomyia	.	.	16
✗ Howardia	.	.	43					

* *Note.*—Retained for group names only.

III.—INDEX OF SPECIFIC AND VARIETAL NAMES.

Note.—Valid species are in heavy type, valid varieties in ordinary type and synonyms and non-identifiable species in italics.

The numbers opposite the name in the index refer to the seriatim numbers in the *provisional list* under which the species are entered. The position of any species in the *synopsis* can be ascertained by first looking it up in the provisional list where a figure in brackets will be found at the end of the entry which is the number in the synopsis under which the species will be found.

Aconitus	71	<i>Annularis</i>	128
Adenensis	66(a)	<i>Annulimanus</i>	14
<i>Adiei</i>	97	Annulipalpis	47
<i>Africanus</i>	127	Annulipes	124
Aitkenii	5	<i>Annulipes</i> of Arribalzagia (Theobald)	47
<i>Alba</i>	108	<i>Annuliventris</i>	137
Albimanus	54	<i>Anopheles</i> I. of Schuffner	88
<i>Albimanus</i> of Autran, Blanchard, Neveu Lemaire and Surcouf and Gonzalez-Rincones	53	<i>Anopheles</i> I.a. of Schuffner	201
<i>Albimanus</i> of Coquillett, Neiva, Newstead and Thomas, Nicholls, Surcouf and Gonzalez-Rincones and of Theobald (in part)	55	<i>Anopheles</i> II. of Schuffner	30(e)
<i>Albipes</i> (<i>albimanus</i>)	54	<i>Anopheles</i> sp. b. from Calcutta	30(e)
<i>Albipes</i> (<i>albimanus</i> var.) of Bourroul, Gray and Low, and Per-yassu	54(a)	<i>Anopheles</i> sp. of Gough	95
<i>Albipes</i> (<i>theileri</i>)	95	<i>Anopheles</i> sp. of Theobald	136
<i>Albirostris</i>	71	<i>Antennatus</i>	10
<i>Albitarsis</i>	53	Apicimacula	50
<i>Albitarsis</i> of Knab	57	Arabica	68(b)
<i>Alboannulatus</i> (<i>hyrcanus</i>)	30(d)	<i>Arabiensis</i>	91
<i>Alboannulatus</i> (<i>albotaeniatus</i>)	33	Ardensis	118
<i>Alboapicalis</i>	70	Argenteolobatus	111
<i>Albofimbriatus</i>	108	<i>Argentinus</i>	27
Albotaeniatus	33	Argyritarsis	53
Algeriensis	6	<i>Argyritarsis</i> of Durham	55
Allopha	53(b)	<i>Argyritarsis</i> of Howard (1901)	54
Amazonicus	42	Argyropus	30(g)
Amictus	125	<i>Argyrotarsis</i>	53
<i>Anisochloros</i>	68(a)	<i>Argyrotarsis</i> of Steph. and Christ.	54
Annandalei	19	<i>Arnoldi</i>	110
		Asiaticus	18
		<i>Asiaticus</i> of Christophers (1915, 1916)	19
		Atratipes	23
		Atropos	16
		Aureosquamiger	115

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Aurorostris	126	<i>Deceptor</i>	122
Austenii	75	Distinctus	86
Azriki	79(a)	Domicolus	76
Bancrofti	40	Dravidicus	101(a)
Barberi	8	<i>D'thali</i>	64
Barbistrotris	39	<i>Dubitus</i>	35
Barianensis	11(a)	<i>Dubius</i>	54
Bellator	62	<i>Dudgeoni</i>	102
<i>Bentleyi</i>	30(e)	Eiseni	21
Bifurcatus	10	<i>Elegans</i>	121
<i>Bifurcatus</i> of Meigen, 1804	12	Elutus	13
<i>Bigotii</i>	53	<i>Error</i>	87
Bironelli	2	Fajardi	1
Bisignata	68(a)	<i>Farauti</i>	124
Boliviensis	61	<i>Febrifera</i>	70
<i>Bozasi</i>	108	<i>Ferruginosus</i>	138
<i>Brachypus</i>	33	<i>Flava</i> (Cellia) Ludl	120
<i>Brahmacharii</i>	71	<i>Flava</i> (Myzomyia) Swell	88
Braziliensis	53(a)	<i>Flavescens</i>	89
Brevipalpis	17	Flaviceps	80
Brunnipes	93	Flavicosta	73(b)
<i>Candidiensis</i>	71	<i>Flavirostris</i>	70
<i>Cardamatisi</i>	82	Flerowi	30(c)
<i>Ceylonica</i>	122	<i>Fluciatilis</i>	69
<i>Chaudoyei</i>	81	<i>Folquei</i>	96
<i>Christophersi</i>	70	<i>Formosaensis I</i>	70
Christyi	117	<i>Formosaensis II</i>	88
Cincta	113	Formosana	129
Ginereus	83	Formosus	25(c)
<i>Claviger</i>	10	<i>Fowleri</i>	99
<i>Claviger</i> of Fabr.	12	<i>Fragilis</i>	5
<i>Cleopatrae</i>	81	<i>Franciscanus</i>	27
<i>Cohaesa</i>	70	<i>Freerac</i>	97
Corethroides	4	Fuliginosus	97
<i>Costalis</i> Loew	83	Funestus	68
<i>Costalis</i> of Giles and Theobald	91	<i>Funestus</i> of Ludlow	70
Costani	29(a)	Gambiae	91
Crucians	28	<i>Gambiensis</i>	91
<i>Crucians</i> of Osten Sacken	26	Gigas	25
Cruzii	62(a)	Gilesi	60
<i>Cubensis</i>	54	<i>Gorgasi</i>	55
<i>Cubensis</i> of Blanchard	55	Grabhamii	44
Culicifacies	66	<i>Gracilis</i> (Myzomyia)	91
<i>Culicifacies</i> of Edwards, 1912 and of Alcock, 1913	67	<i>Gracilis</i> (Bironella)	2
Culiciformis	9	<i>Grisescens</i>	10
Cuyabensis	55(c)	<i>Guttulatus</i>	14

Hackeri	121(a)	Longipalpis	85
Halli	120	Ludlowi	89
Hatorii	89	<i>ludlowi</i> var.	90
Hebes	68	<i>Lukisii</i>	6
Hispaniola	78	Lutzii	57
Hunteri	35	<i>Lutzi</i> Theobald	62(a)
<i>Hyemalis</i>	26	<i>Lutzi</i> (Manguinhosia)	52
Hylephilus	62(c)	<i>Macedoniensis</i>	82
Hyrceanus	30	Maculatus	101
<i>Immaculatus</i>	88	<i>Maculata</i> (lindesaii var.)	24
Implexa	46	<i>Maculicosta</i>	108
<i>Impunctus</i>	81	Maculipalpis	106
<i>Indefinita</i> Ludlow	87	<i>Maculipalpis</i> of James and Liston	106(a)
<i>Indefinata</i> Ludlow of authors	88	Maculipennis	12
<i>Indica (culicifacies)</i>	66	<i>Maculipennis</i> of authors, S. Europe	13
<i>Indica (willmori)</i>	102	<i>Maculipennis</i> of authors, N. America	12(a)
<i>Indiensis (sinensis)</i>	30(e)	<i>Maculipes</i>	47
<i>Indiensis (maculipalpis)</i>	106(a)	<i>Maculipes</i> of Coquillett and Dyar and Knab, 1906	50
<i>Insulae-florum</i>	5(a)	<i>Maculipes</i> of Pazos	41
<i>Intermedia (Neocellia)</i>	96	<i>Maculosu</i>	102
<i>Intermediun (Cycloleppter)</i>	51(b)	<i>Malayensis</i>	87(a)
Jacobi	112	<i>Malefactor</i>	51
Jamesii	104	<i>Mangyana</i>	70
<i>Jamesii</i> of Liston, 1901	97	Marshallii	73
<i>Jamesii</i> of Giles, 1902 and of Steph. and Christ., and of Mathis and Leger, 1910, allied sp. 1 and 3 of James	106(a)	<i>Martini</i>	130
<i>Jamesii allied sp. 2</i> of James	97	<i>Masteri</i> of Theobald	124
<i>Javanensis</i>	88	<i>Masteri</i> of Mathis and Leger	120
<i>Jehafi</i>	83	<i>Mastersi</i>	124
<i>Jesoensis</i>	30(d)	Mattogrossensis	43
Jeyporiensis	72	Mauritianus	29
Karwari	107	<i>Mcgregori</i> (nec. Anop.)	140
Kingi	116	Mediopunctatus	48
Kochi	120	<i>Mediopunctatus</i> of Coquillett and of Dyar and Knab, 1906	51(a)
<i>Kumasii</i>	68	<i>Melanocosta</i>	86
<i>Leptomeres</i>	69	<i>Melas</i>	91
<i>Leucopus</i>	97	<i>Merak</i>	70
Leucosphyrus	121	<i>Merus</i>	91
<i>Lewisii</i>	12	Mesopotamiae	30(b)
Lindesaii	24	<i>Metaboles</i>	96
<i>Lineata</i>	139	Minimus	70
Listoni	69	<i>Minuta</i> Macq.	68
<i>Listoni</i> Giles	66	<i>Minutus</i> of Theobald	30(e)
		<i>Moghulensis</i>	72(a)
		<i>Moluccensis</i>	123(a)

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Montanus	34	<i>Pictipennis</i>	53
Multicolor	81	<i>Pictus</i> Loew	30(a)
<i>Musivus</i>	124	<i>Pictus</i> of Grassi, 1899	82
<i>Myzomyia</i> sp. Theo.	136	<i>Pictus</i> of Macdonald	78
<i>Myzomyfacies</i>	78	Pitchfordi	74
<i>Nagpori</i>	97	<i>Pleccau</i>	24
Natalensis	114	Plumbeus	11
<i>Neivae</i> (<i>Chagasia</i>)	1	<i>Plumiger</i>	30(e)
<i>Neivai</i> (<i>Dendropaedium</i>)	62(b)	Pretoriensis	105
<i>Nero</i>	30(e)	<i>Pretoriensis</i> Gough	110
<i>Nigerrimus</i>	30(e)	<i>Pseudobarbistrotris</i>	40
<i>Nigra</i> (<i>Myzorhynchella</i>)	57	<i>Pseudocostalis</i>	73
<i>Nigra</i> (<i>funestus</i> var.)	65	Pseudomaculipes	49
<i>Nigrans</i>	107	<i>Pseudopictus</i>	30(a)
<i>Nigrifasciatus</i>	81	Pseudopunctipennis	27
<i>Nigripes</i>	11	<i>Pseudosquamosa</i>	111
Nigritarsis	59	<i>Pseudowillmori</i>	101
<i>Nilghiricus</i>	24(a)	Pulcherrimus	109
Nili	65	Punctibasis	32
Nimbus	3	<i>Punctibasis</i> var.	32
<i>Niveopalpis</i>	21	Punctimacula	51
<i>Nivipes</i>	98	Punctipennis	26
<i>Non vittata</i>	71	<i>Punctipennis</i> of Howard, 1900	27
Novumbrosus	37	<i>Punctipennis</i> Bigot (Theobald)	53
<i>Nursei</i>	82	<i>Punctipennis</i> var. <i>A.</i>	27
Obscurus	38	Punctulatus	123
<i>Occidentalis</i>	12(a)	<i>Punctulatus</i> of James and Liston	122
<i>Ocellatus</i>	120	<i>Punctulatus</i> of Mathis and Leger, 1910	121
<i>Orientalis</i>	123(b)	<i>Punjabensis</i>	66
<i>Oswaldoi</i>	55(a)	<i>Pursati</i>	131
<i>Palestinensis</i>	82	<i>Pygmaeus</i>	132
<i>Pallidopalpi</i>	63	<i>Pyrethoroides</i>	118
Pallidus	99	Quadriannulatus	92
<i>Pallida</i> Ludlow	5	Quadrinaculatus	14
<i>Pallidus</i> Swell. and Swell.	40	<i>Refutans</i>	25(b)
<i>Paludis</i>	29	Rhodesiensis	64
<i>Papuae</i>	5(b)	Rockefelleri	45
Parangensis	90	<i>Rondoni</i>	55(b)
Parvus	58	<i>Rossii</i>	87
<i>Peditaeniatus</i>	30(f)	<i>Rossii</i> of Swellengrebel, 1916	88
<i>Perplexens</i>	26	Rufipes	94
<i>Persicus</i>	81	<i>Sacharovi</i>	133
<i>Peruvianus</i>	27	Schuffneri	100
Peryassui	52	<i>Selengensis</i>	12
Pharoensis	108	Separatus	35
Philippinensis	98		

Sergentii	67	Tibiamaculatus	22
<i>Similis</i> Strickland	36	Transvaalensis	84
<i>Similis</i> Theobald	29	<i>Treacherii</i>	5
<i>Simlensis</i>	25(a)	<i>Triannulatus</i>	55(d)
<i>Sinensis</i>	30(d)	<i>Trifurcatus</i>	10
Smithii	63	<i>Tucumanus</i>	27
<i>Snijdersi</i>	35	Turkhudi	79
<i>Sp.</i> Gough	95		
<i>Sp.</i> Theobald	136	Umbrosus	36
<i>Splendidus</i>	106(a)	<i>Umbrosus</i> (Myzomyia) Theo.	68(a)
Squamosus	110	<i>Umbrosus</i> of Edwards, 1911	65
Stephensi	96	<i>Umbrosus</i> (<i>Myzorhynchus</i>), Africa	38
<i>Stephensi</i> of Mathis and Leger,		<i>Umbrosus</i> var. Swell.	36(a)
1910	88	Unclassified larva No. I. Swell.	5(a)
Stigmaticus	7	<i>Unicolor</i>	65
<i>Strachani</i>	38		
<i>Strigimacula</i>	51(a)	Vagus	88
Subpictus	87	<i>Vaga</i> of Schuffner and Swell,	
<i>Subtilis</i>	134	1917	89
<i>Subumbrosus</i>	68	<i>Vanus</i>	39
Superpictus	82	<i>Varuna</i>	70(a)
<i>Superpictus</i> of Mathis and Leger,		<i>Vassilievi</i>	82
1910	72	<i>Venezuelae</i>	51
		Vestitipennis	41
<i>Tananarivensis</i>	110	<i>Villosus</i>	10
Tarsimaculatus	55	<i>Vincenti</i>	135
<i>Tarsimaculatus</i> var. (Boune)	55(e)	Walkerii	15
<i>Tenebrosus</i>	29	Watsonii	119
Tessellatus	122	<i>Watsoni</i> Edwards	94
<i>Tessellatus</i> of Mathis and Leger,		Wellcomei	77
1910	120	Wellingtonianus	20
Theileri	95	Willmori	102
Theobaldi	103	<i>Willmori</i> of Leicester	101
<i>Thorntonii</i>	122		
<i>Tibani</i>	105	Ziemanni	29



IV.—SYSTEMATIC LIST OF SPECIES.

Tribe **ANOPHELINI**.

Edwards, Bull. Ent. Res., iii, part 1, p. 2, May, 1912.

Sub-family *Anophelina* Theobald, 1901, Mono. Cul., i, p. 97.

Sub-family *Anophelinae* Felt, 1904, New York State Mus., Bull. 79, Entom. 22, p. 264.

Section *Anophelina* Marshall, 1911, Bull. Ent. Res., ii, part 3, p. 241.

Section *Epialurgi* Alcock, 1911, Ann. Mag. Nat. Hist., ser. 8, viii, p. 241.

Section *Anophelini* Brunetti, 1914, Rec. Indian Mus., x, part I, p. 32.

Genus **ANOPHELES** Meigen 1818.

Meigen, 1818, Syst. Besch., i, p. 10 (*Anopheles* Hgg.).

Genosyntypes: *A. bifurcatus* L. (as *Culex bifurcatus* L.) and *A. maculipennis* Mg., by Meigen, *ibid.*, Genolectotype: *A. bifurcatus* L., by Curtis, Brit. Entom., v, genus 210, 1828, *vide* Coquillett, Proc. U. S. Nat. Mus., xxxvii, p. 507, 1910, and Lang, Brit. Mosq., p. 73, 1920.

1. Subgenus **CHAGASIA** Cruz 1906.

Cruz, 1906, Brazil Medico, Anno xx, No. 20, p. 199, 22 May, 1906.

Genotype: *A. fajardi* Lutz (as *Chagasia neivae* Cruz), by Cruz *ibid.*, by orig. designation.

1. **A. (Chagasia) fajardi** Lutz, 1904, in Bourroul, Mosq. do Brazil, p. 16 (*Pyrethophorus fajardi*). *Loc.*, S. Paulo, Brazil. Female described. (1)
- neivae* Cruz, 1906, Braz. Med., Anno xx, No. 20, May (*Chagasia neivae*). *Loc.*, Minas Geraes, Brazil. Female described; type sent to Inst. Manguinhos, *vide* Cruz, *ibid.* *Syn.* by Theobald, Mono. Cul., iv, p. 123, 1907.

2. Subgenus **BIRONELLA** Theobald 1905.

Theobald, 1905, Ann. Mus. Nat. Hung., iii, p. 69.

Genotype: *A. bironelli* Christ. (as *Bironella gracilis* Theo.) by Theobald, *ibid.*, by original designation.

2. **A. (Bironella) bironelli.** The adoption of the classification here used necessitates a new specific name for *gracilis*, which is preoccupied by *gracilis* Don., 1902, *vide* Introduction. (2)

gracilis Theobald, 1905, Ann. Mus. Nat. Hung., iii, p. 69 (*Bironella gracilis*). *Loc.*, Muina, New Guin. Described from three males; type in National Mus., Budapest, *vide* Theobald, Mono. Cul., v, p. 74, 1910.

3. Subgenus **ANOPHELES**, Christophers 1915.

Christophers, 1915, Indian Jour. Med. Res., iii, No. 2, p. 383, October, *vide* also Edwards, Bull. Ent. Res., xii, part 3, p. 268, 1921.

Genotype: *A. bifurcatus* L., *vide* genus Anopheles Meigen, not *A. maculipennis* Mg., as given by Christophers *loc. cit.*

Cyclolepteron Theobald, 1901, Jour. Trop. Med. and Hyg. iv, p. 234, July, and Mono. Cul., ii, p. 312. Genotype: *A. grabhamii* Theo., by Theobald, *ibid.*, by original designation. In the first publication no species is mentioned as the genotype, but the wing-scales of *A. grabhamii* are depicted. Spelt "*Cyclolepidopteron*" by Blanchard, Les Moustiques, p. 185, 1905.

Stethomyia Theobald, 1902, Jour. Trop. Med. and Hyg., v, p. 181, June, and Mono. Cul., iii, p. 62, 1903. Genotype: *A. nimbus* Theo. (as *S. nimbus* and *S. nimba* respectively) by Theobald, *ibid.*, by original designation. In the first publication *S. nimbus* is given as the genotype though this species had not then been described.

Rossia Theobald, 1902, Jour. Trop. Med. and Hyg., v, p. 181. Genotype: *A. hyrcanus* Pallas (as *A. sinensis* Wied.) by Theobald, *ibid.*, by original designation. Genus

- given as invalid by Blanchard, C. R. Soc. de Biol., liv., p. 793, 1902, as name preoccupied by *Rossia* Bonaparte 1838 and *Rossia* Owen 1838.
- Myzorhynchus* Blanchard, 1902, C. R. Soc. de Biol., liv., No. 23, p. 793, July, to replace *Rossia* preoccupied. Genotype: *A. hyrcanus* Pallas (as *A. sinensis* Wied.), by original designation for *Rossia*.
- Christya* Theobald, 1903, Rept. Sleeping Sickness Comm., No. III, p. 34, Nov. Genotype: *A. implexa* Theo. (as *Christya implexa* Theo.), by Theobald, *ibid.*, by original designation.
- Arribalzagia* Theobald, 1903, Mono. Cul., iii, p. 13. Genotype: *A. annulipalpis* F. Lch. A., (as *Arribalzagia maculipes* Theo.), *vide* Brethes, Anales Mus. Nac. Buenos Aires, xxviii, p. 200, 1916), by Theobald, *ibid.*, by original designation.
- Lophoschelomyia* Theobald, 1904, Entomologist, xxxvii, No. 488, p. 12, January. Genotype: *A. asiaticus* Theo. (as *Lophoschelomyia asiatica* Theo.), by Theobald, *ibid.*, by original designation. Spelt '*Lophomyia*' by Giles, Jour. Trop. Med. and Hyg., vii, p. 166, 1904.
- Nototricha* Coquillett, 1906, U. S. Dept. Agric., Bur. Entom., Tech. ser. No. 11, p. 13. Genotype: *A. strigimacula* Dyar and Knab (as *A. mediopunctatus* Theo.), *vide* Howard, Dyar and Knab, Mosq. of N. and C. Amer., iv, p. 995, 1917), by Coquillett, *loc. cit.*, by original designation. Spelt '*Notonotricha*' by Theobald, Mono. Cul., iv, p. 54, 1907.
- Coelodiazesis* Dyar and Knab, 1906, Jour. N. Y. Entom. Soc., xiv, No. 4, p. 177, December. Genotype: *A. barberi* Coq., by Dyar and Knab, *ibid.*, by original designation.
- Neostethopheles* James, 1910, Rec. Indian Mus., iv, No. 5, p. 98, November. Genotype: *A. aitkenii* James, by James, *ibid.*, by original designation.
- Patagiamyia* James, 1910, Rec. Indian Mus., iv, No. 5, p. 98, November. Genotype: *A. gigas* Giles, by James, *ibid.*, by original designation.

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Proterorhynchus Brethes, 1912, Bol. Inst. Ent. y. Pat. Veg., i, p. 10, 14. Genotype: *A. pseudopunctipennis* Theo. (as *Proterorhynchus argentinus* Brethes), by Brethes, *ibid.*, by original designation.

Cyclophorus, Eysell, 1912, Arch. f. Schiffs., xvi, h. 13, p. 422. Genotype: *A. plumbeus* Stephens (as *A. nigripes* Staeger), by Eysell, *ibid.*, by original designation.

Memnemyia Strickland, 1915, Indian Jour. Med. Res., iii, No. 1, p. 204, July. Genotype: *A. brevipalpis* Roper, by Strickland, *ibid.*, by original designation.

[-(a) Group **Anopheles** Root 1922.*]

3. **A. (Anopheles) nimbus** Theobald, 1903, Mono. Cul., iii, p. 62 (*Stethomyia nimba*). *Loc.*, British Guiana. Male and female described; type female in Brit. Mus. Provisionally placed in the subgenus *Anopheles*, the characters of the male hypopygium not being known. (7)

4. **A. (Anopheles) corethroides** Theobald, 1907, Mono. Cul., iv, p. 35 (*A. corethroides*). *Loc.*, South Queensland. Described from 4 specimens; type male and type female in Brit. Mus. Provisionally placed in the subgenus *Anopheles*, the characters of the male hypopygium not being known. (8)

5. **A. (Anopheles) aitkenii** James, 1903, in Theobald, Mono. Cul., iii, p. 22 (*A. aitkenii*). *Loc.*, Karwar, West Coast, India. Female described; type in Brit. Mus. (9)

fragilis Theobald, 1903, Entomologist, xxxvi, p. 257, October. (*Stethomyia fragilis*). *Loc.*, Kuala Lumpur, Fed. Malay States. Described from two males; type in Brit. Mus. *Syn.* by Stanton, Jour. London Sch. Trop. Med., ii, p. 4, December, 1912.

pallidus Ludlow, 1905, Canad. Entom., xxxvii, p. 129, April (*Stethomyia pallida*). *Loc.*, Camp Stotsenberg, Angeles, Pampanga, Luzon, Philippine Islands. Described from a single female. *Syn.* (probably) by Alcock, Jour. London Sch. Trop. Med., ii, No. 3, p. 159, 1913 and by Christophers, Indian Jour. Med. Res., iii, No. 3, p. 461, 1916.

* *Vide* Root, Amer. Jour. of Hyg., May, 1922.

treacherii Leicester, 1908, Culic. Malaya, p. 19 (*A. treacherii*).
Loc., Fed. Malay States. Male and female described. It is doubtful if types exist, but named specimens were examined by James and Stanton, Trans. 2 Bien. Congr. F. E. A. T., M., 1912 and Paludism, v, p. 59, 1912.

5.a. A. (*Anopheles*) *aitkenii* var. *insulae florum* Swellengrebel and Swellengrebel, 1920, Meded. v. d. Burg. Geneesk. D. in Ned. Indie, addendum p. 2, in 1919, ix, following p. 118 (*Stethomyia aitkenii* var. *insulae florum*). *Loc.*, various islands in the Moluccas. *Unclassified larva No. I*, Swell. and Swell., *ibid.*, 1919, vi, p. 23 is this species, *vide* Swellengrebel, *loc. cit.* The larval characters appear to point to a distinct species but Swellengrebel's designation is retained for the present. (10)

5.b. A. (*Anopheles*) *aitkenii* var. *papuae* Swellengrebel and Swellengrebel, 1920, Meded. v. d. Burg. Geneesk. D. in Ned. Indie, addendum p. 3, in 1919, ix, following p. 118 (*Stethomyia aitkenii* var. *papuae*). *Loc.*, West New Guinea. The imago is not yet known but the larval characters indicate a distinct species rather than a variety; it is retained under Swellengrebel's designation for the present. (10).

6. A. (*Anopheles*) *algeriensis* Theobald, 1903, Mono. Cul., iii, p. 21 (*A. algeriensis*). *Loc.*, Algeria. Type female in Brit. Mus. (11)

lukisii Christophers, 1916, Indian Jour. Med. Res., iv, No. 1, p. 120, July (*A. lukisii*). *Loc.*, Amara, Mesopotamia. Female described; type in Brit. Mus. *Syn.* by Edwards Bull. Ent. Res., xii, part 3, p. 270, 1921.

7. A. (*Anopheles*) *stigmaticus* Skuse, 1889, Proc. Linn. Soc. N. S. Wales, iii, part 4, p. 1759 (*A. stigmaticus*). *Loc.*, Blue Mts., New South Wales, Australia. Male and female described (10 specimens); type in Macleay Mus., Sidney, *vide* Taylor, Proc. Linn. Soc. N. S. Wales, xxxviii, part 4, p. 747, 1913. This is provisionally placed in the subgenus *Anopheles*, the characters of the male hypopygium not being known. (13)

8. **A. (Anopheles) barberi** Coquillett, 1903, *Canad. Entom.* xxxv, No. 11, p. 310, November (*A. barberi*). *Loc.*, Maryland, United States. Described from three females; type, No. 6959, U. S. Nat. Mus., *vide* Coquillett, *ibid.* (16).
9. **A. (Anopheles) culiciformis** Cogill, 1903, *Jour. Bombay Nat. Hist. Soc.*, xv, No. 2, p. 333, October. (*A. culiciformis*). *Loc.*, Karwar, West Coast, India. Several co-types, male and female in Brit. Mus. Also described from the same locality under the same name by James and Liston, 1904, *Anop. Mosq. of India*, Ed. 1, p. 122. (18).
10. **A. (Anopheles) bifurcatus** Linnaeus, 1758, *Syst. Nat.*, Ed. 10, p. 603 (*Culex bifurcatus*). *Loc.*, Sweden. Spelt 'trifurcatus' by Fabricius, *Entom. Syst.*, p. 401, 1794. (19)
claviger Meigen, 1804, *Klass. u. Beschr.*, p. 4 (*Culex claviger*). *Loc.*, Germany. Male described. *Syn.* by Meigen, *Syst. Beschr.*, i, p. 11, 1818.
villosus Robineau-Desvoidy, 1827, *Mem. Soc. d'Hist. Nat. de Paris* (*A. villosus*). *Loc.*, Paris. Male and female described. *Syn.* by Ficalbi, *Bull. Soc. Entom. Ital.*, xxxi, p. 142, 1899.
grisescens Stephens, 1828, *Zool. Jour.* iii, p. 503 (*A. grisescens*). *Loc.*, Surrey, England. *Syn.* by Edwards, *Bull. Ent. Res.*, xii, part 3, p. 271, 1921.
antennatus Becker, 1903, *Mitt. Zool. Mus. Berlin*, ii, p. 68 (*A. antennatus*). *Loc.*, Cairo, Egypt. Male described; type in Berlin Mus. (?). *Syn.* by Edwards, *Bull. Ent. Res.*, xii, part 3, p. 271, 1921.
11. **A. (Anopheles) plumbeus** Stephens, 1828, *Zool. Jour.*, iii, p. 503. (*A. plumbeus*). *Loc.*, North of Ireland. Described without name by Haliday, *ibid.*, p. 501. (20)
nigripes Staeger, 1839, *Natur. Tidschr. (Kroyer)*, ii, p. 552 (*A. nigripes*). *Loc.*, Charlottenburg, Denmark. Female described. *Syn.* by Theobald, *Mono. Cul.*, i, p. 202, 1901.
- 11.a. **A. (Anopheles) plumbeus** var. **barianensis** James, 1911, in James and Liston, *Anop. Mosq. of India*, Ed. 2, p. 76 (*A. barianensis*). *Loc.*, Barian, near Murree, Western Himalayas, India. Female described. Type now in Brit. Mus. (20)

12. A. (*Anopheles*) *maculipennis* Meigen, 1818, Syst. Besch., p. 11 (*A. maculipennis* Hoffmgg). *Loc.*, Europe. Described as *Culex bifurcatus* L. by Meigen, Klass. u. Besch., p. 5, 1804, and as *Culex claviger* Meigen, by Fabricius, Syst. Antl. p. 35, 1805. The ascribing of many of his species and of the genus *Anopheles* by Meigen to Hoffmanssegg remains a mystery. Lang suggests that the collector was Hoffmanssegg and the name an MSS. label name, but this will not explain why Meigen places Hoffmanssegg after his genus *Anopheles*. The most probable presumption is that 'Hoffmanssegg' in some way refers to himself. (22)

lewisi Ludlow, 1920, Psyche, xxvii, No. 4, p. 74 (*A. lewisi*).

Loc., Selenga, and Verkhne Udinsk, near Lake Baikal, Siberia. Type probably in Army Med. Mus., Washington. *Syn.* by Edwards, Bull. Ent. Res., xii, part 3, p. 272, 1921. Abdomen very hairy.

selengensis Ludlow, 1920, Psyche, xxvii, No. 4, p. 77 (*A. selengensis*). *Loc.*, Selenga, near Lake Baikal, Siberia. Type probably in Army Med. Mus., Washington. *Syn.* by Edwards Bull. Ent. Res. xii, part 3, p. 272, 1921. Darker in coloration than the previous form.

- *12.a. A. (*Anopheles*) *maculipennis* var. *occidentalis* Dyar and Knab, 1906, Proc. Biol. Soc. Wash., xix, p. 159, November (*A. occidentalis*). *Loc.*, Western United States. Described from 118 specimens from California, Oregon, Idaho and Utah. Type, cat. no. 10028, U. S. Nat. Mus., *vide* Dyar and Knab, *ibid.* Though the evidence all points to the identity of this form with *A. maculipennis* I have retained it as a variety pending complete confirmation of Edwards's views, *vide* Bull. Ent. Res., xii, part 3, p. 272, 1921. *A. maculipennis* of Theobald, Canad. Entom., xxxv, p. 211, 1903, of Dyar and Knab, Proc. Entom. Soc. Wash., vi, p. 41, 1904 and Proc. U. S. Nat. Mus., xxxii, No. 1516, p. 121, 1907 and of McCracken, Entom. News, xv, p. 9, 1904 are this form, *vide* Howard, Dyar and Knab, Mosq. N. and C. Amer., iv, p. 1026, 1917. (22)

13. **A. (Anopheles) elutus** Edwards, 1921, Bull. Ent. Res., xii, part 3, p. 273, November (*A. (Anopheles) elutus*). *Loc.*, Kishon. Palestine. Type: male; Brit. Mus. *A. maculipennis* of Alcock, Jour. Lond. Sch. Trop. Med., ii, No. 3, p. 154, 1913, and many other authors referring to Mediterranean area. (21)

14. **A. (Anopheles) quadrimaculatus** Say, 1824, in Keating's Narr. of an Exped. to the Sources of the St. Peter River, etc., ii, appendix, p. 356 (*A. quadrimaculatus*). *Loc.*, North West Territory (presumably what is now Minnesota), U. S. America. Type: female; probably in Philadelphia Mus., *vide* Wiedemann, Auss. zweifl. Ins., i, p. 14, 1828.

The locality referred to by Say is presumably what is now Minnesota and as *A. quadrimaculatus*, in the sense at present understood, has been given by Howard, Dyar and Knab, Mosq. N. and C. Amer., iv, p. 1032, as recorded from the neighbouring State of Wisconsin there would not seem to be any necessity for the change of name to *A. guttulatus* as suggested, but not actually carried out, by these authors. (22)

guttulatus Harris, 1835, in Hitchcock's Rept. on Geol., Min., Bot. and Zool. of Mass., p. 595 (as probable variety of *A. quadrimaculatus* without description, *vide* Howard, Dyar and Knab, Mosq. N. and C. Amer., iv, p. 1032). *Loc.*, Massachusetts. (*nom. nud.*) *Syn.* by Howard, Dyar and Knab, *ibid.*

annulimanus Van der Wulp, 1867, Tijds. v. Entom., x, p. 129 (*A. annulimanus*). *Loc.*, Wisconsin. Male described. *Syn.* by Theobald, Mono. Cul., iv, p. 26, 1907.

15. **A. (Anopheles) walkeri** Theobald, 1901, Mono. Cul., i, p. 199 (*A. walkeri*). *Loc.*, Lake Simcoe, Ontario, Canada. Female described; type in Brit. Mus. Recently very fully re-described with genitalic and larval characters by Matheson and Shannon, Insec. Insc. Menstr., xi, Nos. 4-6, p. 57, 1923. (23)

16. **A. (Anopheles) atropos** Dyar and Knab, 1906, Proc. Biol. Soc. Wash., xix, p. 160, November (*A. atropos*). *Loc.*, Florida Keys. Described from 7 females; type, cat. no. 10029,

- U. S. Nat. Mus., *vide* Dyar and Knab, *ibid.* Recently very fully re-described with larval characters, etc., by Beyer, Amer. Jour. Trop. Med., iii, No. 4, p. 351, 1923. (23)
17. A. (**Anopheles**) **brevipalpis** Roper, 1914, Bull. Ent. Res., v, p. 141, September (*A. brevipalpis*). *Loc.*, Membakut, North Borneo. Described from four females and two males; type female in Brit. Mus. (17)
18. A. (**Anopheles**) **asiaticus** Leicester, 1904, in Theobald, Entomologist, xxxvii, No. 488, p. 13, January (*Lophoschelomyia asiatica*). *Loc.*, Ambang Jungle, Kuala Lumpur, Fed. Malay States. (26)
19. A. (**Anopheles**) **annandalei** Bains Prashad, 1918, Rec. Indian Mus., xv, part 3, p. 123, August (*A. annandalei*). *Loc.*, Sureil (5,000 ft.), Darjeeling District, Eastern Himalayas. Described from a single male; type in Indian Mus., Calcutta. *A. asiaticus* of Christophers, Indian Jour. Med. Res., iii, No. 2, p. 385, and No. 3, p. 462 is this species. (26)
20. A. (**Anopheles**) **wellingtonianus** Alcock, 1912, Jour. Lond. Sch. Trop. Med., ii, part 1, p. 1, December. (*A. (Myzorrhynchus) wellingtonianus*). *Loc.*, Larut Hills (4,000 ft.), Fed. Malay States. Described from a single female; type in Brit. Mus. (25)
21. A. (**Anopheles**) **eiseni** Coquillett, 1902, Jour. N. Y. Entom. Soc., x, No. 4, p. 192, December (*A. eiseni*). *Loc.*, Aguna (2,000 ft.), Guatemala. Described from two females and one male; type, cat. No. 6699, U. S. Nat. Mus., *vide* Coquillett, *ibid.* (30)
- niveopalpalis* Ludlow, 1919, Psyche, xxvi, No. 6, p. 166, December (*A. (Stethomyia?) niveopalpalis*). *Loc.*, Comacho, Reservoir, Empire, Canal Zone, Panama. Described from a single female. The type was examined by Dyar, presumably at Washington, *vide* Zetek, Panama Canal Species of the Genus *Anopheles*, p. 10, who confirmed Zetek's opinion that *niveopalpalis* was *eiseni*.
22. A. (**Anopheles**) **tibiamaculatus** Neiva, 1906, Brazil Medico, xx, p. 288; and Um nova especie de Anophelina Brasileira, trab. do Inst. Manguinhos (*Myzomyia tibiamaculata*). *Loc.*, Oliviera, Minas Geraes, Brazil. Female described;

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type presumably at Inst. Manguinhos. This species is sunk by Knab, Amer. Jour. Trop. Dis., i, p. 36, as a synonym of *A. eiseni*, and also by Howard, Dyar and Knab, Mosq. N. and C. Amer., iv, p. 1006 on the authority of Neiva, who examined these authors material. In the Brit. Mus. is a specimen labelled 'Brazil, Dr. Cruz, 1910' in which the apex only of the palps is pale and in which there is an extra interruption on the costa as well as some distinct white spots on some of the veins. On referring to Dr. Neiva's description I find that he makes no mention of a second palpal band and that his photograph of the wing shews apparently the same ornamentation as the British Museum specimen. The specimen unfortunately has lost the hind legs so that it cannot be certainly identified as *tibiamaculata*, but the discrepancy in Neiva's description with that of *eiseni* and the fact that one species comes from Brazil and the other from Central America has made me for the present retain Neiva's species. The proper position of *tibiamaculata* may, however, be in the subgenus *Nyssorhynchus* near *A. gilesi*, a species with apparently very similar tibial ornamentation. (30)

23. **A. (Anopheles) atratipes** Skuse, 1889, Proc. Linn. Soc. N. S. Wales., iii, part 4, p. 1755 (*A. atratipes*). *Loc.*, Berowra, N. S. Wales, Australia. Male and female types in Macleay Mus., Sidney, *vide* Taylor, Proc. Linn. Soc. N. S. Wales, xxxviii, part 4, p. 747, 1913. (41)

24. **A. (Anopheles) lindesaii** Giles, 1900, Handb. of Gnats or Mosq., Ed. 1, p. 166 (*A. lindesaii*). *Loc.*, Bakloh, Western Himalayas. Type female in Brit. Mus. (28)

maculata Theobald, 1910, Rec. Indian Mus., iv, No. 1, p. 1 (*A. lindesayi* var. *maculata*). *Loc.*, Kurseong, Darjeeling District, Eastern Himalayas (5,000 ft.). Described from a single female; type in Indian Mus., Calcutta. Examination of the type shews this to be *A. lindesaii* type form.

pleccau Koidzumi, original description in Japanese, ref. in Trans. of the 5th Congr. F.E.A.T.M., at Singapore, 1923, p. 97, 1914. Examination of a specimen in the Brit. Mus., labelled by Koidzumi,

shews this to have wing markings of the type form of *A. lindesaii*.

- 24.a. **A. (Anopheles) lindesaii** var. **nilgiricus** Christophers, 1924, Indian Jour. Med. Res., xii, No. 1, p. 13. *Loc.*, Nilgiri Hills, South India. Type: male and female in Brit. Mus. (28)
25. **A. (Anopheles) gigas** Giles, 1901, Ent. Month. Mag., ser. 2, No. 140, p. 196, August (*A. gigas*). *Loc.*, Coonoor, Nilgiri Hills, South India (6,000 ft.). One male and two female co-types in Brit. Mus. (37)
- 25.a. **A. (Anopheles) gigas** var. **simlensis** James, 1911, in James and Liston, Anop. Mosq. of India, Ed. 2, p. 66 (*Patagiamyia simlensis*). *Loc.*, Simla, Western Himalayas (7,000 ft.). Type: male in Brit. Mus. (37)
- 25.b. **A. (Anopheles) gigas** var. **refutans** Alcock, 1913, Jour. London Sch. Trop. Med., ii, part 3, p. 161, November (*A. gigas* var. *refutans*). *Loc.*, Hills of Ceylon. Possibly identical with the Southern Indian form but retained pending further information. (38)
- 25.c. **A. (Anopheles) gigas** var. **formosus** Ludlow, 1909, Canad. Entom., xli, No. 1, p. 22, January (*A. formosus*). *Loc.*, Camp John Hay, Benguet (high mountainous region), Philippine Islands. Female described. (38)
26. **A. (Anopheles) punctipennis** Say, 1823, Jour. Acad. Nat. Sci. of Philad., iii, part 1, p. 9 (*Culex punctipennis*). *Loc.*, United States. Described as *A. crucians* (in part) by Osten Sacken, Smiths. Misc. Coll., xvi, p. 2, 1858, and Cat. North Amer. Dipt., Ed. 2, Smiths. Misc. Coll., No. 270, p. 19, 1878, *vide* Howard, Dyar and Knab, Mosq. N. and C. Amer., iv, p. 1009. (42)
- hyemalis* Fitch, 1847, Amer. Jour. Agric. and Sci., v, p. 281 (*Culex hyemalis*). *Loc.*, New York. Type: was in Brit. Mus., *vide* Theobald, Mono. Cul., i, p. 190. *Syn.* by Theobald, *ibid.*, 1901.
- perplexens* Ludlow, 1907, Canad. Entom., xxxix, No. 8, p. 267, August (*A. perplexens*). *Loc.*, Camp Roosevelt, Mt. Gretna, Pennsylvania, United States. Described from a single female. *Syn.* by Howard, Dyar and Knab, Mosq. N. and C. Amer., iv, 1014,

- 1917, by one of whom the type has been examined and noted as a dark variation of *A. punctipennis*.
27. A. (**Anopheles**) **pseudopunctipennis** Theobald, 1901, Mono. Cul., ii, p. 305. *Loc.*, Grenada (? Nicaragua, *vide* Howard, Dyar and Knab, Mosq. N. and C. Amer., iv, p. 1023). Described from two balsam specimens, male and female. Given in Pl. VI, fig. 24, as *A. punctipennis* var. *A. A. punctipennis* of Howard, U. S. Dept. Agric., Div. Ent., Bull. 25 n. s., p. 44, 1900, is this species, *vide* Howard, Dyar and Knab *loc. cit.*, p. 1014. (42)
- franciscanus* McCracken, 1904, Entom. News, January, p. 12 (*A. franciscanus*). *Loc.*, San Francisco, California. Male and female described. Type possibly in Entom. Lab. of Stanford University. Referred to as *A. franciscanus* Kellog, by Giles, Rev. Anop., p. 25, 1904. *Syn.* by Howard, Dyar and Knab, *loc. cit.*, 1917.
- peruvianus* Tamayo and Garcia, 1907, Los aguas de Huacachina, Mem. Munic., Lima, app., p. 35 (*A. peruvianus*). *Loc.*, Huacachina, San Pedro de Lloc, Lima, Chanchamayo, in Peru. *Syn.* by Howard, Dyar and Knab, *loc. cit.*, p. 1015, 1917.
- tucumanus* Lahille, 1912, Anal. Mus. Nac. Buenos Aires, xxiii, p. 253 (*A. tucumanus*). *Loc.*, Tucuman, Argentine. *Syn.* by Knab, Amer. Jour. Trop. Dis., i, No. 3, p. 227, September, 1913 (not of *A. punctipennis* as given by this author, *ibid.*, No. 1, p. 36, July, 1913).
- argentinus* Brethes, 1912, Bol. Inst. Ent. y Pat. Veg., i, p. 15 (*Proterorhynchus argentinus*). *Loc.*, North Tucuman, Salta and Jujuy in North Argentine. *Syn.* by Neiva and Barbara, La Prensa Med. Argentina, 10 December, 1915.
28. A. (**Anopheles**) **crucians** Wiedemann, 1828, Auss. zweifl. Ins., i, p. 12 (*A. crucians*). *Loc.*, Pennsylvania and New Orleans. Howard, Dyar and Knab note that Wiedemann confused *A. crucians* and *A. punctipennis*, and Wiedemann himself gives *A. punctipennis* Say as synonymous with his own species. Type in Nat. Hist. Mus., Vienna, *vide*

Coquillett, U. S. Dept. Agric., Bur. Ent., Tech. Ser., No. 11, p. 7, 1906. (41)

29. A. (**Anopheles**) **mauritanus** Daruty and d'Emmerez, 1900, Les Moustiques, Port Louis, Mauritius (*A. mauritanus*). *Loc.*, Mauritius. (47)

paludis Theobald, 1900, Repts. Malar. Comm. Roy. Soc., p. 75, July (*A. paludis*). *Loc.*, Sierra Leone, West Africa. Described from three females; type in Brit. Mus. *Syn.* by Edwards, Bull. Ent. Res., iii, part 3, p. 250, 1912 (dependent, however, on priority of publication of Daruty and d'Emmerez treatise, the month of publication of this not being known. There seems no evidence at present that the forms with and without the dark band on the tarsus have any geographical significance or represent true local varieties.

similis Theobald, 1901, Mono. Cul., i, p. 129 (*A. paludis* var. *similis*). *Loc.*, Salisbury Mashonaland. Type: male and female in Brit. Mus. *Syn.* by Theobald, Mono. Cul., iii, p. 85, 1903.

tenebrosus Donitz, 1902, Zeits. f. Hyg., xli, p. 53 (*A. tenebrosus*). *Loc.*, Wadi Natrun, near Alexandria, Egypt. *Syn.* by Theobald, Mono. Cul., iii, p. 85, 1903.

ziemanni Grunberg, 1902, Zool. Anz., xxv, No. 677, p. 550, July (*A. ziemanni*). *Loc.*, Wuri, Cameroons. Described from two females. *Syn.* by Theobald, Mono. Cul., v, p. 54, 1910.

- 29.a. A. (**Anopheles**) **mauritanus** var. **coustani** Laveran, 1900, C. R. Soc. de Biol., lii, p. 109, 3rd February (*A. coustani*). *Loc.*, Tananarive, Madagascar, *vide* Dye, Arch. de Parasit., vi, p. 359, 1902. Stated by both Laveran and Dye to have unbanded palpi in the female; the wings according to the latter have the veins five and six nearly all dark scaled. In view of Edwards, Bull. Ent. Res., xi, part 2, p. 133, 1920, having recorded only *A. mauritanus* among Neiret's, Bouet's and Ventrillon's material some doubt must be felt as to this being a distinct species or variety. Should it be shewn that *coustani* is synonymous with *mauritanus* the name should probably be given priority. Pending further

knowledge of Madagascan species and the date of publication of Daruty and d'Emmerez, *Les Moustiques, coustani* is retained as a variety. (50)

30. A. (*Anopheles*) *hyrcanus* Pallas, 1771, Reise d. versch. Prov. des. Russ. Reichs., i, p. 475, St. Petersburg (*Culex hyrcanus*). *Loc.*, salt marshes about the Caspian. Following Edwards, Bull. Ent. Res., x, part 2, p. 129, 1920, the description may be assumed to be of this species. (48)
- 30.a. A. (*Anopheles*) *hyrcanus* var. *pseudopictus* Grassi, 1899, in Grassi, Bignami and Bastianelli, Atti d.R. Accad. d. Lincei, ser. 5, viii, p. 102, February (*A. pseudopictus*). *Loc.*, Italy. Until more is known of the type form this is best retained as a variety. (48)
- ? *pictus* Loew, 1845, Dipt. Beitr., i, p. 4. Posen (*A. pictus*). *Loc.*, Island of Rhodes, coast of Asia Minor (male), Tombolo, Tuscany, Italy (female), *vide* Ficalbi, Rev. Sist. Culic. Europ., p. 224, 1896. Loew's description certainly seems to be that of a male *hyrcanus*, but in view of the doubt it seems unnecessary to change the generally accepted nomenclature. The *pictus* of Ficalbi, Venti Spec. d. Zanzare, 1899, also comes here.
- 30.b. A. (*Anopheles*) *hyrcanus* var. *mesopotamiae* Christophers and Khazan Chand, 1915, Indian Jour. Med. Res., iii, No. 1, p. 196, July (*A. sinensis* var. *mesopotamiae*). *Loc.*, Busra, Mesopotamia. Type: female in Brit. Mus. The variety is retained provisionally. (48)
- 30.c. A. (*Anopheles*) *hyrcanus* var. *flerowi* Portchinsky, ref. by Vassiliev, *vide* Rev. App. Entom., i, p. 196 (*A. pseudopictus* Grassi var. *flerowi*). *Loc.*, Vassiliev records this variety as having been found by himself in Russian Turkestan. I have not seen any description and the variety is retained provisionally. (48)
- 30.d. A. (*Anopheles*) *hyrcanus* var. *sinensis* Wiedemann, 1828, Auss. zweifl. Ins., p. 547 (*A. sinensis*). *Loc.*, China. Male and female described. The application of the description is not very certain, but the usual acceptance may be followed that it refers to the form with the Oriental type

of female palpi but with a somewhat well marked subcostal interruption on the costa, *vide* under 30.e. (48)

jesoensis Tsuzuky, 1902, Cent. f. Bakt., Abt. I, Orig., xxxi, h. 15, p. 764, June (*A. jesoensis*). *Loc.*, Island of Yezo, Japan (lat. 44 N.). *Syn.* by Theobald, Mono. Cul., iv, p. 86, 1907.

30.e. A. (**Anopheles**) **hyrcanus** var. **nigerrimus** Giles, 1900, Handb. of Gnats or Mosq., Ed. 1, p. 161 (*A. nigerrimus*). *Loc.*, Calcutta, India. Female described; type female in Brit. Mus. Called by Giles, *ibid.*, also '*Anopheles* sp. *b* from Calcutta'. *Anopheles II* of Schuffner, Zeit. f. Hyg., xli, p. 92, 1902, is probably this species. *Nec. vanus*, *vide* No. 39 of this catalogue. From the synopsis it will be seen that two main forms may possibly be distinguished under *A. hyrcanus*, an Oriental form with relatively narrow banding of the female palpi and possibly larger palmate hairs in the larva and a Mediterranean form. Provisionally *pseudopictus*, *mesopotamica* and *flerowi* may be considered as belonging to the former and *sinensis* and *nigerrimus* to the latter. (48)

? *nero* Doleschall, 1851, Nat. Tijds. v. Ned. Indie, xiv, p. 383 (*Culex nero*). *Loc.*, Gombong, Middle Java. *Vide* Edwards, Indian Jour. Med. Res., x, No. 2, p. 473, 1922.

plumiger Donitz, 1901, Insectenborse, xviii, p. 37 (*A. plumiger*). *Loc.*, Hong Kong. *Syn.* by Theobald, Mono. Cul., v, p. 51, 1910.

indiensis Theobald, 1901, Mono. Cul., i, p. 145 (*A. sinensis* sub-species *indiensis*). *Loc.*, Madras, A. specimen under this head in the Brit. Mus. is labelled '*Anopheles annularis* var. *alboannulatus* (type) Theobald.'

bentleyi Bentley, 1902, Indian Med. Gaz., xxxvii, p. 15, January (*A. bentleyi*). *Loc.*, Tezpur, Assam, India.

minutus Theobald, 1903, Mono. Cul., iii, p. 91 (*Myzorhynchus minutus*). *Loc.*, Lahore, Punjab, India. Described from a single female; type in Brit. Mus. *Syn.* by James and Liston, Anop. Mosq. of India, Ed. 2, p. 120, 1911.

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- 30.f. **A. (Anopheles) hyrcanus** var. **peditaeniatus** Leicester, 1908, *Culic. of Malaya*, p. 31 (*Myzorhynchus peditaeniatus*). *Loc.*, Fed. Malay States. Male and female described; female co-type in Brit. Mus. This is retained provisionally in view of Leicester's very definite statement in regard to the larva. (48)
- 30.g. **A. (Anopheles) hyrcanus** var. **argyropus** Swellengrebel, 1914, *Geneesk. Tijds. v. Ned. Indie*, liv, p. 334 (*Myzorhynchus argyropus*). *Loc.*, Java. This is retained provisionally pending more certain information whether it is to be regarded as a variant of var. *nigerrimus* or distinct. (48)
32. **A. (Anopheles) punctibasis** Edwards, 1921, *Bull. Ent. Res.*, xii, part 3, p. 274, November (*A. (Anopheles) punctibasis*). *Loc.*, Nagasaki, Japan. Type: male with one male and five female paratypes in Brit. Mus. A variety is also described with some banding of the female palpi. (43)
33. **A. (Anopheles) albotaeniatus** Theobald, 1903, *Mono. Cul.*, iii, p. 88 (*Myzorhynchus albotaeniatus*). *Loc.*, Perak, Fed. Malay States. Type: female in Brit. Mus. Spelt 'alboannulatus' by James and Liston, *Anop. Mosq. of India*, Ed. 1, p. 81. (50)
I have seen only females of this form, but it seems likely to be distinct from the better known var. *montanus*.
- ? *brachypus* Donitz, 1902, *Zeit. f. Hyg.*, xli, p. 52 (*A. brachypus*).
Loc., presumably oriental but not definitely so stated. The description suggests some form of *albotaeniatus* or var. *peditaeniatus*.
34. **A. (Anopheles) montanus** Stanton and Hacker, 1917, *Bull. Ent. Res.*, vii; part 3, p. 273, January (*A. albotaeniatus* var. *montanus*). *Loc.*, Fed. Malay States. Male and female described. Paratypes in Brit. Mus., and Malaria Bureau F.M.S. (50)
35. **A. (Anopheles) separatus** Leicester, 1908, *Culic. of Malaya*, p. 36 (*Myzorhynchus separatus*). *Loc.*, Kuala Lumpur, Fed. Malay States. Specimens apparently of this species labelled '*Myzomyia dubitans*, Kuala Lumpur, Dr. G. F. Leicester' in Brit. Mus. (45)

- hunteri* Strickland, 1916, Indian Jour. Med. Res., iv, No. 2, p. 263, October (*Myzorhynchus hunteri*). *Loc.*, Tebong, Negri Sembilan, Bandar Penggaram and Sungei Simpang Kanan in Jahore State, F.M.S. Male and female described. *Syn.* by Edwards, in Hacker F.M.S. Malaria Bureau Repts., ii, p.1, November 1920.
- snijdersi* Swellengrebel, 1921, Anop. v. Ned. Oost-Indie, Kolon. Inst. Amsterd., xv, No. 10, p. 114 (*A. sinensis* var. *snijdersi*). *Loc.*, Medan, Sumatra. Male described. The figure of the wing and the leaflets of the phallosome given by Swellengrebel are similar to those of *separatus* as accepted by Hacker and Edwards (*hunteri*); the interruptions on the costa in *separatus* are noticeably broad in the male.
36. **A. (Anopheles) umbrosus** Theobald, 1903, Mono. Cul., iii, p. 87 (*A. umbrosus*). *Loc.*, Pekan, Pahang, Fed. Malay States. Female described; type in Brit. Mus. (54)
- similis* Strickland, 1917, Indian Jour. Med. Res., iv, No. 3, p. 611 (*Myzorhynchus similis*). *Loc.*, Fed. Malay States. Female described as indistinguishable from *umbrosus*, but outer clypeal hairs of larva like those of *A. sinensis*. If confirmed as a species it will require a new name as *similis* is preoccupied by *similis* Theo. (*paludis* var. *similis* 1901).
- 36.a. **A. (Anopheles) umbrosus** var. Swellengrebel and Swellengrebel, 1919, Meded, v. d. Burg, Geneesk. D. in Ned. Indie, 1919, d. vi, p. 16 (*A. umbrosus* var.). *Loc.*, Dutch East Indies. Outer clypeal hair more branched and frequents brackish water. (54)
37. **A. (Anopheles) novumbrosus** Strickland, 1916, Indian Jour. Med. Res., iv, No. 2, p. 271, Oct. (*Myzorhynchus novumbrosus*). *Loc.*, Fed. Malay States. Male and female described. The leaflets of the phallosome are unlike those of any other *Anopheles* being longer than the phallosome itself and hair like. (53)
38. **A. (Anopheles) obscurus** Grunberg, 1905, Zool. Anz., xxix, No. 12, p. 380, Sept. (*Myzorhynchus obscurus*). *Loc.*,

Cameroons, West Africa. Described from single female. Sunk as *umbrosus* by Edwards, Bull. Ent. Res., iii, part 3, p. 250, 1912, *vide* also Alcock, Jour. London Sch. Trop. Med., ii, part 3, p. 154, 1913, but the examination of the hypopygium of a male specimen from Yasuba, Congo, taken by Drs. Dutton and Todd, in the Liverpool Sch. of Trop. Med. shews the leaflets of the phallosome to be large, rather resembling those of *A. barbirostris*. The abdomen of this specimen is devoid of white scales ventrally as in *A. barbirostris* and there is no admixture of pale scales on the femora. This African species is therefore distinct from either *umbrosus*, *barbirostris* or *bancrofti* and must be considered a definite species, presumably that described by Grunberg. (54)

39. **A. (Anopheles) barbirostris** Van der Wulp, 1884, Notes from the Leyden Museum, vi, No. 4, p. 248 (*A. barbirostris*). *Loc.*, Mount Ardjoeno, East Java. Described from a single female. (52)

? *vanus* Walker, 1860, Jour. Proc. Linn. Soc., Zool., iv, p. 91 (*A. vanus*). *Loc.*, Makessar, Celebes. Male described. A male and female specimen labelled as from Walker's series are to be seen in the Brit. Mus., the female appears to be either *A. barbirostris* or *A. bancrofti*. If shewn with certainty to be either the name *vanus* would have precedence; for the present no change seems necessitated.

40. **A. (Anopheles) bancrofti** Giles, 1902, Handb. of Gnats or Mosq., Ed. 2, p. 511 (*A. bancrofti*). *Loc.*, Bupengarry, Queensland. Female described; type in Brit. Mus. (52)

pseudobarbirostris Ludlow, 1902, Jour. N. Y. Entom. Soc., x, No. 3, p. 129, Sept. (*A. pseudobarbirostris*). *Loc.*, Hagonoy, Bulacan, Luzon, Philippine Islands. Female described. The description leaves no doubt that this is *A. bancrofti*.

pallidus Swellengrebel and Swellengrebel, 1919, Meded. v. d. Geneesk. D. in Ned. Indie, vi, p. 21 (*Myzorhynchus barbirostris* var. *pallidus*). *Loc.*, Dutch East Indies. The characters of the wing, etc., appear identical with those of *A. bancrofti*; the name is in any

case invalid as preoccupied by *A. pallidus* Theo. 1901.

41. **A. (Anopheles) vestitipennis** Dyar and Knab, 1906, Proc. Biol. Soc. Wash., xix, p. 136 (*A. vestitipennis*). *Loc.*, Guatemala, Mexico and Cuba. Described from 23 specimens; type, cat. no. 9976, U. S. Nat. Mus., *vide* Dyar and Knab, *ibid.* Described as *A. maculipes* by Pazos, San. y Ben., ii, p. 45, 180, 1909, *vide* Howard, Dyar and Knab, Mosq. N. and C. Amer., iv, p. 989, 1917. (32)
42. **A. (Anopheles) amazonicus** Christophers, 1923, Ann. Trop. Med. and Par., xvii, No. 1, p. 71, April (*A. amazonicus*). *Loc.*, River Amazon. Described from three females; type and two paratypes in Liverpool Sch. Trop. Med. (33)
43. **A. (Anopheles) mattogrossensis** Lutz and Neiva, 1911, Mem. Inst. Osw. Cruz, iii, fas. 2, p. 297 (*A. mattogrossensis*). *Loc.*, Matto Grosso, Brazil. (34)
44. **A. (Anopheles) grabhamii** Theobald, 1901, Mono. Cul., i, p. 205 (*A. grabhamii*). *Loc.*, Kingston, Jamaica. Described from a single broken specimen noted as mounted in fragments on slide No. 27 by Theobald, *ibid.*; presumably in Brit. Mus. (31)
45. **A. (Anopheles) rockefelleri** Peryassu, 1923, A. Folha Medica, iv, No. 9, p. 68, May (*Cyclolepidopteron rockefelleri*). *Loc.*, Brazil. (31)

[(b) Group **Christya**.*]

46. **A. (Anopheles) implexa** Theobald, 1903, Rept. Sleeping Sickness Comm., No. iii, p. 34, Nov. (*Christya implexa*). *Loc.*, various localities north of Victoria Nyanza, Central Africa. Described from a damaged female taken by Dr. Christy in August 1902, and the description completed from a specimen taken by Dr. Hodges in the same area in June 1903. Female type in Brit. Mus. (Uganda, Dr. Hodges). The hypopygeal characters are unknown and the species is placed in the sub-genus *Anopheles* provisionally. The unusual condition of basal tarsal

* NOTE.—Position in sub-genus *Anopheles* provisional, *vide* remarks under *A. implexa*, No. 46 of this catalogue.

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banding is only seen otherwise in *Chagasia*, a group to which *implexa* may actually be related. (55)

[(c) Group **Arribalzagia** Root 1922*]

47. **A. (Anopheles) annulipalpis** F. Lynch Arribalzagia, 1878, El Naturalista Argent., i, p. 149 (*A. annulipalpis*). *Loc.*, Baradero y Las Conchas near Buenos Aires, Argentine. Spelt '*annulipes*' by Theobald, Mono. Cul., v, p. 84, 1910. (60)
- maculipes* Theobald, 1903, Mono. Cul., iii, p. 81 (*Arribalzagia maculipes*). *Loc.*, Sao Paulo, Brazil, Described from a single female; type in Brit. Mus. *Syn.* by Brethes, Anales Mus. Nac., Buenos Aires, xxviii, p. 200, 1916.
48. **A. (Anopheles) mediopunctatus** Theobald, 1903, Mono. Cul., iii, p. 60 (*Cyclolepteron mediopunctatus*). *Loc.*, Sao Paulo, Brazil. Described from a single male; type in Brit. Mus. (57)
49. **A. (Anopheles) pseudomaculipes** Chagas, 1908, in Peryassu, Os Culic. do Brazil, p. 108 (*Arribalzagia pseudomaculipes*). *Loc.*, Xerem, Rio de Janeiro, Brazil.
50. **A. (Anopheles) apicimacula** Dyar and Knab, 1906, Proc. Biol. Soc. Wash., xix, p. 136 (*A. apicimacula*). *Loc.*, Livingston, Guatemala; Cordoba, Mexico; Colon, Panama; Trinidad, West Indies. Described from twenty-six specimens from the above localities; type, cat. no. 9979, U. S. Nat. Mus., *vide* Dyar and Knab, *ibid.* Referred to as *A. maculipes* Theo. by Coquillett, U. S. Dept. Agric., Bur. Ent., Tech. ser. No. 11, p. 13, 1906, and by Dyar and Knab, Jour. N. Y. Ent. Soc., xiv, No. 4, p. 176, 1906, *vide* Howard, Dyar and Knab, Mosq. N. and C. Amer., iv, p. 995, 1917. (59)
51. **A. (Anopheles) punctimacula** Dyar and Knab, 1906, Proc. Biol. Soc. Wash., xix, p. 136 (*A. punctimacula*). *Loc.*, Colon, Panama. Described from a single specimen; type, cat. no. 9979, U. S. Nat. Mus., *vide* Dyar and Knab, *ibid.* (61)

* *Vide* Root, Amer. Jour. of Hyg., May, 1922.

malefactor Dyar and Knab, 1907, Jour. N. Y. Entom. Soc., xv, No. 4, p. 198, Dec. (*A. malefactor*). *Loc.*, Chagres River, Panama; Gatun Canal, Panama. Described from seven specimens male and female; type, cat. no. 10877, U. S. Nat. Mus., *vide* Dyar and Knab, *ibid. Syn.* by Dyar, Insec. Insc. Menstr., vi, p. 147, 1918.

venezuelae Evans, 1922. Ann. Trop. Med. and Par., xiv, No. 2, p. 214, July (*A. (Arribalzagia) venezuelae*). *Loc.*, La Cabrera, Estado Carabobo, Venezuela. Described from a single female; type in Liverpool Sch. of Trop. Med. *Syn.* by Evans, Ann. Trop. Med. and Par., xvii, No. 1, p. 101, 1923.

*51.a. A. (*Anopheles*) *punctimacula* var. *strigimacula* Dyar and Knab, 1906, Proc. Biol. Soc. Wash., xix, p. 136 (*A. strigimacula*). *Loc.*, Cordoba, Mexico. Described from a single specimen; type, cat. no. 9977, U. S. Nat. Mus., *vide* Dyar and Knab, *ibid.* Referred to as *A. mediopunctatus* Theo. by Coquillett, U. S. Dept. Agric., Bur. Ent., Tech. ser. No. 11, p. 13, 1906 and by Dyar and Knab, Jour. N. Y. Entom. Soc., xiv, No. 4, p. 176, 1906, *vide* Howard, Dyar and Knab, Mosq. N. and C. Amer., iv, p. 998, 1917. This may possibly be a distinct species, but it is difficult with the data available to differentiate from *punctimacula* of which it is here retained as a variety. (62)

*51.b. A. (*Anopheles*) var. *intermedius* Chagas, 1908, in Peryassu, Os Culic. do Brazil, p. 85 (*Cyclolepteron intermedium*). *Loc.*, Rio de Janeiro, Brazil. This species seems to be very close to *A. punctimacula* of which it is retained as a variety. (62)

52. A. (*Anopheles*) *peryassui* Dyar and Knab, 1909, Proc. U. S. Nat. Mus., xxxv (*A. peryassui*); to replace *Manguinhosia lutzi* Cruz 1907, as below, preoccupied by *A. lutzi* Cruz 1901 (No. 61 of this catalogue). The hypopygeal characters of this species are unknown, but it appears from its characters to belong to the subgenus *Anopheles* rather than subgenus *Nyssorhynchus*; its present position may require revision. (56)

lutzi Cruz, 1907, Brazil, Medico, xxi, No. 28, p. 271, July (*Manguinhosia lutzi*). *Loc.*, margins of River Bicudo, Minas geraes, Brazil. *Syn.* by Dyar and Knab, *loc. cit.* as preoccupied.

4. Subgenus **NYSSORHYNCHUS** Blanchard 1902.

Blanchard, C. R. Soc. de Biol., liv, No. 23, p. 795, July 1902.

Genotype: *A. argyritarsis* Rob. Desv., by Theobald, Jour. Trop. Med. and Hyg., v, p. 183, 1902 (as *A. argyrotarsis* Rob. Desv.), by original designation for genus *Laverania* preoccupied, *vide* Blanchard *loc. cit.*

Laverania, Theobald, 1902, Jour. Trop. Med. and Hyg., v, p. 183, June. Genotype: *A. argyritarsis* Rob. Desv. (as *A. argyrotarsis* Rob. Desv.), by Theobald, *ibid.*, by original designation. Theobald later, Mono. Cul., iii, p. 14, 1903, gave *A. maculatus* Theo., as the type species of *Nyssorhynchus*, but the originally designated type species has precedence. Genus invalid by Blanchard, *loc. cit.*, as name preoccupied by *Laverania* Grassi and Feletti, 1890.

Kerteszia, Theobald, 1905, Ann. Mus. Nat. Hung., iii, p. 66. Genotype: *A. boliviensis* Theo. (as *K. boliviensis* Theo.) by Theobald, *ibid.*, by original designation.

Manguinhosia, Cruz, 1907, Brazil Medico, Anno xxi, No. 28, p. 271, July. Genotype: *A. peryassui* Dyar and Knab (as *Manguinhosia lutzi* Cruz), by Cruz, *ibid.*, by original designation.

Myzorhynchella, Theobald, 1907, Mono. Cul., iv, p. 78. Genotype: *A. lutzii* Cruz (as *Myzorhynchella nigra* Theo.), by Theobald, *ibid.*, by original designation.

Dendropaedium, Dyar and Knab, 1918, Insec. Insc. Menstr., vi, p. 141, July-Sept. Genotype: *A. bellator* Dyar and Knab (as the species *bellator*, *cruzei*, *hylephilus* and *neivai* now considered conspecific), by Dyar and Knab, *ibid.*, by original designation.

[(a) Group **Nyssorhynchus**, Root, 1922* (New World *Cellia* of authors)].

53. A. (**Nyssorhynchus**) **argyritarsis** Robineau-Desvoidy, 1827, Mem. Soc. d'Hist. Nat. de Paris, iii, p. 411 (*A. argyritarsis*). *Loc.*, Brazil. *Albimanus* of Neveu-Lemaire, Arch. d. Parasit., vi, p. 613, 1902, of Blanchard, Les Moustiques p. 202, 1905, of Autran, Anal. Dep. Nac. Hig., xiv, p. 8, 1907, of Surcouf and Gonzalez Rincones, Arch. de Parasit., xv, p. 273, 1912, are this species, *vide* Howard, Dyar and Knab, Mosq. N. and C. Amer., iv, p. 975; *argyrotarsis* of many authors. (69)

pictipennis Philippi, 1865, Verh. d. Zool. Bot. Gesellsch. in Wien, xv, p. 596 (*Culex pictipennis*). *Loc.*, Chili. Theobald, Mono. Cul., i, p. 137, notes that a single female specimen, then in Mr. Verral's collection, was sent by Bigot labelled '*Anopheles punctipennis*, n. sp. 1874, Chili.' It seems possible this was meant to be *A. pictipennis*, and the date (1874) suggests it may have been from an original batch of specimens labelled in accordance with Philippi's species. The description of *A. bigotii*, the name given to this specimen by Theobald, is in every detail that of *A. argyritarsis*. *Syn.* (as *A. albitarsis* Arr.) by Petrocchi, Rev. Inst. Bact., Buenos Aires, ii, No. 3 October, 1919, *vide* Rev. App. Ent., viii, p. 107.

albitarsis F. Lynch Arribalzagia, 1878, El Naturalista Argent., i, p. 151 (*A. albitarsis*). *Loc.*, Baradero and Las Conchas, near Buenos Aires, Argentine. *Syn.* (of *A. pictipennis*) by Knab, Amer. Jour. Trop. Dis., i, No. 3, p. 227, 1913, and (of *A. argyritarsis*) by Petrocchi *loc. cit.*

bigotii Theobald, 1901, Mono. Cul., i, p. 135 (*A. bigotii*). *Loc.*, Chili. Described from a single female, as mentioned under *A. pictipennis* above. The description is that of *A. argyritarsis*.

albitarsis Goeldi, 1905, Os Mosq. no Para, p. 133 (*A. argyrotarsis* var. *albitarsis*). *Loc.*, Brazil. This was

* *Vide* Root, Amer. Jour. of Hyg., May, 1922.

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Goeldi's typical form as against what he took to be var. *albipes* Theo., for which he suggested the name var. *tarsimaculata* (*vide* No. 54.a. of this catalogue).

albitarsis Aiken, 1907, Brit. Guiana Med. Annual, 1906, p. 66 (*Cellia albitarsis*). *Loc.*, British Guiana. *Syn.* by Howard, Dyar and Knab, *loc. cit.*, p. 967.

* 53.a. **A. (Nyssorhynchus) argyritarsis** var. **braziliensis**† Chagas, 1907, *Novas especies de Culicidios Brazileros*, trab. do Inst. Manguinhos, p. 18 (*Cellia braziliensis*). *Loc.*, Rio das Velhas, Minas Geraes, Brazil. Considered by Bonne, Bull. Soc. Path. Exot., xvii, No. 2, p. 133, 1924, to be a varietal form only. Specimens received from Brazil, very kindly sent by Dr. Lutz, suggest a distinct species, but on Dr. Bonne's authority it is provisionally given as a variety. This form has lateral tufts, but very marked white scaling of the last segment of the abdomen. (69)

*53.b. **A. (Nyssorhynchus) argyritarsis** var. **allopha**,† Peryassu. Also given by Bonne, *loc. cit.*, as a varietal form. This has no lateral scale tufts on the abdomen. (69)

54. **A. (Nyssorhynchus) albimanus** Wiedemann, 1821, Dipt. Exot., i, p. 10 (*A. albimanus*). *Loc.*, St. Domingo, Greater Antilles, West Indies. Female described: type in Nat. Hist. Mus., Vienna, *vide* Coquillett, U. S. Dept. Agric., Bur. Ent., Tech. ser., No. 11, p. 7, 1906. *A. argyritarsis* of Howard, Mosquitoes, p. 117, 240, 1901, of Stephens and Christophers, Prac. Study of Mal., 1903; *A. albipes* of Taylor, Rev. de Med. Trop., iv, 1903, of Parker, Beyer and Pothier, Yellow Fever Inst., Bull. 13, p. 38, 1903, of Giles, Revis. Anop., p. 46, 1904, of Pazos, Bull. Soc. Ent. France, p. 134, 1904, of Goeldi, Os Mosq. no Para, p. 129, 1905, of Felt, New York State Mus., Bull. 97, p. 470, 1905, of Coronado, Agramonte and Agostini, Rev. Assoc. Med. Farm. de Cuba, p. 27 of reprint, 1906, of Dyar and Knab,

† NOTE.—The placing of a number of the South American species as varieties must be regarded as a provisional arrangement to indicate their general affinities. It is very probable that some at least so placed are good species.

Jour. N. Y. Entom. Soc., xiv, p. 175, 1906, of Howard, in Osler's Mod. Med., and of Prout, Ann. Trop. Med. and Par., iii, p. 487, 1909, *vide* Howard, Dyar and Knab. Mosq. N. and C. Amer., iv, p. 979. (67)

cubensis Agramonte, 1900. El Progreso Medico, x, p. 460 (*A. cubensis*). *Loc.*, Quemados, Campamento de Columbia, Cuba, West Indies. *Syn.* by Coquillett, U. S. Dept. Agric., Bur. Ent., Tech. ser., No. 11, p. 13, 1906.

dubius Theobald, 1900, Repts. Mal. Comm. Roy. Soc., p. 76. Ref. by Theobald to *dubius* mihi, in description of *A. paludis*; presumably unpublished MSS name for the species he afterwards described as var. *albipes*, given by Blanchard, Les Moustiques, p. 205, 1905, and untraceable by Howard, Dyar and Knab, *loc. cit.*, p. 984.

albipes Theobald, 1901, Mono. Cul., i, p. 125 (*A. argyrotarsis* var. *albipes*). *Loc.*, Jamaica. Male and female described; type in Brit. Mus. *Syn.* by Coquillett, U. S. Dept. Agric., Bur. Ent., Tech. ser., No. 11, p. 7, 1906.

55. A. (*Nyssorhynchus*) *tarsimaculatus** Goeldi, 1905, Os Mosq. no Para, p. 133 (*Cellia argyrotarsis* var. *albipes* (*tarsimaculata*). *Loc.*, Para, Brazil, Referred to (in part) by Coquillett, U. S. Dept. Agric., Bur. Ent., Tech. ser. No. 11, p. 13, 1906, as *A. albimanus*; also the *A. albimanus* of Theobald, Mono. Cul., iv, p. 106, 1907; of Neiva, Mem. Inst. Osw. Cruz, i, p. 69, 1909; of Newstead and Thomas, Ann. Trop. Med. and Par., iv, p. 142, 1910; of Nichols, Bull. Ent. Res., iii, p. 252, 1912; of Surcouf and Gonzalez Rincones. Arch. de Parasit., xv, p. 274, 1912, *A. argyritarsis* of Durham, Thompson Yates Lab. Repts, iv, p. 534, 1902; *A. cubensis* of Blanchard, Les Mostiques, p. 204, 1905; *A. albipes* of Gray and Low, Brit. Med. Jour., No. 2143, p. 194, 1902; of Bourroul, Mosq. do Brazil, p. 61,

* NOTE.—Perhaps to be regarded as a variety of *A. albimanus*, but given specific rank in view of further described varieties of this form.

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1908; *vide* Howard, Dyar and Knab, Mosq. of N. and C. America, iv, p. 975. (67)

gorgasi Dyar and Knab, 1907, Jour. N. Y. Entom. Soc., xv, No. 4, p. 198, Dec. (*A. gorgasi*). *Loc.*, La Boca, Canal Zone, Panama. Described from a single female: type, cat. no. 10863, U. S. Nat. Mus. *Syn.* by Knab, Amer. Jour. Trop. Dis., i, No. 1, p. 36, 1913. Bonne, Bull. Path. Exot., xvii, No. 2, p. 133, 1924, suggests that this may be a local variety, but the statement of Howard, Dyar and Knab, *loc. cit.*, p. 978, that no like specimen has been seen out of many hundreds of *A. tarsimaeculatus* examined is against this view so far as a variety coming from Panama is concerned.

- *55.a. **A. (Nyssorhynchus) tarsimaeculatus** var. **oswaldoi** Peryassu, 1922, A Folha Medica, Anno, iii, No. 23, p. 179, Dec. (*Cellia oswaldoi* Peryassu). *Loc.*, Valle do Rio Doce and Baixada Fluminense, Minas Geraes, Brazil. The second segment of female palpi has its apical third white, the second tarsal segment of the hind leg has a very narrow dark ring only basally and the larva is said to be distinct. It is provisionally placed along with the following three entries as a local variety. Considered by Dyar as synonymous with *A. tarsimaeculatus*, Insec. Insc. Menstr., xi, p. 185, 1923. (67)
- *55.b. **A. (Nyssorhynchus) tarsimaeculatus** var. **rondoni** Neiva and Pinto, 1922, Brazil Medico, xxxvi, No. 46, p. 321, Nov. (*Cellia rondoni*). *Loc.*, Margins of the rivers Paraguay, S. Lourenco and Cuyaba, Matto Grosso, Brazil (near borders of Bolivia). Considered by Bonne, Bull. Soc. Path. Exot., xvii, No. 2, p. 133, as with the two following, probably biologically distinct, presumably true local varieties in the sense of the use of the term in this catalogue. (67)
- *55.c. **A. (Nyssorhynchus) tarsimaeculatus** var. **cuyabensis** Neiva and Pinto, 1923, Brazil Medico, xxxvii, No. 17, p. 235, April (*Cellia cuyabensis*). *Loc.*, Matto Grosso, Brazil. (67)
- *55.d. **A. (Nyssorhynchus) tarsimaeculatus** var. **triannulatus** Neiva and Pinto, 1922, Brazil Medico, xxxvi, No. 48, p. 355,

- Dec. (*Cellia triannulata*). *Loc.*, Matto Grosso, Brazil. (67)
- *55.e. A. (*Nyssorhynchus*) *tarsimaculatus* var. Bonne, 1924, Bull. Soc. Path. Exot., xvii, No. 2, p. 135 (variety from interior of Dutch Guiana). *Loc.*, interior of Dutch Guiana as against the littoral where the type form occurs. Stated to have different habits to type form. (67)
57. A. (*Nyssorhynchus*) *lutzii* † Cruz, 1901, Brazil Medico, xv, p. 423 (*A. lutzii*). *Loc.*, Brazil. *A. albitarsis* of Knab, Amer. Jour. Trop. Dis., i, No. 1, p. 35, 1913, is stated by Howard, Dyar and Knab, Mosq. N. and C. Amer., iv, p. 971, 1917, to be in part this species. (70)
- nigra* Theobald, 1907, Mono. Cul., iv, p. 78 (*Myzorhynchella nigra*). *Loc.*, Brazil. Described from three females and a male; two female specimens labelled 'Brazil, Dr. Lutz' and 'Cantonira, 3.11.04' given as types, by Theobald in Brit. Mus. *Syn.* by Chagas, Novas especies de Culic. Braz., p. 3, 1907.
- *58. A. (*Nyssorhynchus*) *parvus* Chagas, 1907, Novas especies de Culic. Braz., trab. do Inst. Manguinhos, p. 4 (*Myzorhynchella parva*). *Loc.*, Minas Geraes, Brazil. Male and female described. The differences as seen in specimens in the Brit. Mus. do not seem to indicate more than a different degree of melanism between *nigra* (darker) and *parva* (lighter); but this is placed provisionally as a species. (70)
59. A. (*Nyssorhynchus*) *nigritarsis* Chagas, 1907, Novas especies de Culic. Braz., trab. do Inst. Manguinhos, p. 12 (*Myzorhynchella nigritarsis*). *Loc.*, Oliveira, Minas Geraes, Brazil. (70)
60. A. (*Nyssorhynchus*) *gilesi* Neiva, 1908, in Peryassu, Os Culic. do Brazil, p. 103 (*Myzorhynchella gilesi*). *Loc.*, Rio das Velhas, Minas Geraes, Brazil. Apical portion of tibia and base of metatarsus very characteristically silvery white. Possibly *tibiamaculata* with markings like *A. eiseni* is

† NOTE—The systematic position of this and the two following species has only recently been ascertained. Dr. Root very kindly informs me that the genitalia of *nigra* (*Myzorhynchella*) come under the type characteristic of the *Nyssorhynchus* group.

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actually a *Nyssorhynchus* and should come near this species. *Vide* No. 22 of this catalogue. (71)

[(b) Group **Kerteszia.**]

61. A. (**Nyssorhynchus**) **boliviensis** Theobald, 1905, Ann. Mus. Nat. Hung., iii (*Kerteszia boliviensis*). *Loc.*, Songo, Bolivia. Described from a single female; type in Nat. Mus. Hungary. The thoracic markings indicate this species as close to *A. bellator*. (72)
62. A. (**Nyssorhynchus**) **bellator** Dyar and Knab, 1906, Proc. Biol. Soc. Wash., xix, p. 160 (*A. bellator*). *Loc.*, Trinidad, Lesser Antilles, West Indies. Described from three specimens, male and female; type, no. 10027, U. S. Nat. Mus., *vide* Dyar and Knab, *ibid.* (74)
- 62.a. A. (**Nyssorhynchus**) **bellator** var. **cruzi** Dyar and Knab, 1909, Proc. U. S. Nat. Mus., No. 1632, p. 53 (*A. cruzii*); to replace *A. lutzii* Theo. 1901, as below, preoccupied by *A. lutzii* Cruz 1901 (No. 61 of this catalogue). Given as synonym of *bellator* by Dyar, Insec. Insc. Menstr., xi, Nos. 4-6, p. 72, 1923, but evidently considered geographical variety (southern form). (73)
- lutzii* Theobald, 1901, Mono. Cul., i, p. 177 (*A. lutzii*). *Loc.*, Rio de Janeiro, Brazil. Described from three females; type in Brit. Mus. *Syn.* by Dyar and Knab, *loc. cit.*
- 62.b. A. (**Nyssorhynchus**) **bellator** var. **neivai** Howard, Dyar and Knab, 1917, Mosq. N. and C. Amer., iv, p. 986 (*A. neivai*). *Loc.*, Panama. Described from two females; type, cat. no. 20440, U. S. Nat. Mus. *Syn.* by Dyar, Insec. Insc. Menstr., xi, Nos. 4-6, p. 72, 1923, but evidently considered geographical variety (Panama form). Strictly this name is preoccupied by *neivae* Cruz, if *Chagasia* be considered a subgenus. (75)
- 62.c. A. (**Nyssorhynchus**) **bellator** var. **hylephilus** Dyar and Knab, 1917, Insec. Insc. Menstr., v, p. 38 (*A. hylephilus*). *Loc.*, Venezuela and Ecuador (nec Panama). *Syn.* by Dyar, Insec. Insc. Menstr., xi, Nos. 4-6, p. 72, 1923, but evidently considered geographical variety (West Central American form). (75)

5. Subgenus **MYZOMYIA** (Blanchard) Christophers, 1915.

Blanchard, C. R. Soc. de Biol., liv, No. 23, p. 795, July, 1902.

Christophers, Indian Jour. Med. Res., iii, No. 2, p. 383, October, 1915.

Genotype: *A. subpictus* Grassi (as *A. rossii* Giles) by Theobald, Jour. Trop. Med. and Hyg., v, p. 183, 1902, by original designation for genus *Grassia* preoccupied, *vide* Blanchard, *loc. cit.*

Grassia Theobald, 1902, Jour. Trop. Med. and Hyg., v, p. 183, June. Genotype: *A. subpictus* Grassi (as *A. rossii* Giles) by Theobald, *loc. cit.* Theobald later, Mono. Cul., iii, p. 12, 1903, gave *A. funestus* Giles as the type species, but the originally designated type species has precedence. Genus invalid by Blanchard, *loc. cit.*, as name preoccupied by *Grassia* Fisch, 1885.

Howardia Theobald, 1902, Jour. Trop. Med. and Hyg., v, p. 183, June. Genotype: *A. gambiae* Giles (as *A. costalis* Loew), by Theobald, *ibid.*, by original designation. Genus invalid by Blanchard, *loc. cit.*, as name preoccupied by *Howardia* Dalla Torre, 1897.

Cellia Theobald, 1902, Jour. Trop. Med. and Hyg., v, p. 183, June. Genotype: *A. pharoensis* Theo., by Theobald, *ibid.*, by original designation.

Pyrethophorus Blanchard, 1902, C. R. Soc. de Biol., liv, No. 23, p. 793, July. Genotype: *A. gambiae* Giles (as *A. costalis* Loew), by Theobald, *loc. cit.*, by original designation for *Howardia* preoccupied, *vide* Blanchard, *loc. cit.*

Aldrichia Theobald, 1903, Mono. Cul., iii, p. 353. Genotype: *A. subpictus* Grassi (as *A. error* Theo.), by Theobald, *ibid.*, by original designation. Invalid by reason of character of type, *vide A. error* under No. 87 of this catalogue.

Feltinella Theobald, 1907, Mono. Cul., iv, p. 56, Genotype: *A. smithii* (as *Feltinella pallidopalpi*), by Theobald, *ibid.*, by original designation. Genus invalid as based on non existent character, *vide* Edwards, Bull. Ent. Res., iii, part 3, p. 248, 1912.

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Neocellia Theobald, 1907, Mono. Cul., iv, p. 111. Genotype :
A. willmori James (as *A. indica* and *A. dudgeoni*)
and *A. stephensi* Liston (as *A. intermedia* Rothwell),
by Theobald, *ibid.*

Pseudomyzomyia Theobald, 1907, Mono. Cul., iv, errata and
addenda. Ref. to *A. rossii* Giles as type species,
but without description of genus.

Aldrichinella Theobald, 1910, Mono. Cull., v, p. 77, footnote,
change of name for *Aldrichia* preoccupied by
Aldrichia, Coquillett, 1894.

Neomyzomyia Theobald, 1910, Mono. Cul., v, p. 29. Geno-
type : *A. leucosphyrus* Don. (as *A. elegans* James),
by Theobald, *ibid.*, by original designation.

Nyssomyzomyia James, 1910, Rec. Indian Mus., iv, No. 5,
p. 101, Nov. New name for *pseudomyzomyia*
undescribed. Genotype : *A. subpictus* (as *A. rossii*
Giles), by James, *ibid.*, by original designation.

Christophersia James, 1910, Rec. Indian Mus., iv, No. 5,
p. 103, Nov. Genotype : *A. kochi* Don. (as
Ch. halli James), by James, *ibid.*, by original
designation.

Dactylomyia Newstead and Carter, 1910, Ann. Trop. Med.
and Par., iv, No. 3, p. 377, Dec. Genotype :
A. tessellatus Theo. (as *D. ceylonica* Newstead
and Carter), by Newstead and Carter, *ibid.*, by
original designation. Genus based on non existent
character, *vide* Stanton, Bull. Ent. Res., iv, part 2,
p. 130, 1913.

№ 3 10 11
[(a) Group **Myzomyia*** (Myzomyia and Pyretophorus) in large part of
authors.

63. A. (**Myzomyia**) **smithii** Theobald, 1905, Entomologist, xxxviii,
No. 503, p. 101, April (*A. smithii*). *Loc.*, Mount Aureole
(800 ft.), Freetown, Sierra Leone. Described from three
females; type in Brit. Mus. The single type shews indistinct

* NOTE.—It is rather curious that not a single species in this large group has ever
been created a genotype; rather than make a new name I have used *Myzomyia*, the
group being what most writers have in mind more or less under this name.

costal spots as noted by Theobald for the specimen sent from the same locality by Capt. Gratton, R. A. M. C., *vide* Theobald, Mono. Cul., iv, p. 39. A balsam preparation labelled *A. smithi* in the Brit. Mus., shews, so far as the parts can be made out, the hypopygeal characters of *Myzomyia*. (78)

pallidopalpi Theobald, 1907, Mono. Cul., iv, p. 57 (*Feltinella pallidopalpi*). *Loc.*, Mount Aureole, Freetown, Sierra Leone. Described from three males; type in Brit. Mus. The genitalia, imperfectly displayed as seen in a balsam preparation in the Brit. Mus., shew 5 parbasal spines and an harpago characteristic of *Myzomyia*. The wing markings and the scales on the portion of the mesothorax are very similar to those in *A. smithi*. It seems probable that they are the same species, *pallidopalpi* being the male of *smithii*. The palpi of the male specimen taken to be *A. smithii* differs somewhat in being darker towards the end, but otherwise the markings are much the same. The two species are from the same locality.

64. A. (*Myzomyia*) *rhodesiensis* Theobald, 1901, Mono. Cul., i, p. 184 (*A. rhodesiensis*). *Loc.*, Salisbury, Mashonaland male and female described; male and female type in Brit. Mus. (78)

d'thali Patton, 1905, Jour. Bombay Nat. Hist. Soc., xvi, No. 4, p. 627 (*A. d'thali*). *Loc.*, D'thala, Aden Hinterland. *Syn.* by Christophers and Khazan Chand, Indian Jour. Med. Res., iii, No. 1, p. 186, 1915.

65. A. (*Myzomyia*) *nili* Theobald, 1904, First Rep. Wellcome Trop. Research Lab., p. 66 (*Myzomyia nili*). *Loc.*, Jebel Akmet-Aga on the White Nile and Middle Sobal (Dr. Balfour). Described from two females; two female types one from each of the above localities in Brit. Mus. A third specimen labelled type by Theobald with locality Mid Sobal (Dr. Balfour) has the label designation *M. funesta* var. *nigra*. 5 specimens from Oshogbo, Southern Nigeria (Dr. T. F. G. Mayer) noted by Edwards (Bull. Ent. Res., ii, part 2,

p. 142, 1911) as *A. (Myzomyia) umbrosa* Theo., are this species as shewn by characters of forked cells and palpi. (80)

unicolor Grunberg, 1905, Zool. Anz., xxix, No. 12, p. 379, Sept. (*M. unicolor*). *Loc.*, Kete Kratje, Togo. Described from single female; *Syn.* by Edwards, Bull. Ent. Res., ii, part 3, p. 268, Oct., 1911, as *umbrosa* (but *vide* above) and Bull. Ent. Res., iii, part 3, p. 248, Nov. 1912, as *A. nili*. The palps are described as pale at apex only by Grunberg *loc. cit.*

66. **A. (*Myzomyia*) *culicifacies*** Giles, 1901, Entom. Month. Mag., 2 ser., xii (xxxvii), No. 140 (447), p. 197, Aug. (*A. culicifacies*). *Loc.*, Hoshangabad, Central Provinces, and the Berars, Deccan, India. Male and female described. Type female labelled 'India, Col. Giles' in Brit. Mus. There is also a male and female specimen labelled 'Ellichpur, Berars, Jan. 1901, Lt. Glen Liston.' (81)

listoni Giles, 1901, Entom. Month. Mag., 2 ser., xii, No. 140, p. 197, Aug. (*A. listoni*). *Loc.*, Ellichpur, Berars, India (Lt. W. G. Liston). Male and female described; male and female type in Brit. Mus., the former a specimen of *A. turkhudi*, Liston, the latter a specimen of *A. culicifacies* Giles. Strictly, the female already having been dealt with under *culicifacies*, the male (*turkhudi*) becomes *A. listoni* Giles, Aug., 1901, antedating *A. turkhudi* Liston, Dec., 1901. It is clear, however, that Giles had in mind chiefly the female characters and any change of name now would be very undesirable owing to the confusion that would be entailed. *Syn.* by Theobald, Mono. Cul., iii, p. 41, 1903.

indica Theobald, 1901, Mono. Cul., i, p. 183 (*A. indica*). *Loc.*, Madras. Described from a single female; type in Brit. Mus. *Syn.* by Theobald, Proc. Roy. Soc., lxix, p. 377, No. 456, 1902.

punjabensis James, 1911, in James and Liston, Anop. Mosq. of India, Ed. 2, p. 72 (*M. culicifacies* var. *punjabensis*). *Loc.*, Punjab, India. Type female now in

Brit. Mus. Pigment anomaly by Christophers,
Indian Jour. Med. Res., iii, No. 3, p. 463, 1916.

- 66.a. A. (**Myzomyia**) **culicifacies** var. **adenensis** Christophers, 1924, Indian Jour. Med. Res., xii, No. 2, p. 296 (*A. culicifacies* var. *adenensis*). *Loc.*, Daral Amir, Aden Hinterland. (81)
67. A. (**Myzomyia**) **sergentii** Theobald, 1907, Mono. Cul., iv, p. 68 (*Pyretophorus sergentii*). *Loc.*, Algeria. Described from two females; type in Brit. Mus. *A. culicifacies* (Africa) of Edwards, Bull. Ent. Res., iii, part 3, p. 248, 1912, is this species, *vide* Edwards, Bull. Ent. Res., xii, part 3, p. 279, 1921, also *A. culicifacies* (Africa) of Alcock, Jour. London Sch. Trop. Med., ii, part 3, p. 155, 1913. (81)
68. A. (**Myzomyia**) **funestus** Giles, 1900, Liverpool Sch. Trop. Med., Mem., ii, append., ii, p. 50, Feb. (*A. funestus*). *Loc.*, Freetown, Sierra Leone. Male and female described; type female in Brit. Mus. (92)
- ? *minuta* Macquart, 1834, Hist. Natur. des Insect. Dipteres, Paris, p. 33 (*A. minuta*). *Loc.*, Senegal. Type male noted by Macquart as in Museum of Natural History, Paris. The portion of the description 'wings with brown edge, and with three small whitish spots' leaves little doubt that it was *funestus* and not *costalis* that was being described. It seems very probable that *A. minuta* is the species now known as *funestus*, but as this cannot be stated with certainty there is no necessity to do more than record *minuta* as a probable synonym.
- kumasi* Chalmers, 1900, Lancet, ii, p.1262, 3 Nov. (*A. kumasi*). *Loc.*, Kumasi, Ashanti, West Africa. Type not referred to by author or by Theobald, Mono. Cul., i, p. 214, *Syn.* by Theobald, Mono. Cul., iv, p. 46, 1907.
- hebes* Donitz, 1902, Zeit. f. Hyg., xli, p. 84 (*A. hebes*). *Loc.*, Dar es Salaam, East Africa. Given as doubtful synonym of *A. funestus*, type form, by Edwards, Bull. Ent. Res., iii, part 3, p. 248, 1912. There appears little doubt from Donitz's description and photograph of the wing that *hebes* is *funestus*.

subumbrosus Theobald, 1903, Liverpool Sch. of Trop. Med. Mem., x, appendix, p. iv. (*A. funestus* var. *subumbrosus*). *Loc.*, Gambia. There does not seem sufficient reason to separate this from the type form as a true geographical variety and it is here regarded as within the ordinary range of variation of the species; this seems in fact the most usual form in which *A. funestus* presents itself, the type form being less frequent.

- 68.a. A. (*Myzomyia*) *funestus* var. *bisignata* Grunberg, 1905, Zool. Anz., xxix, No. 12, p. 378, Sept. (*Myzomyia bisignata*). *Loc.*, Kete Kratje, Togo, West Africa. This species has banded palpi with pale apex and veins with pale spots only at the cross veins and bifurcations. The fringe is dark. It may be a dark variant of *funestus*, but pending further information it is retained as a variety. Except in regard to the dark fringe and an interruption on the costa near the base it appears very near Theobald's var. *umbrosa*, with which it is for the present classed. Both *Myzorhynchus umbrosus* and *funestus* var. *umbrosa* were described, so far as the prefaces of the respective works are a guide, in June, 1903; the least important species may presumably therefore be taken as invalid and *umbrosus* in this connection placed for the present under *bisignata*. (93)

umbrosus Theobald, 1903, Liverpool Sch. of Trop. Med., Mem., x, appendix, p. iv. (*Myzomyia funesta* var. *umbrosa*). *Loc.*, Gambia, West Africa. Referred to in the plate as var. *anisochloros*. For reasons given above the *umbrosus* in this connection may be considered as in any case invalid. The *umbrosus* of Edwards, Bull. Ent. Res., ii, part 2, p. 142, 1911, is not this form, but No. 65 of this catalogue.

- 68.b. A. (*Myzomyia*) *funestus* var. *arabicus* Christophers and Khazan Chand, 1915, Indian Jour. Med. Res., iii, No. 1, p. 189, July (*A. funestus* var. *arabica*). *Loc.*, Muscat, Arabia. Male and female type in Brit. Mus., numerous paratypes in collection of Central Malaria Bureau, Kasauli. (94)

- *69. A. (**Myzomyia**) **listonii** Liston, 1901, Indian Med. Gaz., xxxvi, p. 361, Oct. (*A. listonii*). *Loc.*, Ellichpur, Deccan, India. Two females labelled 'Deccan Capt. Liston' in Brit. Mus. Strictly the name is preoccupied by *A. listoni* Giles, *vide* No. 66 of this catalogue, and the proper name is *A. fluviatilis* James; it would perhaps be unwise to make any change, however, on such a point in a name that has been in general use now for a great many years. The question arises whether this is a variety only of *A. funestus* or a distinct species. It is clearly very closely related, but it is perhaps better to retain it as a species until the larval characters, etc., have been fully worked out. (94)

fluviatilis James, 1902, Sci. Mem. by Off. Med. and San. Dept., of the Govt. of India, n.s., No. 2, p. 31 (*A. fluviatilis*). *Loc.*, Duars, Nagpur and Jeypore Hill Tracts, India. *Syn.* by Theobald, Mono. Cul., iv, p. 51, 1907.

leptomeres Theobald, 1903, Mono. Cul., iii, p. 38 (*Myzomyia leptomeres*). *Loc.*, India. Described from a single female; type in Brit. Mus. This is found in dark series of the species as a variant.

candidiensis Koidzumi, description in Japanese, ref. in Trans. of the 5th. Congr. F. E. A. T. M., at Singapore, 1923, p. 98, 1924. *Loc.*, Formosa. I have placed this here provisionally *aconitus*.

70. A. (**Myzomyia**) **minimus** Theobald, 1901, Mono. Cul., i, p. 186 (*A. minimus*). *Loc.*, Pokfulam, Hong Kong. Described from a single female noted by Theobald *ibid.*, as in Dr. Rees collection. (96)

christophersi Theobald, 1902, Proc. Roy. Soc., lxi, No. 456, p. 378, March (*A. christophersi*). *Loc.*, Bengal Duars, India. Described from two females; type female in Brit. Mus. *Syn.* by Edwards, Bull. Ent. Res., vi, part 2, p. 156 (footnote).

formosaensis I Tsuzuky, 1902, Arch. f. Schiffs., vi, p. 287 (*A. formosaensis I*). *Loc.*, Formosa. Male and female specimen in balsam in Brit. Mus. (showing characters of *A. minimus*).

- cohaesa* Donitz, 1903, Zeit. f. Hyg., xliii, p. 233 (*A. aconitus* var. *cohaesa*). Change of name by Donitz *ibid.* for Tsuzuky's species (*A. formosaensis* I). *Syn.* by admission of describer *ibid.*
- mangyana* Banks, 1906, Phil. Jour. Sci., i, No. 9, p. 991, Nov. (*Myzomyia mangyana*). *Loc.*, Mindoro, Rio Baco, Chicago, Philippine Islands. Female described; type noted as no. 3290 in entomological collection, Bureau of Science, Manila, by author *ibid.*; co-type in bad condition in Brit. Mus. *Syn.* by Edwards, Bull. Ent. Res., iv, part 3, p. 222, 1913. Has double interruption at base of costa.
- alboapicalis* Theobald, 1910, Mono. Cul., v, p. 25 (*Myzomyia christophersi* var. *alboapicalis*). *Loc.*, Meenglas, Bengal Duars (C. Wallich). Described from a single female; type in Brit. Mus., shewing characters of *A. minimus*.
- flavirostris* Ludlow, 1913, Bull. No. 4, Surgeon-General's Office, Washington D. C., and also Psyche, xxi, No. 1, p. 30, Feb. (*Myzomyia flavirostris*). *Loc.*, Camp Wilhelm, Tayabas, Philippine Islands. The description indicates *A. minimus*, not as previously given by me, *A. aconitus*, in spite of the name. This is the species previously referred to by Ludlow as *A. funestus*, dark variety, *vide* Ludlow, Bull. Ent. Res., vi, part 2, p. 155, 1915.
- febrifera* Banks, 1914, Phil. Jour. Sci., ix, Sec. D, No. 4, p. 405 (*Myzomyia febrifera*). *Loc.*, Luzon, Laguna Province, Canlubang, near Calamba, Philippine Islands. Male and female described; type given as no. 18015 in entomological collection, Bureau of Science, Manila, by author *ibid.*, paratype with the same number. *Syn.* by Ludlow, Bull. Ent. Res., vi, part 2, p. 155, 1915.
- merak* (*cohaesa*) Mangkoewinoto, 1919, Meded. v. d. Burg. Geneesk. in Ned. Indie, 1919, d. 2, p. 57 (*Myzomyia aconita* var. *merak* (*cohaesa*)). *Loc.*, Merak, West Java. The description indicates *A. minimus*.

70.a. A. (*Myzomyia*) *minimus* var. *varuna* Iyengar, 1924, Indian Jour. Med. Res., xii, No. 1, p. 24, July (*A. varuna*). Pending further collection of data this form seems best treated of as a variety of *A. minimus* occurring over the eastern and southern parts of India as distinct from the form in the north east. (96)

71. A. (*Myzomyia*) *aconitus* Donitz, 1902, Zeit. f. Hyg., xli, p. 70 (*A. aconitus*). *Loc.*, Kajoe-Tanam, Sumatra; Willem I., Soekaboemi, Java. This form, *vide* Christophers, Indian Jour. Med. Res., iii, No. 3, p. 473, 1916, would seem to be a distinct species, especially as the larval characters are distinct, *vide* Strickland, Indian Jour. Med. Res., xii, No. 1, p. 148, 1924. (95)

albirostris Theobald, 1903, Mono. Cul., iii, p. 24 (*Myzomyia albirostris*). *Loc.*, Kuala Lumpur, Fed. Malay States. Described from two specimens; male and female type in Brit. Mus. A female specimen from Dr. Durham in Brit. Mus. with wing veins shewing exaggerated whitening is labelled by Theobald 'var. *non vittata*, var. type.' *Syn.* by Edwards, Bull. Ent. Res., vi, part 2, p. 156, footnote, 1915, also Stanton, *ibid.*, p. 162.

brahmacharii Christophers, 1912, Paludism, No. 5, p. 11, Sept. Description by Brahmachari, Indian Med. Gaz., xlvi, No. 6, p. 268, July, 1911. *Loc.*, Calcutta, India. Specimens from Dr. Brahmachari in Central Malaria Bureau, Kasauli. *Syn.* by Christophers, Indian Jour. Med. Res., iii, No. 3, p. 474, 1916.

72. A. (*Myzomyia*) *jeyporiensis* James, 1902, Sci. Mem. Off. Med. and San. Dept., Gov. of India, N. S., No. 2, p. 32 (*A. jey-poriensis*). *Loc.*, Patingi, Jeypore Hills, Madras Presidency, India. Theobald also describes this species under the same name from the same locality, Mono. Cul., iii, p. 66 (spelt *A. jey-porensis*). Theobald's description is from three females and two males from Patingi; male and female type (of Theobald's) in Brit. Mus. This is probably the species referred to as *A. superpictus* by

Mathis and Leger, Bull. Soc. Med. Chir. de l'Indochine, seance du 15 Nov. 1910. (99)

- 72.a. **A. (*Myzomyia*) jeyporiensis** var. **moghulensis**, Christophers, 1924, Indian Jour. Med. Res., xii, No. 2, p. 296, Oct. *Loc.*, Quetta, North West India. Described from numerous examples in Central Malaria Bureau, Kasauli; type male and female in Brit. Mus. This is the north western and Deccan form as against the type form of the north east, east and south of India. (99)
73. **A. (*Myzomyia*) marshallii** Theobald, 1905, Mono. Cul., iii, p. 77 (*Pyretophorus marshallii*). *Loc.*, Salisbury, Mashonaland. Described from a single female; type in Brit. Mus. (102.a).
neireti Ventrillon, 1906, Bull. du Mus. d'Hist. Nat., Paris, Ann. 1906, No. 2, p. 103 (*Culex neireti*). *Loc.*, Tananarive, Madagascar. Referred to by Blanchard, Arch. de Parasit, xi, p. 188, 1906, as *M. funesta* var. *neireti*. Edwards, Bull. Ent. Res., xi, part 2, p. 133, 1920, who examined the types and co-types of all the species described from Madagascar by Ventrillon and who mentions specimens of *A. marshallii* from Neiret, 1904, and Ventrillon, 1905, would seem to make this species synonymous with *A. marshallii*. The female would appear from Ventrillon's description to be a *Culex*.
pseudocostalis Theobald, 1910, Mono. Cul., v, p. 41 (*Pyretophorus pseudocostalis*). *Loc.*, Bihe, Angola, West African. Described from three females; type in Brit. Mus. *Syn.* by Edwards, Bull. Ent. Res., iii, part 3, p. 249, 1912. The pale costal interruptions are somewhat extended and the third longitudinal is largely dark scaled.
- *73.a. **A. (*Myzomyia*) marshallii** var. **flavicoستا** Edwards, 1911, Bull. Ent. Res., ii, part 2, p. 142, July (*A. (*Myzomyia*) flavicoستا*). *Loc.*, Baro, Northern Nigeria. Type and one other female in Brit. Mus. Probably flavescent form, retained as a variety for the present. (103)
- *74. **A. (*Myzomyia*) pitchfordi** Giles, 1904, Revision Anop., p. 34 (*Pyretophorus pitchfordi*). *Loc.*, 80 miles N. E. of Eshowe,

Zululand, (1,500 ft.). Female described; type in Brit. Mus. This appears to be rather intermediate between *funestus* and *marshallii*. It seems possibly a distinct species. (103)

- *75. A. (*Myzomyia*) *austenii* Theobald, 1905, Entomologist, xxxviii, No. 503, p. 102, April (*Pyrethorus austenii*). *Loc.*, Bihe, Angola, West Africa. Described from a single female; type in Brit. Mus. The very broad apical banding of the front tarsi and somewhat thicker female palpi seem to point to this species as possibly distinct. (102)
- *76. A. (*Myzomyia*) *domicolus* Edwards, 1916, Bull. Ent. Res., vi, part 4, p. 363, Feb. (*A. domicolus*). *Loc.*, Zungeru Northern Nigeria. Described from six females from above locality; type in Brit. Mus. Near *A. marshallii* but possibly distinct. (102.a)
- *77. A. (*Myzomyia*) *wellcomei* Theobald, 1904, First Rept. Wellcome Trop. Res. Lab., p. 64 (*A. wellcomei*). *Loc.*, Baro and Piber Rivers, Abyssinian frontier, Anglo-Egyptian Soudan. Described from several females; male described Second Rept. *ibid.*, p. 68, 1906; type in Brit. Mus. A flavescent form, the palps and leg markings indicating a species allied to, or identical with, *A. marshallii*. (101)
78. A. (*Myzomyia*) *hispaniola* Theobald, 1903, Mono. Cul., iii, p. 49 (*Myzomyia hispaniola*). *Loc.*, Spain. Male and female type labelled 'Spain, Macdonald' in the Brit. Mus. This is the species referred to as *A. pictus* by Macdonald, Brit. Med. Jour., 16 Sept., 1899, p. 699, *vide* Theobald, *ibid.*, p. 50. (84)
- myzomyfacies* Theobald, 1907, Mono. Cul., iv, p. 69 (*Pyrethorus myzomyfacies*). *Loc.*, Algeria. Described from a single female; type in Brit. Mus. *Syn.* by Edwards, Bull. Ent. Res., xii, part 3, p. 279, 1921.
79. A. (*Myzomyia*) *turkhudi* Liston, 1901, Indian Med. Gaz., xxxvi, No. 12, p. 441, Dec. (*A. turkhudi*). *Loc.*, Ellichpur, Berars, Deccan, India. Type female in Brit. Mus. Strictly the male of this species was described as *A. listoni* Giles in Aug. 1901 and the species should be known as *A. listoni* Giles; it would be ridiculous to change the name now. (84)

- *79.a. **A. (Myzomyia) turkhudi** var. **azriki** Patton, 1905, Jour. Bombay Nat. Hist. Soc., xvi, No. 4, p. 632 (*A. (Myzomyia) azriki*). *Loc.*, Azriki spring, near D'thala, Aden Hinterland. Patton's description, with the larval characters given, indicates *A. turkhudi*, not *A. multicolor*. On the grounds of the locality from which it is recorded, the name *azriki* has been retained as a variety, though no adequate differentiating points can be given from *A. turkhudi*. (84)
- *80. **A. (Myzomyia) flaviceps** Edwards, 1921, Bull. Ent. Res., xii, part 1, p. 69, June (*A. flaviceps*). *Loc.*, Erkowit, Anglo-Egyptian Sudan. Described from one male and two females; male specimen selected as type in Brit. Mus. This species is quite distinct from *A. multicolor*, but is very close to *A. turkhudi*. (84)
81. **A. (Myzomyia) multicolor** Cambouliu, 1902, C. R. Acad. de Sc., cxxxv, 2 sem., No. 17, p. 704 (*A. multicolor* α), *Loc.*, Suez, Egypt. Cambouliu described two species as *A. multicolor* (α and β), the former with the palpi of the female black tipped ('et un petit bouquet de poils noirs à l'extrémité distal du dernier article') and the latter with the tip pale and wider rings, presumably *A. superpictus* Grassi. Besides other points given the wing markings are far more vivid than in *A. turkhudi* due to the broader scaling and more concrete spotting. (83)
- impunctus* Donitz, 1902, Zeit. f. Hyg., xli, p. 67 (*A. impunctus*). *Loc.*, Wadi-Natrun, near Alexandria, Egypt. *Syn.* by Edwards, Bull. Ent. Res., xii, part 3, p. 280, 1921.
- chaudoyei* Theobald, 1903, Mono. Cul., iii, p. 68 (*Pyretophorus chaudoyei*). *Loc.*, Touggourt, Algeria. Described from a series of females; type female in Brit. Mus. *Syn.* by Edwards, *ibid.*
- cleopatrae* Willcocks, 1910, Ann. Trop. Med. and Par., iii, No. 5, p. 586, March (*Pyretophorus cleopatrae*, name only without description). *Loc.*, Cairo, Egypt. A specimen labelled 'P. cleopatrae, Willcocks, MSS, Helowan, Cairo, Dr. Stephens' and having the characters of *A. multicolor*, in Liverpool Sch. of Trop. Med.

- nigrifasciatus* Theobald, 1907, Mono. Cul., iv, p. 65 (*Pyrethrophorus nigrifasciatus*). *Loc.*, Peshin, British Baluchistan, India. Female described; type in Brit. Mus., having the characters of *A. multicolor*. *Vide* remarks under *persicus*.
- persicus* Edwards, 1921, Bull. Ent. Res., xii, part 3, p. 280, Nov. (*A. (Myzomyia) turkhudi* var. *persicus*). *Loc.*, East Persia. Type male in Brit. Mus. Specimens from very nearly the same area since examined shew all the characters of *A. multicolor* (as Edwards notes for *persicus*), but the phallosome without leaflets, i.e., as in typical *A. multicolor*. *A. turkhudi* also occurs in this area and it is just possible that the specimen selected as the male type was really *A. turkhudi*.
82. **A. (*Myzomyia*) *superpictus*** Grassi, 1899, Atti d. R. Accad. d. Lincei, Ser. 5, viii, sem. i, fasc. 12, p. 560, June (*A. superpictus*), description *ibid.*, as *A. pictus*, sem. i, fasc. 3, p. 101, footnote. *Loc.*, Italy. (98)
- palestinensis* Theobald, 1903, Mono. Cul., iii, p. 71, (*Pyrethrophorus palestinensis*). *Loc.*, Ain-ed-delib, Sidon, Palestine (Dr. J. Cropper). Male and female type in Brit. Mus. *Syn.* by Edwards, Bull. Ent. Res., xii, part 3, p. 278, 1921.
- nursei* Theobald, 1907, Mono. Cul., iv, p. 66 (*Pyrethrophorus nursei*). *Loc.*, Quetta, India (Major C. G. Nurse). Described from a single female; type in Brit. Mus. *Syn.*, as *palestinensis* by Edwards, Jour. Asiatic Soc. Bengal, ix, No. 1, p. 48, 1913, as *superpictus* by Edwards, Bull. Ent. Res., xii, part 3, p. 278, 1921.
- cardamatisi* Newstead and Carter, 1910, Ann. Trop. Med. and Par. iv, No. 3, p. 379, Dec. (*Pyrethrophorus cardamatisi*). *Loc.*, Athens. Male and female type in collection of the Liverpool Sch. of Trop. Med. *Syn.* as *palestinensis* by Edwards, Jour. Asiatic Soc. Bengal, ix, No. 1, p. 48, 1913, as *superpictus* *ibid.*, Bull. Ent. Res., xii, part 3, p. 278, 1921.

macedoniensis Cot and Hovasse, 1917, Bull. Soc. Path. Exot., x, No. 10, p. 891, Dec. (*Pyrethophorus macedoniensis*). *Loc.*, Salonica, Europe. *Syn.* by Waterston, Bull. Ent. Res., ix, part 1, p. 4, 1918, and Edwards, *ibid.*, xii, part 3, p. 278, 1921. The wing however differs in that there are three dark spots on vein 6, a dark fringe spot between veins 2·2 and 3 and a dark spot on the basal portion of vein 1 (subcosta ?), as however *A. superpictus* itself is not mentioned as found the synonymy may perhaps be accepted.

vassilievi Portchinsky, 1913 (?). ref. by Vassiliev, *vide* Rev. App. Ent., Ser. B, i, part 11, p. 196, Dec. 1913 (*A. superpictus* Grassi var. *vassilievi*). *Loc.*, Russian Turkestan. No description of this variety has been seen, but as typical *A. superpictus* have been sent to me from near Merv it may provisionally be placed under the type form.

83. A. (*Myzomyia*) **cinereus** Theobald, 1901, Mono. Cul., i, p. 161 (*A. cinereus*). *Loc.*, Salisbury, Mashonaland, and Zomba, British Central Africa. Described from three females; female type from Mashonaland in Brit. Mus. (86)

costalis Loew, 1866, Berlin Entom. Zeits., Jahrg. x, p. 55 (*A. costalis*). *Loc.*, Kaffraria, Cape Colony. Female described; type noted by author as in Mus. Winth. As pointed out by Donitz, the description corresponds to that of *A. cinereus* (*vide* Donitz, Zeit. f. Hyg., xli, p. 80, 1902). It is impossible at this stage, however, to introduce so well known a name as *costalis* to indicate the species for long known as *A. cinereus*, *vide* also remarks under No. 91 of this catalogue.

jehafi Patton, 1905, Jour. Bombay Nat. Hist. Soc., xvi, No. 4, p. 630 (*A. (Myzomyia) jehafi*). *Loc.*, D'thala, Jehaf, Hardeba and Sulek, Aden Hinterland, Arabia. *Syn.* by Edwards, Bull. Ent. Res., iii, part 3, p. 249, 1912.

84. A. (*Myzomyia*) **transvaalensis** Carter, 1910, Entomologist xliii, No. 568, p. 237, Sept. (*Pyrethophorus transvaalensis*).

Loc. Leysdorp, Transvaal. Described from two females ; female type in Brit. Mus. (89)

85. A. (*Myzomyia*) **longipalpis** Theobald, 1903, Mono. Cul., iii, p. 37 (*Myzomyia longipalpis*). *Loc.*, Zomba, British Central Africa. Described from a single female ; type in Brit. Mus. (89)

86. A. (*Myzomyia*) **distinctus** Newstead and Carter, 1911, Ann. Trop. Med. and Par., v, No. 2, p. 234, Aug. (*Pyretophorus distinctus*). *Loc.*, Luapula River, N. E. Rhodesia. Female described ; type in Liverpool Sch. of Trop. Med. (86)

melanocosta Newstead and Carter, *ibid.*, p. 236 (*P. distinctus* var. *melanocosta*). *Loc.*, Luapula River, N. E. Rhodesia. Female described ; type in Liverpool Sch. of Trop. Med. Collected in the same place on the same date as the type form and clearly only more pronounced melanic individual variation.

[(b) Group **Pseudomyzomyia**.]

87. A. (*Myzomyia*) **subpictus** Grassi, 1899, Atti d. R. Accad. d. Lincei, Ser. 5, viii, sem. I, fas. 3, p. 101, Feb. (*A. subpictus* Grassi). *Loc.*, India. Described from a specimen received through Dr. Charles sent by Ross from India. Type in Rome University Mus., *vide* Brunetti, Rec. Indian Mus., xvii, p. 98. This is the *A. rossii* of writers from 1900 to 1920. (107)

rossii Giles, 1899, Jour. Trop. Med. and Hyg., ii, p. 63, Oct. (*A. rossii*). *Loc.*, India (probably Calcutta). Theobald, Mono. Cul., iii, p. 354, refers to six specimens set aside by Giles as types of *A. rossii* ; male and female type specimen in Brit. Mus., but without locality. *Syn.* by Edwards, Ball. Ent. Res., x, part 2, p. 129, 1920.

error Theobald, 1903, Mono. Cul., iii, p. 353 (*Aldrichia error*). *Loc.*, India (probably Calcutta). One of the six types of *A. rossii* referred to above, *vide* Theobald, *ibid.*, stated to be a composite specimen by Alcock Entom. for Med. Off., p. 69, 1911.

indefinita Ludlow, 1904, *Canad. Entom.*, xxxvi, No. 10, p. 299, Oct. (*M. rossii* Giles var. *indefinita*). *Loc.*, Bayamban, Mangarin, Guimaras Is., Philippine Islands. *Vide* Christophers, *Indian Jour. Med. Res.*, iii, No. 3, p. 477, 1916. The *A. indefinatus* of Theobald, *Mono. Cul.*, iv, p. 47, 1907, of Stanton, *Jour. London Sch. Trop. Med.*, ii, part 1, p. 6, 1912, and *Bull. Ent. Res.*, vi, part 2, p. 169, 1915, of Edwards, *Bull. Ent. Res.*, vi, part 1, p. 67, 1915, of Strickland, *Bull. Ent. Res.*, vi, part 2, p. 157, 1915, is *A. vagus* Don. Spelt *indefinata* by most authors.*

87.a. **A. (Myzomyia) subpictus** var. **malayensis** Hacker, 1921, *F. M. S. Malaria Bureau Reports*, ii, p. 1 (*A. subpictus* var. *malayensis*); *vide* also Barber, *Philipp. Jour. Sci.*, B, xiii, No. 1, p. 2-7, Jan., 1918 (type Giles). *Loc.*, Fed. Malay States. Probably mistaken in past for *A. vagus* or *A. subpictus* (type). (108)

88. **A. (Myzomyia) vagus** Donitz, 1902, *Zeit. f. Hyg.*, xli, p. 80 (*A. vagus*). *Loc.*, Fort de Kock, Sumatra (female); Banjoe-Biroe, Java (male). *Anopheles I* cf Schuffner, *Zeit. f. Hyg.*, xli, p. 90, 1902 is probably this species. *A. rossii* of Swellengrebel, *De Anop. v. Ned. Oost-Indie*, 1916, and many other authors is this species. *A. indefinatus* of most writers, *vide* No. 87 of this catalogue is *A. vagus* Don. *A. stephensi* of Mathis and Leger, *Bull. Soc. Med. Chir. de l'Indo-chine*, seance du 15 Nov., 1910, is this species or *A. subpictus*. (108)

formosaensis II, Tsuzuky, 1902, *Arch. f. Schiffs.*, vi, (*A. formosaensis II*). *Loc.*, Formosa. A balsam specimen in the Brit. Mus., a male, shews nothing to indicate speckling of the legs and has a narrow pale band only between the third and fourth front tarsal joint and would appear to be *A. vagus*.

immaculatus James, 1902, *Sci. Mem. Off. Med. and San. Dept.*, Gov. of India, n.s., No. 2, p. 35 (*A. immaculata*). *Loc.*, Ennur, near Madras, India. Described from a single female; type in Brit. Mus. *Syn.* by Edwards, *Bull. Ent. Res.*, xii, part 1, p. 70, 1921. Theobald,

* NOTE.—Miss Ludlow has kindly pointed this out to me.

Mono. Cul., iii, p. 23, 1903, described the same specimen under the same name, but afterwards, Mono. Cul., iv, p. 14, referred to it as James's species. *flava* Swellengrebel, 1917, Geneesk. Tijds. v. Ned. Indie, lvii, Af. 6, p. 807 (*Myzomyia flava*). Loc., Soerabaia, Java. Described from three females and three males; type female in Brit. Mus. Syn. (of *A. immaculatus*) by Edwards and Swellengrebel, Bull. Ent. Res., xi, No. 1, p. 77, footnote. The name *M. javanensis* in the table on page 91 of Swellengrebel's paper, *ibid.*, is evidently an MSS name intended to replace *flava* preoccupied.

89. A. (**Myzomyia**) *ludlowii* Theobald, 1903, Mono. Cul., iii, p. 42 (*Myzomyia ludlowii*). Loc., Luzon, Philippine Islands. Described from a number of specimens; type female in Brit. Mus. Dr. Rodenwaldt in a letter has informed me that Theobald's description of *ludlowii* is that of the much speckled form coming from the Celebes (*parangensis*?), in which case Theobald's *A. ludlowii* is not the species ordinarily so referred to. Miss Ludlow, Psyche, xxi, No. 1, p. 32, 1914, says that the specimens originally sent to Theobald came from an inland locality with no sea or brackish water within many miles. The only name that appears to have been given to the species usually called *A. ludlowi* is *flavescens* Swell., given to a variety of this form. I have not changed the name *A. ludlowi* in its usually accepted sense, because to do so would complicate rather than simplify nomenclature. There is a second species, however, to be reckoned with (true *A. ludlowii* of Theobald) which for the present is most simply regarded as *parangensis*. *A. ludlowii* is referred to as *M. vaga* Don, by Schuffner and Swellengrebel, Med. v. d. Geneesk. D. in Ned. Indie, 1917, d. iv, p. 17, *vide* Schuffner and Van der Heyden, *ibid.*, p. 26. (110) *

* NOTE.—Dr. Rodenwaldt in a letter now informs me that he recognises a variety of *A. ludlowii* occurring in the smaller Sunda Island, Rieuw Archipelago and Andamans in which, in addition to differences in the wing fringe and other points, the pale costal interruptions are less extended as distinct from *A. ludlowii* type form from the Philippines, Formosa and Moluccas with wider pale costal interruptions.

- flavescens* Swellengrebel, 1921, Anop. v. Ned. Oost-Indie, Kolon. Inst. Amsterdam, Meded. xv, Af. Trop. Hyg., No. 10, 2 Druk, p. 47 (*Myzomyia ludlowi* var. *flavescens*). *Loc.*, Soerabaia, Java. Appears to be a flavescent form of *A. ludlowii*, but doubtful if a true local variety.
- hatorii* Koidzumi, ———— Ref. in Trans. of the 5th Congr. of the F.E.A.T.M., at Singapore, 1923, p. 101, 1924. This is near *A. ludlowi* and is placed here provisionally.
90. **A. (*Myzomyia*) *parangensis*** Ludlow, 1914, Psyche, xxi, No. 4, p. 129, Aug. (*Myzomyia parangensis*). *Loc.*, Parang, Mindanao, Philippine Islands (south). *Vide* also Ludlow, Canad. Entom., xxxix, No. 8, p. 267, Aug. 1907, *M. ludlowi* var. (110)
91. **A. (*Myzomyia*) *gambiae*** Giles, 1902, Handb. of Gnats or Mosq., Ed. 2, p. 511 (*Anopheles gambiae*). *Loc.*, Gambia, West Africa. Female described; female type in Brit. Mus. The *A. costalis* Loew of Giles, Liverp. Sch. of Trop. Med., Mem. ii, addendum i, p. 49, Feb., 1900, and of Theobald, Mono. Cul., i, p. 157, 1901; *A. costalis* Theo. of later writers. If it were possible to regard the description by Loew as even doubtfully referring to the species now under discussion it would under the circumstances be legitimate to apply to it the name *A. costalis* Loew. But it is generally admitted that *A. costalis* of Loew is an entirely different species, the description as pointed out by Donitz, Zeit. f. Hyg., xli, p. 80, 1902, almost certainly indicating the species now known as *A. cinereus* Theo. It would cause too much confusion to rectify matters completely and give to the species now known as *A. cinereus* the name *A. costalis*, and this can be avoided as one is justified in making the most under the circumstances, of any doubt there may be. But in regard to *A. costalis* Theo., there is no method of escape unless we pretend that *A. costalis* Loew is this species, and then the name should be *A. costalis* Loew and not *A. costalis* Theo. In spite of a desire not further to create confusion by changing names in general use I

think that it would really be an advantage to rectify even at so late a stage, what is clearly an untenable position in regard to the usual present method of naming this species, a method that includes the use of a name given by one author under that of another, whilst the original description leaves no doubt that it indicated another species altogether. As regards the correct name, Donitz's description of *merus* was published late in 1902, but Giles book, judging by the date of the preface (26th Dec. 1901) probably was issued early in 1902. I have therefore used the name *gambiae* as probably having right of precedence. The first to use the name *A. costalis* Loew as applied to the present species is not, it may be noted, Theobald, 1901, but Giles, 1900, as indicated above Spelt *gambiensis* by Giles, Liverp. Sch. Trop. Med., Mem. x, appendix, p. ii, 1903. (112)

gracilis Donitz, 1902, Zeit. f. Hyg., xli, p. 76 (*A. gracilis*).

Loc., Togo and the Cameroons, West Africa. *Syn.* by Edwards, Bull. Ent. Res., iii, part 3, p. 247, 1912.

merus Donitz, 1902, Zeit. f. Hyg., xli, p. 77 (*A. merus*). *Loc.*, Dar es Salaam, East Africa. *Syn.* by Edwards, *ibid.*

melas Theobald, 1903, Liverpool Sch. Trop. Med., Mem. x, addend., p. 11 (*A. costalis* var. *melas*). *Loc.*, Gambia, West Africa. Described from a single female; type in Brit. Mus. There seems no reason to believe that this constitutes a true local variety. The fourth palpal band and bridging of the pale costal spots are among the ordinary manifestations of melanism in Anopheles.

arabiensis Patton, 1905, Jour. Bombay Nat. Hist. Soc., xiv, No. 4, p. 625 (*A. arabiensis*). *Loc.*, from Sheik Othaman to D'thala, Aden Hinterland, Arabia. *Syn.* by Edwards, Bull. Ent. Res., iii, part 3, p. 247, 1912, *vide* also Christophers and Khazan Chand, Indian Jour. Med. Res., iii, No. 1, p. 192, 1915.

- *92. **A. (Myzomyia) quadriannulatus** Theobald, 1911, First Rept. Director Vet. Res., p. 242, Aug. (*Pyretophorus quadriannulatus*). *Loc.*, Onderstepoort, Transvaal. Described from a single female ; type in Liverpool Sch. Trop. Med. It has to be considered whether this is a poorly developed specimen of *A. costalis*, possibly with the pale tips of the palpi broken off. (112)

[(c). Group **Neocellia** (*Nyssorhynchus* of authors).]

93. **A. (Myzomyia) brunnipes** Theobald, 1910, Mono. Cul., v, p. 64 (*Nyssorhynchus brunnipes*). *Loc.*, Bihe, Angola. Described from three females ; type in Brit. Mus. (114)
94. **A. (Myzomyia) rufipes** Gough, 1910, Transvaal Dept. Agric., Rept. Gov. Vet. Bact., 1908-9, p. 119 (*N. pretoriensis* var. *rufipes*). *Loc.*, Transvaal. Described from 2 specimens No. 134 and 140, not traceable by Theobald in Transvaal collection, *vide* Theobald, Union of South Africa, First Rept. Dir. Vet. Res., p. 258, 1911. Given as a distinct species by Edwards, Bull. Ent. Res., iii, part 3, p. 246, 1912. (117)
watsoni Edwards, 1911, Bull. Ent. Res., ii, part 2, p. 143 (*A. (Nyssorhynchus) watsoni*). *Loc.*, Katagum, Northern Nigeria. Type male and female in Brit. Mus. *Syn.* by Edwards, Bull. Ent. Res., iii, part 3, p. 246, 1912.
95. **A. (Myzomyia) theileri**, Edwards, 1912, Bull. Ent. Res., iii, part 3, p. 247 (*A. theileri*). New name for *A. albipes* Theo., 1911 (*Pyretophorus albipes*) preoccupied by *A. albipes* Theo., 1901 (*Cellia albipes*), *vide* Edwards, *ibid.* (117)
albipes Theobald, 1911, Union of South Africa, Dept. of Agric., First Rept. Dir. of Vet. Res., p. 243 (*Pyretophorus albipes*). *Loc.*, Onderstepoort, Transvaal. Described from two females ; type in Liverpool Sch. Trop. Med.
sp. Gough, 1911, in Theobald, *ibid.*, p. 250 (*Pyretophorus sp.*) *Loc.*, Transvaal. Description without a name. Described from a single female. The description appears to be that of *A. theileri*.

96. A. (*Myzomyia*) **stephensi** Liston, 1901, Indian Med. Gaz., xxxvi, No. 12, p. 441, Dec. (*A. stephensi*). *Loc.*, Ellichpur, Berars, Deccan, India. (114)
metaboles Theobald, 1902, Proc. Roy. Soc., lxi, No. 456, p. 374, March (*A. metaboles*). *Loc.*, Lahore, Punjab, India. Described from five females; type in Brit. Mus. *Syn.* by James and Liston, Anop. Mosq. of India, Ed. 2, p. 113, 1911.
intermedia Rothwell, 1907, Entomologist, xl, No. 525, p. 34, February (*Neocellia intermedia*). *Loc.*, Deesa, near Quetta, India. Described from three females and one male; type male and female in Brit. Mus. *Syn.* by James and Liston, Anop. Mosq. of India, Ed. 2, p. 116, 1911. The male is redescribed by Carter, in Theobald, Mono. Cul., v, p. 73, 1910.
folquei de Mello, 1918, Anais Scientificor da Faculdade ai Medicina do Porto, iv, No. 3 (*A. folquei*). *Loc.*, Pragana, Goanese Possession, Gujerat, India. Type female in Indian Mus., Calcutta. *Syn.* by describer, *ibid.*, footnote. The type is a specimen of *A. stephensi*.
97. A. (*Myzomyia*) **fuliginosus** Giles, 1900, Handb. of Gnats or Mosq., Ed. 1, p. 160 (species 'a' from Calcutta, the name *fuliginosus* suggested). *Loc.*, Calcutta. The original description is of a female with 2 hind tarsal segments white; the type female in Brit. Mus., labelled 'Calcutta, Dr. C. W. Daniells' has three hind tarsal segments white. (118)
leucopus Donitz, 1901, Insectenborse, xviii, p. 37, Jan. (*A. leucopus*). *Loc.*, Doerian, Sumatra. *Syn.* by Theobald, Mono. Cul., ii, p. 307, 1901.
jamesii Liston, 1901, Indian Med. Gaz., xxxvi, No. 12, p. 441, Dec. (*A. jamesii*). *Loc.*, Ellichpur, Berars, Deccan, India. *Syn.* by Theobald, Mono. Cul., iii, p. 93, 1903.
nagpori James and Liston, 1904, Anop. Mosq. of India, Ed. 1, p. 101 (*A. nagpori*). *Loc.*, Nagpur, Central Provinces, India. Described from a single female. This is a melanic form characterised by an extra dark band on palps, an extra dark band on the

tarsus and certain wing characters the result of melanism. The additional band on the tarsus most usually occurs without the extra band on the palps, but the band on the palps may be present with the normal type of tarsus. It is impossible therefore to retain *nagpori* as a precise definition, even if it were otherwise desirable to do so. *A. jamesii*, allied species 2 of James, Sci. Mem. Off. San. and Med. Dept., Gov. of India, n. s. No. 2, p. 42, 1902, is this form.

freerae Banks, 1906, Philipp. Jour. of Sci., i, No. 9, p. 993, Nov. (*pyretophorus freerae*). *Loc.*, Manila Philippine Islands. Described from a single female; type female No. 5975 in entomological collection, Bureau of Science, Manila. The description would indicate this species as *A. philippinensis*, but specimens received from Mr. Banks at the British Museum appear to be *A. fuliginosus*.

adiei James and Liston, 1911, Anop. Mosq. of India, Ed. 2, p. 89 (*Nyssorhynchus fuliginosus* var. *adiei*). *Loc.*, Punjab, India. The commonest form is with an extra dark band on the tarsus, but with the palps normal.

98. **A. (Myzomyia) philippinensis** Ludlow, 1902, Jour. Amer. Med. Assoc., 23 Aug., p. 426 (*A. philippinensis*). *Loc.*, San Jose, Abra, Luzon, Philippine Islands. (120)

nivipes Theobald, 1903, Entomologist, xxxvi, No. 485, p. 258, Oct. (*Nyssorhynchus nivipes*). *Loc.*, Kuala Lumpur, Fed. Malay States. Described from three females. Examination of material very kindly sent to me by Dr. Tiedemann, from the Philippines and comparison with that from the Malay States, etc., as well as a careful study of the descriptions and specimens in the Brit. Mus., has satisfied me that *nivipes* is *philippinensis* and a perfectly distinct species from *A. fuliginosus*.

99. **A. (Myzomyia) pallidus** Theobald, 1901, Mono. 'Cul., i, p. 134 (*A. fuliginosus* var. *pallida*). *Loc.*, Sambalpur, Central Provinces, India. Type female in Brit. Mus. (120)

fowleri Christophers, 1911, Paludism, No. 2, p. 64 (*Neocellia fowleri*). *Loc.*, Amritsar, Punjab, India. Type male and female in Brit. Mus. Examination of the type of var. *pallida* has shewn that *A. fowleri* is identical with this. Examination of material has also satisfied me that this again is a distinct species, neither *A. fuliginosus* nor *A. philippinensis*, the latter of which species it more nearly resembles.

100. A. (**Myzomyia**) **schuffneri** Stanton, 1915, Bull. Ent. Res., v, part 4, p. 373, March (*A. schuffneri*). *Loc.*, Lampongs, South Sumatra. Described from 6 females; type in Brit. Mus. Clearly a distinct species. (119)

101. A. (**Myzomyia**) **maculatus** Theobald, 1901, Mono. Cul., i, p. 171 (*A. maculata*). *Loc.*, Hong Kong. Described from several females and two males; type in Brit. Mus. The type female now in the Brit. Mus. is a specimen of *A. karwari*, *vide* Stanton, Jour. London Sch. Trop. Med., ii, No. 1, p. 7, 1912.

pseudowillmori Theobald, 1910, Mono. Cul., v, p. 65 (*Nyssorhynchus pseudowillmori*). *Loc.*, Meenglas, Jalpaiguri, Duars, foot of Eastern Himalayas. *Syn.* by James and Liston, Anop. Mosq. of India, Ed. 2, p. 87, 1911. (126)

101.a. A. (**Myzomyia**) **maculatus** var. **dravidicus** Christophers, 1924, Indian Jour. Med. Res., xii, No. 2, p. 297. (*A. maculatus* var. *dravidicus*). *Loc.*, Nilgiri Hills, South India. Type in Brit. Mus. (127)

102. A. (**Myzomyia**) **willmori** James, 1903, in Theobald, Mono. Cul., iii, p. 100 (*Nyssorhynchus willmori*). *Loc.*, Kashmir, North West Himalayas. Female described; type female in Brit. Mus. (127)

indica Theobald, 1907, Mono. Cul., iv, p. 111 (*Neocellia indica*). *Loc.*, Dehra Dun, Western Himalayas. Described from three females and one male; male and female type in Brit. Mus. *Syn.* by Alcock, Jour. Lond. Sch. Trop. Med., ii, No. 3, p. 164, 1913.

dudgeoni Theobald, 1907, Mono. Cul., iv, p. 113 (*Neocellia dudgeoni*). *Loc.*, Kangra Valley, Western Himalayas. Described from several females and males;

type male and female in Brit. Mus. *Syn.* by James and Liston, *Anop. Mosq. of India*, Ed. 2, p. 112, 1911.

maculosa James and Liston, 1911, *Anop. Mosq. of India*, Ed. 2, p. 112 (*Neocellia willmori* var. *maculosa*). *Loc.*, Pathankot and other localities at foot of Western Himalayas; Kurseong, Eastern Himalayas. A specimen labelled by James 'willmori var. *maculosa*' in Brit. Mus. *Syn.* by Christophers, *Indian Jour. Med. Res.* iii, No. 3, p. 484, 1916.

103. **A. (Myzomyia) theobaldi** Giles, 1901, *Entom. Month. Mag.*, 2 ser., xii, No. 140, p. 198, Aug. (*A. theobaldi*). *Loc.*, Ellichpur, Berars, Deccan, India. Female described; type in Brit. Mus. (122)
104. **A. (Myzomyia) jamesii** Theobald, 1901, *Mono. Cul.*, i, p. 134 (*A. jamesii*). *Loc.*, Quilon, Travancore, South India. Type female in Brit. Mus. (123)
105. **A. (Myzomyia) pretoriensis** Theobald, 1903, *Mono. Cul.*, iii, p. 99 (*Nyssorhynchus pretoriensis*). *Loc.*, Pretoria, Transvaal. Described from a large series sent by Dr. Theiler; type female in Brit. Mus. (124)
- tibani* Patton, 1905, *Jour. Bombay, Nat. Hist. Soc.*, xvi, No. 4, p. 629 (*A. (Nyssorhynchus) tibani*). *Loc.*, Aden Hinterland, Arabia. *Vide* Christophers and Khazan Chand, *Indian Jour. Med. Res.*, iii, No. 1, p. 195, 1915, the description corresponds very closely to that of *A. pretoriensis*.
106. **A. (Myzomyia) maculipalpis** Giles, 1902, *Handb. of Gnats or Mosq.*, Ed. 2, p. 297 (*A. maculipalpis*) (male), also Theobald, 1903, *Mono. Cul.*, iii, p. 96 (*Nyssorhynchus maculipalpis*) (female). *Loc.*, male type, Salisbury, Mashonaland; female type (Theobald), Mauritius. Giles's type does not now seem to exist; type female from Mauritius in Brit. Mus. Giles's description may be presumed to be this species as Theobald evidently had reason to believe it the same as that described by himself, otherwise there would be considerable doubt as the description is poor. (125)
- 106.a. **A. (Myzomyia) maculipalpis** var. **indiensis** Theobald, 1903, *Mono. Cul.*, iii, p. 99 (*Nyssorhynchus maculipalpis* var.

indiensis). *Loc.*, Nagpur, Central Provinces, India. Type in Brit. Mus. The Indian form has only a short length of the second tarsal segment white, whereas the African form (judging by specimens in the Brit. Mus.) has one to two-thirds of the segment white. This is the *A. maculipalpis* of James and Liston, Anop. Mosq. of India; Ed. 1, p. 95, 1904, and Ed. 2, p. 93, 1911, and the *A. jamesii* of Stephens and Christophers, Repts. to the Roy. Soc., seventh ser., p. 3, 1902 and of Mathis and Leger, Bull. Soc. Med. Chir. du l'Indochine seance du 15 Nov., 1910. *A. jamesii* allied species 1, of James, Sci. Mem. Off. Med. and San. Dept., Gov. of India, n.s. No. 2, p. 41, is this species, *vide* James *loc. cit.*, footnote, also *A. jamesii* Theobald of Giles, Ed. 2, p. 299 (allied species 3, of James, *loc. cit.*, p. 42) is also this species, the statement by Giles that 2 tarsal segments only were completely white being contradicted by his drawing (Pl. viii, fig. 6. c.). (125)

splendidus Koidzumi (original description in Japanese); Ref. in Trans. of the 5th Congr. of the F.E.A.T.M., at Singapore, 1923, p. 99, 1924. A specimen in the Brit. Mus. appears to be *A. maculipalpis*, and I have placed the species here provisionally. Should this prove to be identical with var. *indiensis*, the name *splendidus* should have precedence as *indiensis* is preoccupied by *indiensis* Theo., 1901 (*A. sinensis* var. *indiensis*).

107. A. (**Myzomyia**) **karwari*** James, 1903, in Theobald, Mono. Cul., iii, p. 102 (*Nyssorhynchus karwari*). *Loc.*, Karwar, West Coast, India. Female described; type female in Brit. Mus. The existing female type of *A. maculatus* Theo., is also this species, *vide* Stanton, Jour. London Sch. Trop. Med., ii, No. 1, p. 7, 1912, but the description is correct for *A. maculatus*, though not some later references by Theobald, *vide* Mono. Cul., iii, p. 101, fig. 59. (143)

nigrans Stanton, 1912, Jour. London Sch. Trop. Med., ii, No. 1, p. 7, Dec. (*A. nigrans*). New name for *A.*

* NOTE—This species has the palpal markings of *A. tessellatus* and *A. annulipes* and is placed in the synopsis in *Neomyzomyia*, but it has no presternal hair and in other respects resembles species in *Neocellia*.

karwari James. *Syn.* by Christophers, Indian Jour. Med. Res., iii, No. 3, p. 469, 1916.

[(d) Group **Cellia**. (Old World *Cellia* of authors).]

108. **A. (Myzomyia) pharoensis** Theobald, 1901, Mono. Cul., i, p. 169 (*A. pharoensis*). *Loc.*, Cairo, Egypt. Type male and female in Brit. Mus. (131)
- albofimbriatus* Giles, 1902, Handb. of Gnats or Mosq., Ed. 2, p. 302 (*A. pharoensis* var. *albofimbriatus*). *Loc.*, Tel Zahmul, Palestine. Described from a single female; type female in Brit. Mus. There is nothing at present to indicate that this flavescens form is a geographical variety.
- maculicosta* Becker, 1903, Mitt. a. d. Zool. Mus. in Berlin, ii, h. 3, p. 69 (*A. maculicosta*). *Loc.*, Egypt. Type female presumably in Zool. Mus., Berlin, *vide* Edwards, Bull. Ent. Res., iii, part 3, p. 246, 1912. *Syn.* by Edwards, *ibid.*
- bozasi* Neveu-Lemaire, 1905, C. R. Soc. de Biol., lix, p. 32, July (*Nyssorhynchus bozasi*). *Loc.*, Donfile, Central Africa. Described from four females in Dr. Brumpt's collection at Paris. *Syn.* by Edwards, Bull. Ent. Res., iii, part 3, p. 245, 1912.
- alba* Ventrillon, 1906, in Laveran, Bull. de l'Acad. de Med., (3) lii, p. 211 (*A. albus*). *Loc.*, Madagascar. Given by Ventrillon, Bull. du Mus. d'Hist. Nat., Paris, Ann. 1906, No. 4, 198, as *Cellia alba*. *Syn.* by Blanchard Arch. de Parasit., xi, p. 188, 1906. Edwards, Bull. Ent. Res., xi, part 2, p. 133, 1920, who has examined the types or co-types of all Ventrillon's species from Madagascar gives to a specimen labelled 'Ventrillon, 1905' the name *A. pharoensis*. Blanchard, *loc. cit.*, gives *A. pharoensis* var. *alba*. There does not seem at present any reason to separate the Madagascan form.
109. **A. (Myzomyia) pulcherrimus** Theobald, 1902, Proc. Roy. Soc., lxi, No. 456, p. 369, March (*A. pulcherrimus*). *Loc.*, Lahore, Punjab, India. Described from three females; type in Brit. Mus. This species is also described by James

1902, Sci. Mem. Off. Med. and San Dept., Gov. of India, n.s., No. 2, p. 48, from the same locality under the same name, but the date 11th March, 1902, occurring on page 68 of James work shews that Theobald's description was published first. (129)

110. A. (*Myzomyia*) **squamosus** Theobald, 1901, Mono. Cul., i, p. 167 (*A. squamosus*). *Loc.*, British Central Africa and Mashonaland. Described from two females, one from each of the above localities; type (from B. C. Africa) in Brit. Mus. (133)

tananariviensis Ventrillon, 1906, Bul. du Mus. d'Hist. Nat., Paris, Ann. 1906, No. 4, p. 198 (*Cellia tananariviensis*). *Loc.*, Tananarive, Madagascar. Type presumably in Nat. Hist. Mus., Paris, *vide* Edwards, Bull. Ent. Res., xi, part 2, p. 133, 1920. *Syn.* by Edwards, *ibid.*

arnoldi Stephens and Christophers, 1908. Practical Study of Malaria, 3 Ed., p. 175 (*Cellia arnoldi*). *Loc.*, Transvaal (? Natal). Type female labelled 'Klipdam, nr. Pietersburg, 1-3-07, Arnold coll.' in Sch. of Trop. Med., Liverpool. The larva as described by Newstead and Carter, Ann. Trop. Med. and Par., v, No. 2, p. 138, 1911, corresponds to that of *A. mauritianus*; it seems probable that a mistake has arisen and that *arnoldi* is not distinct from *squamosus*.

pretoriensis Gough, 1910, Transvaal Dept. Agric., Rept. Govt. Vet. Bact., 1908-9, p. 117 (*Cellia pretoriensis*). *Loc.*, Onderstepoort, Transvaal. Described from 18 specimens; one of original series in Sch. of Trop. Med., Liverpool. *Syn.* by Edwards, Bull. Ent. Res., iii, part 3, p. 245, 1912.

111. A. (*Myzomyia*) **argenteolobatus** Gough, 1910, Transvaal Dept. Agric., Rept. Govt. Vet. Bact., 1908-9, p. 116 (*Cellia argenteolobata*). *Loc.*, Onderstepoort, Transvaal. Described from seven females; one of original series in Sch. of Trop. Med., Liverpool. (133)

pseudosquamosus Newstead and Carter, 1911, Ann. Trop. Med. and Par., v, No. 2, p. 236, Aug. (*Cellia pseudo-*

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squamosa). *Loc.*, Chinyanta's village, Luombwa River, North Eastern Rhodesia. Described from a single female; type in Sch. of Trop. Med., Liverpool. *Syn.* by Edwards, Bull. Ent. Res., iii, part 3, p. 245, 1912.

112. A. (*Myzomyia*) **jacobi** Hill and Haydon, 1907, Annals of the Natal Gov. Mus., i, part 2, p. 144, March (*Cellia jacobi*). *Loc.*, Natal (at sea level). (132)
113. A. (*Myzomyia*) **cinctus** Newstead and Carter, 1910, Ann. Trop. Med. and Par., iv, No. 3, p. 381, Dec. (*Cellia cincta*). *Loc.*, Broomasie, West Africa. Described from a single female; type in Liverpool Sch. of Trop. Med. (132)

[(e) Group **Neomyzomyia**.]

114. A. (*Myzomyia*) **natalensis** Hill and Haydon, 1907, Annals of the Natal Gov. Mus., i, part 2, p. 152, March (*Myzorhynchus natalensis*). *Loc.*, Natal. (138)
- *115. A. (*Myzomyia*) **aureosquamiger** Theobald, 1907, Mono. Cul., iv, p. 73 (*Pyretophorus aureosquamiger*). *Loc.*, Pretoria, Transvaal. Described from two females; paratype in Sch. of Trop. Med., Liverpool. This species is very near *A. natalensis* but differs apparently in the mesothoracic vestiture. Hill and Haydon's reference to 'hairs' in the case of *A. natalensis* perhaps requires confirmation. (138)
116. A. (*Myzomyia*) **kingi** Christophers, 1923, Indian Jour. Med. Res., x, No. 4, p. 1011, April (*A. kingi*). *Loc.*, Livingstone. Range (7,000 ft.), East Africa. Described from five females; type in Brit. Mus. (136)
117. A. (*Myzomyia*) **christyi** Newstead and Carter, 1911, Ann. Trop. Med. and Par., v, No. 2, p. 238, Aug. (*Neocellia* (?) *christyi*). *Loc.*, Uganda. Described from a single female; type in Liverpool Sch. of Trop. Med. (141)
118. A. (*Myzomyia*) **ardensis** Theobald, 1905, Jour. of Econ. Biol., i, No. 1, p. 17, Nov. (*Pyretophorus ardensis*). *Loc.*, Natal. Described from one male and one female; male type in Brit. Mus. (141)
- pyretophoroides* Theobald, 1907, Mono. Cul., iv, p. 48 (*Myzomyia pyretophoroides*). *Loc.*, Pretoria, Transvaal.

Described from two males and one female. *Syn.* by Edwards, Bull. Ent. Res., iv, part 1, p. 47, 1913.

119. **A. (Myzomyia) watsoni*** Leicester, 1908, Culic. of Malaya, p. 38 (*Pyretophorus watsoni*). *Loc.*, Klang, Fed. Malay States. Described from a single female; type in Brit. Mus. (137)
120. **A. (Myzomyia) kochi** Donitz, 1901, Insectenborse, xviii, p. 1 (*A. kochi*). *Loc.*, Padang, Sumatra; Serang and Tjimah, Java. Referred to as *Anopheles Ia* by Schuffner, Zeit. f. Hyg., xli, p. 91, 1902. *M. tessellata* of Mathis and Leger, Bull. Soc. Med. Chir. de l'Indochine, séance du 15th Nov., 1910, and also the species near to *masteri* referred to by these authors. (143)
- ocellatus* Theobald, 1901, Mono. Cul., i, p. 174 (*A. ocellatus*). *Loc.*, Taiping, Perak, Fed. Malay States. Described from two females; type in Brit. Mus. *Syn.* by Theobald, *ibid.*, footnote.
- flava* Ludlow, 1908, Canad. Entom., xl, No. 1, p. 32, Jan. (*Cellia flava*). *Loc.*, Camp Wilhelm, Tayubar, Philippine Islands. *Syn.* by Edwards, Bull. Ent. Res., iv, part 3, p. 222, 1913.
- halli* James 1910, Paludism, i, p. 33, July (*Christophersia halli*). *Loc.*, Sylhet, Assam, India. Type male in Indian Museum, Calcutta. *Syn.* by James and Stanton, Paludism, No. 5, p. 62, 1912 and Stanton, C. R. Troisième Congr., F.E.A.T.M., p. 515, 1914.
121. **A. (Myzomyia) leucosphyrus** Donitz, 1901, Insectenborse, xviii, p. 37, Jan. (*A. leucosphyrus*). *Loc.*, Kajoe Tanam, Sumatra. (140)
- elegans* James, 1903, in Theobald, Mono. Cul., iii, p. 51 (*Myzomyia (?) elegans*). *Loc.*, Karwar, West Coast, India. *Syn.* by James and Stanton, Paludism, No. 5, p. 60, 1912, and Stanton, C. R. Troisième Congr. Bienn., Far East. Assoc. Trop. Med., p. 516, 1914.

* NOTE.—The reference by Christophers, Indian Jour. Med. Res., X, No. 4, p. 1019, 1923, to the larva of this species requires correction. The larva was stated by Dr. Hacker to be like that of *A. leucosphyrus*, not as given by me as like that of *A. tessellatus*.

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- 121.a. **A. (*Myzomyia*) *leucosphyrus*** var. ***hackeri*** Edwards, 1921, Bull. Ent. Res., xii, part 1, p. 70, June (*A. leucosphyrus* var. *hackeri*). *Loc.*, Fed. Malay States. Type female in Brit. Mus. (140)
122. **A. (*Myzomyia*) *tessellatus*** Theobald, 1901, Mono. Cul., i, p. 175 (*A. tessellatum*). *Loc.*, Taiping, Perak, Fed. Malay States. Described from a single female. This is the *A. punctulatus* of James and Liston, Anop. Mosq. of India, Ed. 1, p. 84, and Ed. 2, p. 104, and of Mathis and Leger, Bull. Soc., Med. Chir. de l'Indochine, seance du 15th Nov., 1910. (145)
- deceptor* Donitz, 1902, Zeit. f. Hyg., xli, p. 60 (*A. deceptor*). *Loc.*, Sumatra. Female described. *Syn.* by Stanton, Bull. Ent. Res., iv, part 2, p. 129, 1913.
- thorntonii* Ludlow, 1904, Canad. Entom., xxxvi, No. 3, p. 69 (*Myzomyia thorntonii*). *Loc.*, Oras Samar and Cottabato, Mindanao, Philippine Islands. *Syn.* by Edwards, Bull. Ent. Res., iv, part 3, p. 221, 1913.
- ceylonica* Newstead and Carter, 1910, Ann. Trop. Med. and Par., iv, No. 3, p. 377, Dec. (*Dactylomyia ceylonica*). *Loc.*, Trincomalee, Ceylon. Described from a single female; type in Liverpool Sch. of Trop. Med. *Syn.* by Edwards, Bull. Ent. Res., iv, part 3, p. 221, 1913.
123. **A. (*Myzomyia*) *punctulatus*** Donitz, 1901, Insectenborse, xviii, p. 372, Jan. (*A. punctulatus*). *Loc.*, Stephansort, north coast of New Guinea. Typical forms of Donitz's species have been very kindly sent to me by Dr. S. L. Brug. These came from the north coast of New Guinea. The only distinction that appears constant between *A. punctulatus* and *A. annulipes* is the extra dark band at the end of the second palpal segment. Var. *moluccensis* is a melanic form with dark proboscis and broader band on the palp. Though *A. tessellatus* has a very long second palpal segment, differences in this character in the case of *moluccensis* and *punctulatus* cannot be relied upon, nor can the exact degree of tarsal banding or speckling or the number of spots on the wings. If such differences denote species, this group including *A. annulipes*, etc., would appear to require

further work before the species composing it can be differentiated. (147)

- 123.a. A. (*Myzomyia*) **punctulatus** var. **moluccensis** Swellengrebel and Swellengrebel, 1920, Meded. v. d. Burg. Geneesk. D. in Ned. Indie, 1919, d. ix, addend., p. 1 (*Nyssorhynchus annulipes* var. *moluccensis*). *Loc.*, Moluccas and western portion of New Guinea. (147)
- 123.b. A. (*Myzomyia*) **punctulatus** var. **orientalis** Swellengrebel and Swellengrebel, 1920, Meded. v. d. Burg. Geneesk. D. in Ned. Indie, 1919, d. ix, addend., p. 3 (following p. 118 of issue) (*Neomyzomyia punctulata* var. *orientalis*). *Loc.*, Northern Celebes, Moluccas and Eastern Java. Resembles type form in adult characters, but palmate hair of larva narrow, fusiform, no fan shaped hair on second abdominal segment. (147)
124. A. (*Myzomyia*) **annulipes** Walker, 1856, Insecta Saundersonia, i, p. 433 (*A. annulipes*). *Loc.*, Tasmania. Female described; type female in Brit. Mus. (148)
- mastersi* Skuse, 1889, Proc. Linn. Soc. N. S. Wales, ser. 2, iii, part 4, p. 1757 (*A. mastersi*). *Loc.*, Blue Mountains, New South Wales, Australia. Male and female described; type in Macleay Mus., Sidney, *vide* Taylor, Proc. Linn. Soc. N. S. Wales, 1913, xxxviii, part 4, p. 749, 1914. *Syn.* by Taylor, *ibid.* Spelt *masteri* by Theobald, Mono. Cul., i, p. 165 *et seq.*
- ? *musivus* Skuse, 1889, Proc. Linn. Soc. N. S. Wales, ser. 2, iii, part 4, p. 1754, March (*A. musivus*). *Loc.*, Elizabeth Bay, near Sidney; Mount Kembla, Illawarra, N. S. Wales, Australia. Female described; type in Macleay Mus., Sidney, *vide* Taylor, Proc. Linn. Soc. N. S. Wales, 1913, xxxviii, part 4, p. 749, 1914. The proboscis is all dark and there are scales on four or five antennal segments. It might therefore be *A. amictus* except that scales are described as present on the last abdominal segment only. Spelt *muscivus* by Theobald, Mono. Cul., v, p. 57, 1910, and *musicus* by Giles, Handb. of Gnats or Mosq., Ed. 2, p. 313, 1902.

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- ? *farauti* Laveran, 1902, C. R. Soc. de Biol., liv, p. 908, July (*A. farauti*). *Loc.*, Isle Vate, New Hebrides. *Syn.* (probable) by Theobald, *Mono. Cul.*, iv, p. 125, 1907.
125. **A. (*Myzomyia*) amictus** Edwards, 1921, *Bull. Ent. Res.*, xii, part 1, p. 71, June (*A. amictus*). *Loc.*, Townsville, Queensland, Australia. Described from one male and one female (type); type in Brit. Mus. (148)
126. **A. (*Myzomyia*) aurirostris** Watson, 1910, *Ann. Trop. Med. and Par.*, iv, No. 2, p. 251, June (*Myzomyia aurirostris*). *Loc.*, Klang, Fed. Malay States. Described from two females; type in Liverpool Sch. of Trop. Med. (144)

Unidentified species.

127. **A. africanus** Roque, 1903, *Medic. Contemporanea* (Lisbon), (*A. superpictus africanus*). *Loc.*, Mossamedes, Angola, West Africa. I have not yet seen the description of this variety.
128. **A. annularis** Van der Wulp, 1884, *Notes from the Leyden Museum*, vi, No. 4, p. 249 (*A. annularis*). *Loc.*, Mount Ardjoeno, East Java. Described from a single female. The description reads as if this might be *A. fuliginosus* or *A. nivipes*, but the statement 'the long hind tarsi fuscous in the middle and with a white ring, wholly white towards the end,' is too ambiguous to base any conclusion upon. This cannot be a form of *A. sinensis* Wied. as considered by Theobald, *Mono. Cul.*, i, p. 142, 1901, as the palps are described as having 'the base of the first and second joints and the whole of the apical joint white.'
129. **A. formosana** Mine, 1904, *Arch. f. Schiffs.* viii, p. 21, Jan. (*A. aconitus* var. *formosana*). *Loc.*, Formosa. I have not yet seen the description; it is possibly the same as *formosaensis* I Tsuzuky (*A. minimus*).
130. **A. martini** Laveran, 1902, C. R. Soc. de Biol., liv, p. 907, July (*A. martini*). *Loc.*, hilly and wooded region west of Pursat, Cambodia. I have not yet seen the description.
131. **A. pursati** Laveran, 1902, C. R. Soc. de Biol., liv, p. 907, July (*A. pursati*). *Loc.*, hilly and wooded region west of Pursat, Cambodia. I have not yet seen the description.

132. **A. pygmaeus** Curtis, 1829, ref. without description in Guide to an arrangement of British Insects, column 202 (*A. pygmaeus*). Vide also Dale, Entom. Month. Mag., xx, p. 214, 1884, who gives above reference with locality 'Glansville Wootton,' Mr. J. C. Dale (*A. pictus* L., *pygmaeus*, Curt. Guide). If actually caught in England and has pale spotted wings it is presumably not an Anopheles.
133. **A. sacharovi** ref. by Ermolov, 1913, vide Rev. App. Entom., ii, p. 108, 1914. Loc., to the south of Batoum, south of the Caucasus on coast of Black Sea. I have not seen a description of this species.
134. **A. subtilis** Pressat, 1905, Paludisme et les Moustiques, Paris (*A. subtilis*). Loc., outskirts of Ismailia. I have not seen the description.
135. **A. vincenti** Laveran, 1901, C. R. Soc. de Biol., liii, p. 993, Nov. (*A. vincenti*). Loc., Van-Linh, Haut-Tonkin. I have not seen the description. According to Mathis and Leger, Bull. Soc. Med. Chir. de l'Indochine, seance du 15 Nov., 1910, this is very near to *A. rossii*. Should it prove to be synonymous with *A. vagus* the name *vincenti* would have precedence.
136. **A. sp.** Theobald, 1904, First Rept. Wellcome Trop. Dis. Lab., p. 68 (*Myzomyia* sp.). Loc., Bor, Anglo-Egyptian Soudan.

Species wrongly described as Anopheles.

137. **A. annuliventris** Blanchard, Ref. by Knab, Amer. Jour. Trop. Dis., i, No. 1, p. 37, 1913, who refers to this species as probably a male of *Culex* or *Aedes*.
138. **A. ferruginosus** Wiedemann, 1828, Auss. zweifl. Ins. i, p. 13, (*A. ferruginosus*). Loc., New Orleans. According to Coquillett, U. S. Dept. Agric., Entom., Tech. ser. No. 11, p. 7, 1906, the types of this species in the Vienna Museum are four specimens of a *Culex*. A study of the description does not enable one to arrive at any species of Anopheles that it might be.
139. **A. lineata** Ludlow, 1908, Canad. Entom., xl, No. 2, Feb. (*Chagasia* (?) *lineata*). Loc., Camp. Gregg, Pangasinan, Philippine Islands. Described from a single specimen, sex not stated, but presumably male as the scaling on the

genital lobes is referred to. The description, including the reference to scales on the *male* antenna, suggests that this is not an Anopheline, but a specimen of *Orthopodomyia* (Culicini).*

140. **A. mcgregori** Banks, 1909, Phil. Jour. of Sci., A, iv, No. 6, p. 548, Nov. (*Chagasia mcgregori*). *Loc.*, Basilan Island, Philippine Islands. Male described; type, No. 6666 in entomological collection, Bureau of Science, Manila. The description is that of *Orthopodomyia albipes* Theo., or a closely related species.

Genera incorrectly placed.

- Conchyliastes** Theobald (MSS) in Howard, Mosquitoes, Ed. 3, p. 155, 1902. Genotype: *Psorophora sayi* Dyar and Knab, *Syn.* of *Janthinsoma* Arrib. Genotype: *Janthinsoma discrucians* Walker. Given by Brunetti, Rec. Indian Mus., xvii, p. 92, 1920, under *Anopheles* Mg.
- Calvertia** Ludlow, 1909, Canad. Entom., xli, No. 1, p. 22, Jan. Genotype: *Calvertia lineata* Ludlow, by Ludlow, *ibid.*, by original designation. Invalid by Dyar and Knab, as preoccupied by *Calvertius*, Sharp, and *Calvertia*, Warren, *vide* Canad. Entom., xli, No. 3, p. 101, 1909.
- Calvertina** Ludlow, 1909, Canad. Entom., xli, No. 7, p. 234, July, for *Calvertia* preoccupied. Genotype: *Chagasia lineata* by original designation for *Calvertia*. If I am correct in my opinion as to *lineata*, this genus will sink under *Orthopodomyia* Theo., 1904.*

* NOTE.—Since writing the above Miss Ludlow informs me that the length of the tarsal joints in this species are not those of *Orthopodomyia* and that her specimen shows the characteristic shape of the mesothorax and scutellum of *Anopheles*. If the fact that *lineata* is an *anopheles* is confirmed it will almost certainly require to be placed in a further subgenus. In the meantime the description so closely resembles that of an *Orthopodomyia* that I leave its position with that of the genus *Calvertina* as doubtful.

PART II.

DESCRIPTIVE SYNOPSIS.

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I.—SYNOPSIS OF SUBGENERA.

The figures in brackets refer to the position of the subgenus in the Synopsis of species.

1. Sidepiece of male hypopygium with a basal lobe.
 Wings unspotted; larva with hair on inner aspect of antenna; leaflets of palmate hairs racquet shaped with hair like filament; respiratory apparatus with a long flagellum rising from anterior pad.

(South America) ..
(1) CHAGASIA

 Sidepiece of male hypopygium without a basal lobe 2
2. Sidepiece of male hypopygium with a massive spur rising from parabasal area; no parabasal spines.
 Wings unspotted; anterior forked cell of wing very short, one-sixth of its petiole; larva with branched antennal hair; leaflets of palmate hairs fusiform.

(New Guinea) ..
(2) BIRONELLA

 Sidepiece of male hypopygium without such a spur 3
3. Spines on parabasal area of sidepiece not more than two in number.
 Parabasal spines two in number rising from a lobe in parabasal area. Wings unspotted or spotted; larva with branched antennal hair; leaflets of palmate hairs fusiform.

The wing pattern is various but never that typical of *Myzomyia* with four main dark linear costal spots.

(All Regions in Old and New World)

(3) ANOPHELES

Parabasal spines one in number, with two strong spines rising some distance up the sidepiece. Wings spotted more or less as in *Myzomyia*; larva with branched antennal hair; leaflets of palmate hairs fusiform. (Neotropical Region) ..

(63) NYSSORHYNCHUS

Spines on parabasal area of sidepiece form cluster of four to six or more arranged in a particular way and springing directly from sidepiece without any lobe.

Wings spotted and with a very similar pattern, normally displaying four main dark costal spots; larva without branched hair on antenna; leaflets of palmate hairs with jagged ends and a filament. (Mediterranean, Ethiopian, Oriental and Australasian Regions) ..

(76) MYZOMYIA

II.—SYNOPSIS OF SPECIES.

The figures in brackets refer to the species number in the provisional list.

1. Hind tarsi if broadly pale banded basally, also apically pale banded 2
 Subgenus CHAGASIA.
 Hind tarsi broadly basally banded, the pale area on some of the segments occupying greater part of length of segment, but with no apical banding.
 (Brazil) (1) *fajardi*
2. Anterior forked cell of wing of usual character 3
 Subgenus BIRONELLA.
 Anterior forked cell of wing very short, one quarter length of posterior and one-sixth of petiole.
 (New Guinea) (2) *bironelli*
3. Anterior edge of wing normally with four dark costal spots; no accessory spots in area of subcostal junction 63

Subgenus ANOPHELES.

- Anterior edge of wing with less than four main costal spots ; or if four dark spots are present they are associated with accessory spots in area of subcostal junction 4
4. Abdomen with lateral scale tufts 55

[Group *Anopheles* (Root).]

- Abdomen without lateral scale tufts 5
5. Wings with pale spots either on costa or wing field 24
- Wings without any pale spots 6
6. Head scales expanded, of ordinary anopheline type 11
- Head scales linear, rod-like 7
7. Mesothorax with broad median milky line. (Brazil, British Guiana, Venezuela, Trinidad) .. (3) *nimbus*
- Mesothorax not so 8
8. Anterior forked cell of wing only moderately longer than posterior ; line intersecting the bases of the two cells cutting across anterior branch of vein 5. Mesonotum pale brown, with (?) median anterior dark area. (Australia) (4) *corethroides*
- Anterior forked cell of wing approaching double length of posterior ; line intersecting the bases of the two cells passing distal to junction of vein 5.1 with wing margin or at least not basal of this point. Mesonotum usually reddish brown 9
9. Clypeal hairs of larva bifurcate or branched or tufted at sides ; leaflets of palmate hairs with well marked shoulder and filament. (Oriental region) (5) *aitkenii*
- Clypeal hairs of larva simple ; leaflets of palmate hairs fusiform or with poorly developed shoulder only 10
10. Leaflets with some shoulder serration ; branched hair on antenna near base of shaft (as in type form) ; Imago indistinguishable from type form. (Moluccas) (5.a) var. *insulae florum*
- Leaflets fusiform, without any serration ; branched hair half way up antenna. Imago unknown but suspected to be of *aitkenii* type. (New Guinea) (5.b) var. *papuae*
11. Head scales rather narrow, expanded in outer half only and striations reach only half way

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	to base, sparsely set on head. Mesothorax pale brown. Outer parabasal spine of hypopygium absent (Edwards). Phallosome with two or three pairs of long delicate leaflets.			
	(Mediterranean region, Mesopotamia)			(6) algeriensis
	Head scales with striations reaching to base .. ..	..	..	12
12.	Palpi of female without pale bands .. ..	..	..	13
	Palpi of female with pale bands .. ..	..	..	23
13.	Hind femora pale yellow for four-fifths of their extent, legs otherwise dark (violet brown). Costa dark, wing field veins with yellow brown scales. Fore and mid femora pale on under side. Head with yellow frontal tuft, proboscis dark. Thorax with scanty narrow curved scales.			
	(Australia)			(7) stigmaticus
	Hind femora not so marked .. ..	..	..	14
14.	Wings without dark spots on the wingfield .. ..	..	..	15
	Wings with dark spots on the wingfield .. ..	..	..	21
15.	Frontal tuft on head well developed .. ..	..	..	19
	Frontal tuft absent or poorly developed .. ..	..	..	16
16.	Head scales on occiput largely pale or dusky brown.			
	(Eastern United States)			(8) barberi
	Head scales sooty black .. ..	..	..	17
17.	Prothorax with scale tuft; female palpi distinctly shorter than proboscis; largish mosquito. Larva with large branched antennal hair; outer clypeal hairs dendri-form; no palmate hairs. Phallosome with about four moderate sized leaflets; harpago with finger like process on dorsal lobe and two ensiform setae on ventral lobe.			
	(Malay States, Borneo)			(17) brevipalpis
	Prothorax without scale tuft; female palpi about same length as proboscis; moderate sized or small mosquito .. ..	..	..	18
18.	Larva with powerful thorn like spines; phallosome with fimbriated frill but no leaflets, harpago with ensiform setae only. A species discovered by Dr. Hacker in Malay, the adult scarcely distinguishable from succeeding species. (Malay States) .. ..	..	..	sp.
	Larva with hairs of ordinary type; phallosome with about five regular large curved scimitar like leaflets; harpago with ensiform setae			

- only. Larva with simple antennal hair; and clypeal hairs unbranched.
(Malabar Coast of India) .. (9) **culiciformis**
19. Mesothorax yellowish or brown, without median line of milk white scales on anterior third. Outer parabasal spine dendriform; phallosome with three or more moderate sized leaflets.
(Europe and Mediterranean Region to Kirdistan) (10) **bifurcatus**
Mesothorax in middle ashy to silvery, with median line of milk white scales on anterior third. Outer parabasal spine simple; phallosome without leaflets 20
20. Knee spots on hind femora not conspicuous.
(Europe) (11) **plumbeus**
Knee spots on hind femora conspicuous.
(Western Himalayas) (11.a) var. **barianensis**
21. Dark spots on wing field inconspicuous; apex of wing without pale tache; frontal tuft poorly developed; general coloration rather lighter; the sides of the scutum not darker than the middle; egg with float rim but no floats. Hypopygium scarcely if at all differentiable from succeeding species.
(Mediterranean area, Mesopotamia) .. (13) **elutus**
Dark spots on wing field conspicuous; egg with lateral floats 22
22. Apex of wing with pale tache; apices of femora with distinct pale knee spots; frontal tuft fairly developed. Larva with palmate hairs on segments 3-7.
(Europe and Siberia, Western North America and Canada reaching in north to Atiantle) .. (12) **maculipennis**
Apex of wing without tache; apices of femur (not tibia) without knee spots in specimens examined; frontal tuft undeveloped; larva with palmate hairs on segments 2-7. Hypopygium as in *A. maculipennis*, but finger shaped process on dorsal lobe of harpago longer and thicker.
(Eastern North America) .. (14) **quadrifaculatus**
23. Palpal bands narrow but distinct, forming four bands with pale apex. Larva in general features very similar to *A. maculipennis*; palmate hairs on segments 2-7; head relatively broader than that of *quadrifaculatus*. Phallosome with about 4 moderate

sized leaflets; harpago bilobed, dorsal lobe with double elongate club, ventral with two ensiform setae. Processes of ninth tergite well marked.

- (Eastern North America) (15) *walkeri*
- Palpi of female with pale silvery scaled ring around articulation between second and third segment, but none elsewhere; tip of palpi dark. No band on male palpi. Frontal tuft black, legs very dark with blue reflections. Larva with small branched hair on antenna but this is towards apical portion of shaft; outer clypeal hairs short, (?) simple. Occurs in connection with tidal mud flats.
- (Florida) (16) *atropos*
24. Femora of hind legs with conspicuous tuft of outstanding scales 25
- Femora of hind legs not so 27
25. Tuft formed of black scales only, with a white area of flattened scales proximal to black. Distal half of femur about equally divided between a black area of erect scales and the pale smooth area proximal to this. Palpi of female shaggily scaled unbanded.
- (Malay States) (20) *wellingtonianus*
- Tuft formed of white and black scales, the white scales distal to black 26
26. Eighth abdominal segment with conspicuous yellowish scales. Larval skin not shagreened. Scaling at base of anterior forked cell of wing forming moderate aggregation of moderately broad scales. Palpi of female unbanded or with some pale scales at junction of segments 3 and 4. Mesonotum with hairs only except anteriorly. Larva with well developed palmate hairs on segments 3-7.
- (Malay States) (18) *asiaticus*
- Eighth abdominal segment with hairs only and not yellowish. Larval skin shagreened. Scaling at base of anterior forked cell of wing forming dense aggregations of very broad scales. Palpi of female generally with white scales at several joints. Mesonotum with scattered narrow pale scales. Larva with well developed palmate hairs on segments, 2-7 leaflets broader and more uniformly lanceolate than those of *A. asiaticus*.
- (Eastern Himalayas, Assam, Ceylon) .. (19) *annandalei*

27.	Conspicuous broad white band on hind femur at about junction of middle with outer third	..	..	28
	Hind femur not so marked.	..	..	29
28.	Hind femur pale beneath for some distance; pale spots at ends of veins 3 and 4·2.			
	(Northern India, Japan)	..	..	(24) <i>lindesai</i>
	Hind femur dark beneath to coxa; no pale spot at ends of veins 3 and 4·2.			
	(Highlands of Southern India)	..		(24.a) var. <i>nilgircus</i>
29.	Tibia of hind legs with extensive pale area about one-quarter length of segments at distal end	..	..	30
	Tibia of hind legs not so	..	..	31
30.	Palpi of female with pale band at apex and another broad pale band beneath this.			
	(Central America)	..	..	(21) <i>eiseni</i>
	Palpi of female with pale band at apex only.			
	(Brazil)	..	..	(22) <i>tibiamaculata</i>
31.	Wing scales inflated; a conspicuous round punctate spot at extreme base of vein 6, which is pale throughout except for dark spot at apex.			
	(West Indies)	..	..	(44) <i>grabhamii</i>
	Wing scales not inflated; sixth vein not as above	..	..	32
32.	Femora and tibiae with row of pale spots; vein 6 with five or six dark spots.			
	(Mexico, Central America, Greater Antilles)	..	..	(41) <i>vestitipennis</i>
	Femora and tibiae not so; vein 6 with not more than four dark spots	..	..	33
33.	Costa with accessory dark spot at subcostal junction; vein 6 with four dark spots. Scale tuft on ventral surface of seventh abdominal segment in female; anterior forked cell extending to level of subcostal junction.			
	(Brazil)	..	..	(42) <i>amazonicus</i>
	Costa without accessory dark spot at subcostal junction; vein 6 with less than four dark spots	..	..	34
34.	Anterior forked cell three times length of stem; palpi of female unbanded; costa with two pale spots.			
	(Brazil)	..	..	* (43) <i>mattogrossensis</i>
	Anterior forked cell not so	..	..	35

* NOTE.—The description of *A. mattogrossensis* does not admit of its being placed in this table with certainty. The very long anterior forked cell may be characteristic, but a similar condition may be found occasionally in specimens of other species of *Myzorhynchus* like *Anopheles*.

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35.	Costa with basal portion uninterruptedly dark	39
	Basal portion of costa broadly pale with small accessory dark spots	36
36.	Apex of female palpi dark	..	..	37
	Apex of female palpi pale	..	..	38
37.	Fringe spots conspicuous, present at veins 3, 4·1, 4·2 and 5·1 as also broad spot between veins 5 and 6; lower end of femur of mid leg without large pale spot or broad band; palpi narrowly banded or unbanded, bands if present dull; outer portion of costa usually with single large dark spot. Larva with outer clypeal hair somewhat branched.			
	(Highlands of Southern India)	..	..	(25) gigas
	Fringe spots, except the large spot between veins 5 and 6 inconspicuous or absent, if present at most at veins 3 and 4·1; lower end of mid femur with large pale spot or band; palpi banded, bands narrow but distinct and definitely white; outer portion of costa usually with dark area divided forming two dark spots. Larva with outer clypeal hair usually unbranched.			
	(Himalayas, Assam, North Burmah)			(25.a) var. simlensis
38.	Fringe spots absent except for large one between branches of vein 5; mid femur without spot or broad band; banding of female palpi distinct; outer portion of costa with dark area undivided.			
	(Philippine Islands)	..	..	(25.c) var. formosus
	"Differs from the typical form only in having 3 or 4 <i>very</i> narrow white bands on the palpi, one of them <i>usually</i> being terminal" (Alcock).			
	(Hills of Ceylon)	..	..	(25.b) var. refutans
39.	Palpi of female not shaggy, at most shaggy towards base	..	..	40
	Palpi of female shaggy to apex	..	..	43
40.	Costa uninterruptedly dark to apex of wing	..	..	41
	Costa with at least one pale interruption before that at apex	..	..	42
41.	Palpi of female unbanded; vein 1 without pale spot in inner part of its course; stems of veins 2 and 4 all dark; vein 6 darkish with one darker spot towards apex. Mesonotum with scales.			
	(Australia)	..	..	23) atratipes
	Palpi of female with white band at apex and two narrow bands; vein 1 with pale spot in			

- inner part of its course ; stems of veins 2 and 4 with pale spots ; vein 6 with three dark spots. Mesonotum with hairs only.
 (South East America and West Indies)
42. Palpi unbanded ; vein 3 dark ; fringe at apex of wing and elsewhere dark ; vein 6 with two dark spots ; vein 5 mainly dark.
 (North America, Mexico) **(26) punctipennis**
- Palpi banded ; vein 3 with extensive pale area ; fringe pale at apex of wing and at junctions of veins ; vein 6 with one dark spot ; vein 5 extensively pale.
 (South Western States to Northern Argentine) **(27) pseudopunctipennis**
43. Costa with narrow interruption near base ; markings of wings vivid, mixed scaling almost confined to vein 3 ; scales on antenna light brown, confined to first and second flagellar segments. Palpi of female unbanded (type form), or unbanded (var.).
 (Japan) **(32) punctibasis**
- Costa without basal interruption 44
44. Palpi with at least some pale scales 45
 Palpi entirely dark 49
45. No ventral tuft on seventh abdominal segment in female ; antenna with scales confined to first flagellar segment ; clypeus without scale tuft ; palpi of female with last segment pale, with or without a second band, marking diffuse. Larva without palmate hairs. Leaflets of phallosome large, expanded, serrated.
 (Malaya) **(35) separatus**
- Ventral tuft present on seventh abdominal segment in female ; antenna with scales on 4 or 5 segments ; clypeus with scale tuft ; palpi of female with several pale rings, last segment not all pale, banding more definite. Larva with palmate hairs. Leaflets of phallosome of moderate size, not especially expanded 46
46. Last two (or more) tarsal segments of hind legs completely white 47
 Tarsi of hind legs not so 48
47. (Africa, Palestine) **(29) mauritanus**
 (Malaya) **(31.c) sinensis** var. **argyropus**

48. Palpi with third band from apex conspicuously developed, as broad or broader than either the apical or preapical. Palmate hairs of larva smaller, the leaflets measuring .07 mm., the transverse diameter of the largest hair .45 of length of shaft of antenna.
- (Mediterranean Region) (30) **hyrcanus**
- (Mediterranean). Markings of wings defined; subcostal interruption broad; ventral scale tuft of black scales; fourth hind tarsal segment may be pale, possibly only in certain lights (30.a) var. **pseudopictus**
- (Mesopotamia). Wings with many white scales giving grey or snowy appearance; tuft of scales on seventh segment of female often absent, usually very small and consisting of pale scales; tuft of scales on clypeus often pale (30.b) var. **mesopotamiae**
- (Russian Turkestan) (30.c) var. **ferowii**
- Palpi with third band poorly developed, in any case not so broad as the apical or subapical. Palmate hairs of larva larger, leaflets measuring .10 mm., the transverse diameter of largest hair .71 of length of shaft of antenna.
- (Oriental Region) (31) var. **sinensis**
- (India, Malaya). Subcostal interruption small to minute, typically more or less comma shaped, often not extending on to vein 1. Wings of various degrees of darkness, but with tendency to general dark effect; light scales of wing usually of yellow colour and opaque. Third band of palpi often a mere tache; no fringe spot usually at vein 5. (31.a) var. **nigerrimus**
49. Last tarsal segment of hind leg completely white. No ventral scale tuft. Antennal scales restricted to first flagellar segment. No scale tuft on clypeus. No broad pale area at apex of wing 50
- Last tarsal segment of hind legs not completely white 51
- *50 Fourth tarsal segment of hind leg with a black band, the segment broadly pale apically and basally.
- (Malaya) (33) **albotaeniatus**

*NOTE.—A species otherwise resembling *A. mauritanus* coming here would be *A. mauritanus* var. *coustani*.

- Fourth tarsal segment of hind legs dark except where it is narrowly pale at base and apex.
 (Malaya) (34) **montanus**
51. With a projecting tuft of black scales on ventral aspect of seventh abdominal segment in female 52
 Without such a tuft 53
52. Apex of wing with two snow white spots at junctions of veins 1 and 3, other fringe spots absent or present only at veins 4·1 and 5·2; legs not flecked with white scales; no white scales distal to black ventral scale tuft; centre of mesepimeron with white scales. Outer clypeal hair of larva forming dense tuft. Leaflets of phallosome large serrated.
 (Oriental Region) (39) **barbirostris**
- Apex of wing with three snow white spots at junctions of veins 1, 2·1 and 3-4·1, other fringe spots at 4·2, 5·1 and 5·2; legs flecked with scattered white scales; white scales present distal to black ventral tuft; centre of mesepimeron devoid of white scales. Outer clypeal hair of larva formed of about 17 branches only.
 (Australasian Region) (40) **bancrofti**
53. Leaflets of phallosome extraordinarily long, hair like, longer than length of whole organ, the phallosome as a whole giving the impression of an extended hydra. Larva with two segments only carrying palmate hairs
 (Malay States) (37) **novumbrosus**
- Leaflets of phallosome not so 54
54. Leaflets of phallosome small, lanceolate, smooth. Larva without palmate hairs on any segments.
 (Malaya) (36) **umbrosus**
- Leaflets of phallosome large, rather like those of *barbirostris*. Abdomen quite or almost devoid of white scales ventrally, no white scales on pleurae, wing fringe without spots, legs not flecked with white scales, female palpi more like *A. umbrosus* than *A. barbirostris*.
 (West Africa) (38) **obscurus**
- [(b) **Group Christya.**]
55. Lateral abdominal tufts formed of long linear scales almost equal in length to the breadth of the segment.
 (Central Africa) (46) **implexa**

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[(c) **Group Arribalzagia** (Root).]

	Lateral abdominal tufts formed of ordinary scales	56
56.	Lateral tufts confined to last segment. (Brazil) .. .. .	.. .. .	(52) peryassui
	Lateral tufts not so confined. .. .. .	.. .. .	57
57.	Wings with large broad inflated scales on many of the veins including those of the apical half of the wing. (Brazil) .. .. .	.. .. .	(48) mediopunctatus
	Wings not so ; definitely inflated scales if present confined to basal half of the wing or nearly so .. .. .	.. .. .	58
58.	Posteriorly projecting scales on vein 2 (near its origin where it forms part of the large dark costal spot) nearly five times as long as broad. Wing scales in general longer and relatively narrower than in other species of the group. Vein 3 pale with a black spot at base and towards apex. Last hind tarsal segment with dark band. (Brazil) .. .. .	.. .. .	(49) pseudomaculipes
	Posteriorly projecting scales in this situation about three times as long as broad .. .. .	.. .. .	59
59.	Wing with a concrete apical dark costal spot ; inflated scales at base of wing more fan shaped than in <i>A. punctimacula</i> . The first tarsal joint of front legs with three white spots, the second, third and fourth with a basal white ring, the second with a narrow white ring in the middle, the last segment pale at the tip. Last tarsal segment of hind leg usually with dark band, but may be all pale. Vein 3 with dark spots. (Central America) .. .. .	.. .. .	(50) apicimacula
	Wings with apical dark costal spot not markedly larger than small spot or spots preceding this .. .. .	.. .. .	60
60.	No inflated scales on base of vein 4*. Vein 3 with dark spots along length. Last tarsal segment of hind leg with dark band. General effect of wing dull as compared with that of <i>A. punctimacula</i> . (South America) .. .. .	.. .. .	(47) annulipalpis

* NOTE.—This requires confirmation.

Inflated scales present on base of vein 4	61
61. Vein 3 with a black spot at base and a variable number of black scales scattered along its length. Hind tarsi appearing dark with pale rings. The first tarsal segment of the front leg with six white rings, the second segment three, the third and fourth narrow white rings basally and apically, the fifth entirely white (<i>Zetek</i> , Panama Canal Species of the Genus <i>Anopheles</i> , p. 11). (Central America, Venezuela)	(51) punctimacula
Vein 3 with dark spots	62
62. Last hind tarsal segment all pale. Light scales on legs yellow, not white. (Tropical Mexico)	(51.a) var. strigimacula
Last hind tarsal segment dark. (Brazil)	(51.b) var intermedius
63. Old World	76
Subgenus NYSSORHYNCHUS.	
New World	64
64. One or more segments of hind tarsus completely white	65
No segment of hind tarsus completely white	72
65. Tarsus of hind legs with a continuous white area involving the whole of segments 3-5, but with or without a dark band on the last segment	66
Tarsus of hind leg not so	71
[(a) Group Nyssorhynchus (Root).]	
66. With such a dark band	67
Without such a band	68
67. Penultimate segment of female palpi dark. (Mexico to Ecuador, Greater Antilles, Florida)	(54) albimanus
Penultimate segment of female palpi more or less extensively pale forming broad white band or area of white speckling. (Central and Tropical South America)	(55) tarsimaculatus
With the second tarsal segment of the hind leg almost entirely pale only a very narrow dark	

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ring at base; a third of the second palpal segment of the female white.	(Minas Geraes, Brazil)	(55.a) var. oswaldoi*
With the dark area at base of second hind tarsal segment reduced to about half the extent of the normal.	(Dutch Guiana)	(55.e) var. (Bonne)
With black band at base of third tarsal segment of hind leg, but not at base of fourth. Second segment with apex pale.	(Matto Grosso, Brazil)	(55.b) var. rondoni†
With black band at base of third tarsal segment of hind leg and with one at base of fourth.	(Matto Grosso, Brazil)	(55.d) var. triannulatus
With no black band at base of third tarsal segment of hind leg but with one at base of fourth.	(Matto Grosso, Brazil)	(55.c) var. cuyabensis
68. Wings not especially dark; vein 3 pale scaled above except for dark spot at base and apex; vein 6 mainly pale with two discrete dark spots .. .. .	.. .. .	69
Wings dark; vein 3 either mainly dark or with a dark spot in middle as well as at ends; vein 6 mainly dark .. .. .	.. .. .	70

* NOTE.—“Muito proxima da *Cellia tarsimaculata* Goeldi, da qual se diferencia : (a) por ser maior e mais clara; (b) pelos palpos que sao muito mais brancos, pois tem tambem branco o terco apical do antepenultimo articulo, alem de escamas brancas espalhadas no resto do referido articulo; (c) pelas pernas mais claras e pelo primeiro tarso posterior que apresenta na base apenas um anel preto, muito estreito, enquanto na *C. tarsimaculata*, o primeiro tarso e preto em todo o terco basal; (d) pelo colorido geral; (e) finalmente, pela larva que e distinta da da *Cellia tarsimaculata*.” “Principal transmissor do paludismo no valle do rio Doce.”

† NOTE.—“O articulo que se segue tem extremidade apical branca, em contraste com a porcao basal negra do articulo immediato, cuja parte apical, assim como os restantes articulos, com excepcao da porcao basal do ultimo que apresenta um anel negro, e branco niveo.”

A especie se caracteriza logo a primeira vista pela grande mancha redonda e negra da porcao posterior do mesonoto e pelos dois anneis negros que fazem contraste com o branco que reveste a maior porcao dos ultimos articulos do 30 par de patas.”

NOTE.—The markings of the tibia in this species recalls the characteristic ornamentation of *A. eiseni* and the wing that of the wing of *A. tibiamaculata*. Until the hypopygium has been examined the position of *gilesi*, as of *tibiamaculata* must remain doubtful. I have placed *A. tibiamaculata* following *A. eiseni* as it has been considered synonymous with that species, but its proper position may be here.

69. White scaling on abdominal segments dorsally, but not especially picking out the eighth segment.
 (Central and South America) (53) **argyritarsis**
 Ditto; without lateral scale tufts
 (Brazil) (53.b) var. **allopha**
 Eighth segment brilliantly picked out with white scales; scaling of the other segments not so marked as in preceding species.
 (Brazil) (53.a) var. **braziliensis**
70. General coloration darker; scaling of genital segments black; scaling of thorax and wings yellowish.
 (Brazil) (57) **lutzii**
 General coloration lighter; scaling of genital segments light and dark; scaling of thorax and wings white.
 (Brazil) (58) **parvus**
 Junction of 2 and 3 hind tarsal segments with a dark ring (59) **nigritarsis**
71. Tibia of hind legs with a broad pale area at apex.
 (Brazil) (60) **gilesi**
 Tibia of hind legs not so 72

[(b) **Group Kerteszia.**]

72. Hind tarsi with segment 2 mainly white, segments 3-5 all dark. Abdomen with broad black scales.
 (Bolivia) (61) **boliviensis**
 Hind tarsus with segment 2 not mainly white, segments 3 and 4 apically pale banded 73
73. Fifth hind tarsal segment dark 74
 Fifth hind tarsal with white tip. Distinct pale shading on vein 3.
 (Brazil) (62.a) **bellator** var. **cruzii**
74. Third vein with pale area.
 (Trinidad) (62) **bellator**
 Third vein dark or only with faintest trace of white 75
75. Pale interruptions on costa well developed.
 (Venezuela, Ecuador) (62.c) var. **hylephilus**
 Pale interruptions on costa small, one or more not involving the costa, but present only on first longitudinal (62.b) var. **neivai**

Subgenus **MYZOMYIA.**

76. Either femora and tibiae speckled; or hind tarsi are tipped with white; or front tarsi are

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broadly banded apically and basally; or there are more than three dark spots on vein 6 104

[(a) **Group Myzomyia.**]

- None of any of the above conditions are present 77
77. No pale markings on wing field, any pale spots present being confined to costa and vein 1 73
- Pale markings present on wing field, at least at cross veins and bifurcations of the forked cells 79
78. Pale markings on costa obscure shewing as minute subcostal, preapical and apical spots, sometimes visible in certain lights. Anterior promontory of mesonotum with scales; palpi of female with dark apex (?) and three narrow pale bands.
- (West Africa) (63) *smithii*
- Pale markings on costa more distinct, forming (usually four) well marked interruptions. Anterior promontory of mesonotum entirely bare of scales; palpi of female with dark apex and two narrow pale bands. Mesothorax shiny; no accessory, sector spot on wing.
- (Africa, Palestine, Persia, North West India) (64) *rhodesiensis*
79. Accessory sector* spot absent, at most represented by a very slight shortening of the dark area on vein 1 underlying the second main costal dark spot 80
- Accessory sector spot developed, either separated from sector spot by a short dark length of vein 1 or confluent with the pale sector area giving rise to distinct shortening of the dark area on vein 1 underlying the second main costal dark spot 82
80. Female palpi with apex only pale; base of posterior forked cell nearer base of wing than that of anterior forked cell; fringe dark, or at most with pale spots at 4·2 and 5·2; basal portion of costa and vein 1 uninterruptedly dark
- (Africa) (65) *nili*

* NOTE.—The accessory sector is the small pale interruption on the first longitudinal where it is dark under the second main costal spot. The accessory sector may be separated or fused with the sector, *i.e.*, the pale area on the costa internal to that at the subcostal junction.

	Female palpi with pale bands other than at apex ; base of posterior forked cell not nearer base of wing than that of anterior	81
81.	Base of costa with pale interruption and opposite this on vein 1 a dark area. Fringe spots if present not more than two ; India, Burma. Outer half of costa with the pale areas obviously less extensive than the dark Aden Hinterland. Outer half of costa with the pale areas as large as the dark	(66) <i>culicifacies</i> (66.a) var. <i>adenensis</i>
	Base of costa with or without interruption, but if interruption present there is no opposing dark area on vein 1. Fringe with pale interruptions at all veins except 6. (North Africa, Palestine)	(67) <i>sergentii</i>
82.	Palpi of female with apex dark	83
	Palpi of female with apex pale	85
83.	Mesothorax with vestiture of hairs or narrow false scales ; sixth vein with delicate narrow scales and very indefinite markings. Phallosome with leaflets	84
	Mesothorax with vestiture of obvious scales ; vein 6 with broadish scales and the markings clearly defined (three dark spots). Phallosome without leaflets. Larva with palmate hairs on segments 2-7 ; egg without floats but with frilled margin at either end. (North Africa, Palestine)	(80) <i>multicolor</i>
84.	Larva with palmate hairs on segments 2-7 ; eggs with lateral floats. (Spain, North Africa)	(78) <i>hispaniola</i>
	Larva with palmate hairs on segments 4-6 only ; eggs without floats or frilled margin at ends. (India. As above) Aden Hinterland. Larva as above ; characters of egg and of phallosome unknown Anglo-Egyptian Soudan. Phallosome with leaflets ; larva and egg unknown	(79) <i>turkhudi</i> (79.a) var. <i>azriki</i> (80) <i>flaviceps</i>
85.	Female palpi with four pale bands including apex	86
	Female palpi with three pale bands including apex	87
86.	Segments of female palpi apically and basally banded, all four bands broad and conspi-	

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	cuous. Hind tarsi apically banded; knee spots on tibiae of hind legs conspicuous. Vein 3 pale.			
	(Africa, Arabia)			(83) cinereus
	Segments of female palpi apically pale banded only, bands not so broad and conspicuous as in preceding species. Hind tarsi not distinctly banded; knee spots on tibiae of hind legs not conspicuous. Vein 3 pale. In type base of costa is uninterruptedly dark.			
	(Africa)			(86) distinctus
87.	Female palpi with two almost equal broad apical pale bands. Female palpi not so .. .. .	..	..	88
88.	Palpal bands widely separated by a dark area, the dark area being about twice the length of either pale band .. .. .	..	..	89
	Palpal bands not so widely separated, dark area about equal to or narrower than either pale band .. .. .	..	..	90
89.	Hind tarsi not definitely banded; veins 3 and 5·1 pale. Pale areas on 2, 2·1, 2·2, 3, 4·1, 4·2, 5, 5·1, 5·2 and 6; base of costa with two dark accessory spots; knee spots at apex of tibiae and femora present but not conspicuous. Mesothorax with narrow scales.			
	(Africa)			(84) transvaalensis
	Hind tarsi rather narrowly apically and basally banded; veins 3 and 5·1 dark. Pale interruptions on the wing-field only on veins 5·1 and 6 in addition to those at bifurcations and cross veins; base of costa dark with interruption; knee spots at apex of femur in hind leg rather conspicuous. Mesothorax with hairs or hair-like scales except anteriorly where there is a rather conspicuous scaled area.			
	(Africa)			(85) longipalpis
90.	Mesothorax with vestiture of hairs or very narrow scales except anteriorly; tarsi of hind legs if banded only very narrowly and inconspicuously so .. .. .	..	..	91
	Mesothorax with vestiture of narrow but definite flat scales; hind tarsi banded, if narrowly very distinctly .. .. .	..	..	97
91.	Palpi of female with second pale band from apex narrow or moderately broad only .. .. .	..	..	92
	Palpi of female with two broad apical bands .. .. .	..	..	95

92. Third longitudinal vein normally with about the middle third pale.
 (Africa) **(68) funestus**
 Third vein either all dark or extensively pale 93
93. Third vein entirely dark. No fringe spots. No pale marks except at bifurcations and cross veins and on 5, possibly 5·2, and 6.
 (Africa) **(68.a) var. bisignata**
 Third vein extensively pale 94
94. Basal portion of costa with pale interruption.
 (Arabia) **(68.b) var. arabica**
 Basal portion of costa without pale interruption.
 (India, Burma) **(69) listonii**
95. Proboscis with apical half always flavescens; vein 6 with 3 dark spots; fringe spot at vein 6; vein 3 extensively pale, usually without dark spot towards base. Base of costa with about equal frequency with or without a pale interruption.
 (Oriental Region) **(71) aconitus**
 Proboscis usually dark; general coloration of mosquito darker; vein 6 with two dark spots; vein 3 extensively pale, but usually with dark area towards base; no fringe spot at vein 6.
 (Oriental Region) 96
96. Base of costa with interruption or with indication of such; vein 3 pale in greater part of extent.
 (North East India and Oriental Region) **(70) minimus**
 Base of costa without interruption; vein 3 very regularly with about two-thirds white.
 (Eastern Peninsular India) **(70.a) var. varuna**
97. Palpi of female with a broad apical pale band and a narrow second band 98
 Palpi of female with two broad apical bands 100
98. Tarsi of hind legs unbanded, or only very indistinctly banded. Pale areas on outer half of costa about equal to dark areas.
 (Mediterranean, Persia, North West India, Turkestan) **(82) superpictus**
 Tarsi of hind legs narrowly but very distinctly banded. Pale areas on costa in apical half of wing much less extensive than dark 99
99. Scaling of mesothorax not so dense, hairs only or a few narrow scales at sides in front of root of wing; bases of forked cells with that

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	of posterior not nearer base of wing than anterior.			
	(Eastern India, China) ..			(72) jeyporiensis
	Scaling of mesothorax heavier with line of overlapping broad scales at side in front of root of wing; bases of posterior forked cell distinctly nearer base of wing than that of anterior.			
	(Baluchistan and Western India) ..			(72.a) var. meghulensis
100.	Preapical* pale interruption on costa of moderate extent .. .. .	..	..	101
	Preapical pale interruption more extended ..	..	..	103
101.	Wings with the dark spots on the wing-field of normal extent .. .. .	..	..	102
	Wings with the dark spots on the wing-field greatly reduced in extent. Terminal portion of female palpi diffusely pale.			
	(Africa)			(77) wellcomei
102.	With very broad apical banding of front tarsi			(75) austenii
	Apical banding of front tarsi not so ..	..	..	102.a
102.a.	Hind tarsi with apical pale banding only. Basal portion of costa with two small dark accessory spots; dark area on vein 1 under the third main dark costal spot usually with a pale interruption; apex of wing with a dark spot on fringe at 2·1 and sometimes between 2·2 and 3.			
	(Africa)			(73) marshalli
	Hind tarsi with some basal banding in addition to apical. Basal portion of costa dark with a pale interruption; dark area on vein 1 under third costal spot without an interruption; wing scales shorter and slightly broader.			
	(Africa)			(76) domicolus
103.	Apex of wing continuously pale between veins 1 and 3. Base of costa dark with pale interruption.			
	(Africa)			(73.a) marshallii var. flavicosta
	Apex of wing with dark interruption between veins 2·1 and 2·2.			
	(Africa)			(74) pitchfordi
104.	Apical segment of female palpi normally all pale, i.e., usually on this account the palpi have three pale bands .. .. .	..	..	105

* NOTE.—The pale interruption on costa between the subcostal spot and that at apex of wing (junction of vein 1).

- Apical segment of female palpi normally with a dark band, i.e., usually on this account the palpi have four pale bands 128
105. Mesothorax with vestiture of broad scales.* Prosternal hairs usually totally absent; † tips of hind tarsi usually white. †† No prothoracic tuft 113

[(b) Group *Pseudomyzomyia*.]

- Mesothorax with vestiture of hairs or narrow scales, though usually with some scattered broader ones towards sides over fossae. Presternal hairs present; tips of hind tarsi dark; tarsi of front legs with apical and basal banding. No prothoracic tuft except in *A. gambiae* (costalis) 106
106. Femora and tibiae not spotted 107
 Femora and tibiae spotted 109
107. Palpi of female with dark preapical band equal to, or nearly equal to, the pale apical area. Larva with the outer clypeal hairs at least half the length of the inner. Tibiae usually with well marked pale longitudinal streak. Male with broad pale band between segments 3 and 4 of the front tarsus.
 (Oriental Region) (87) *subpictus*
- Palpi of female with dark preapical band half or less the length of the pale apical area 108
108. Larva with outer clypeal hair at least half the length of inner. Dark preapical band variable.
 (Malay States) (87.a) var. *malayensis*
- Larva with outer clypeal hair very short, much less than half length of inner. Dark preapical band of palpi usually very narrow. Tibiae without well marked pale streak. Male with no pale band or very narrow one, not involving both sides of the joint, between segments 3 and 4 of the front tarsus.
 (Oriental Region) (88) *vagus*
109. Mesothorax with well marked vestiture of narrow scales; female abdomen without

* NOTE.—Broad scales confined to antero-lateral portion of mesonotum in *A. theileri*.

† NOTE.—Absent in all Oriental forms, but a hair present in *A. rufipes*, *A. theileri* and possibly other African species.

†† NOTE.—Except in *A. stephensi* and *A. brunnipes*.

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	scales except on cerci; the prothoracic lobes with some outstanding dark scales	112
	Mesothorax with vestiture of hairs except for scales on anterior promontory and scattered ones over fossæ; female abdomen with narrow scales on last segment; prothoracic lobes without any outstanding dark scales	110
110.	Speckling present on femur, tibia and metatarsus, but if on any further tarsal segment it is poorly developed and indefinite. Wing with pale interruptions on outer half of costa not so extended.	
	(Oriental Region)	(89) ludlowii
	Speckling very vivid, extends on to several tarsal segments and forms on some of these broad conspicuous bands. Wing with the pale costal interruptions in outer half extended, the third dark costal spot less in extent than pale interruptions.	
	(Philippine Islands, Celebes)	(90) parangensis
112.	Apex of palpi of female broadly pale.	
	(Africa)	(91) gambiae (costalis)
	Apex of palpi of female dark or with trace only of pale.	
	(Africa)	(92) quadriannulatus
[(c) Group Neocellia.]		
113.	Tip of tarsus of hind leg not white	114
	Tip of tarsus of hind leg white	115
114.	Femora and tibiae not spotted; palpi of female with one broad apical and two narrow pale bands.	
	(Africa)	(93) brunnipes
	Femora and tibiae spotted; palpi of female with two broad apical and one narrow band.	
	(India, Mesopotamia)	(96) stephensi
115.	Femora and tibiae not spotted	116
	Femora and tibiae spotted	121
116.	Palpi of female with two broad apical bands and one narrow	117
	Palpi of female with one broad apical band and two narrow bands	118
117.	Wing darker; veins 4 and 5 mainly dark, vein 6 with outer half continuously dark. Pale	

* NOTE.—With pale interruptions on the costa more extended, type form (Philippines, Formosa and Moluccas), and less extended, variety (Dr. Rodenwaldt) smaller Sunda Island, Riouw Archipelago and Andamans.)

area at apex of second tarsal segment of hind leg about one-twelfth of segment. Mesonotal scaling covering mesonotum. Three tarsal segments continuously white or with dark band at base of third tarsal. Banding of tarsi on fore and mid legs inconspicuous.

(Africa)

.. (94) **rufipes**

Wing lighter; veins 4 and 5 mainly pale, vein 6 with three dark spots. Pale area at apex of second tarsal segment of hind leg about one-fifth of segment. Mesonotal scaling confined to anterior third. Two and three quarter tarsal segments continuously white. Banding of tarsus on fore and mid tarsi more definite.

(Africa)

.. (95) **thoiler**

118. Wing darker; pale interruptions on costa very narrow; subcostal pale spot bridged on vein 1 by dark; vein 5 extensively dark; basal portion of costa mainly dark. Three tarsal segments continuously white, the joint above this (between first and second tarsal) conspicuously picked out with white. Sometimes with dark band at base of second tarsal leaving two and three quarters only continuously white. Scaling on dorsal aspect of abdomen confined to two or three segments; no pale scales on ventral surface of abdominal segments; scale tuft on ventral aspect of seventh segment not very prominent. Few or no white scales on mesothoracic plate of pleura or on prothoracic lobes.

(Oriental Region)

(97) **fuliginosus**

Wings lighter; pale interruptions on costa in apical half of wing approaching dark in extent or at least not especially narrow; vein 5 extensively pale; base of costa pale with small dark accessory spots; subcostal pale area on costa not bridged on vein 1 by dark

.. .. 119

119. Two and a half tarsal segments continuously white; tarsal segments one and two with apical white bands. Front tarsi conspicuously banded. Scales on abdomen confined to posterior edge of eighth segment and the female cerci.

(Sumatra, Java)

(100) **schuffneri**

Three tarsal segments continuously white

.. .. 120

120. White scales present on ventral aspect of most of the abdominal segments; scaling on

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- dorsal aspect of abdomen variable, but some scales on 5 or 6 segments and dorsum often heavily scaled; scales present on mesosternal plate of pleura; tuft of scales on ventral aspect of seventh abdominal segment very conspicuous; scales present on prothoracic lobes. End of second tarsal segment in hind legs never picked out with white. Three completely white tarsal segments invariable
 (Peninsular India) (99) *pallidus*
- No white scales on ventral aspect of abdominal segments; scales confined on dorsum to a few segments, dorsum never heavily scaled; mesosternal plate of pleura devoid of scales; scale tuft on ventral aspect of seventh segment present but not so conspicuous as in preceding species. End of second tarsal segment in hind legs variable, usually picked out in some degree in white. Three completely white tarsal segments invariable; amount of white on second tarsal usually greater than in *A. fuliginosus* but variable.
 (Oriental Region) (98) *philippinensis*
121. White portion of tarsus forms a continuous area involving at least two whole segments 122
 White portion of tarsus involves continuously only one complete segment 126
122. Two tarsal segments only completely white. Scaling of abdomen broad but confined to last few segments. Front tarsi apically banded only.
 (Peninsular India) (103) *theobaldi*
- Three tarsal segments completely white 123
123. Palpi of female with one broad apical band and two narrow. Seventh and eighth abdominal segments with conspicuous golden hairs and scales.
 (Oriental Region) (104) *jamesii*
- Palpi of female with two broad apical bands and one narrow. Termination of abdomen not conspicuously golden 124
124. With broad white band at apex of first and base of second hind tarsal segment. Dark area between the two broad palpal bands broader; no speckling of palpi. Third hind tarsal segment with a dark band towards its base leaving about two and three quarter segments

completely white. Larva with clypeal hairs simple.

(Africa)

(105) **pretoriensis**

Without any pale band at joint between first and second hind tarsal segment. Dark area between the two broad palpal bands somewhat less than either pale area; second segment of palpi in female prominently speckled with one or more patches of white scales. Third hind tarsal segment entirely pale leaving three tarsal segments completely white. Larva with clypeal hairs shewing well marked lateral branching

125

125. White area on second hind tarsal segment one-half to two-thirds length of segment.

(Africa)

(106) **maculipalpis**

White area on second hind tarsal segment less than one quarter, usually about one tenth, of the length of the segment.

(India, China)

(106.a) var. **indiensis**

126. Front tarsal banding broader, apical and basal. Pale interruptions on costa more extended. Scaling if present on second abdominal segment narrow.

Scales narrow and confined to last two segments or so except for a few that may be found among the hairs several segments higher.

(Oriental Region)

(101) **maculatus**

Scales more conspicuous and broader, very variable in extent but often extending to second abdominal segment.

(Peninsular India)

(101.a) var. **dravidicus**

Front tarsal banding narrower, often apical only, pale interruptions on costa less extended. Scaling heavy and profuse on all abdominal segments and with patch of broad oval scales on second abdominal segment.

(Foothills of Himalayas from Assam to Kashmir)

(102) **wilmori**

128. Abdomen without lateral scale tufts

134

[(d) **Group Cellia.**]

Abdomen with lateral scale tufts. Prothoracic tuft present except in *A. pulcherrimus*

129

- Palpi of female with broad pale bands occupying considerable proportion of length of some of the palpal segments often with narrow as well as broad bands 142
135. Hind tarsus ending in an uninterrupted pale area involving several segments, with or without a dark terminal segment 136
Hind tarsus not so 139
136. Last tarsal segment of hind leg dark, fourth segment pale. Mesothorax with narrow scales. Wings Myzorhynchus like in general appearance. Vein 6 with two dark spots. Prothoracic tuft present.
(Africa) (116) **kingi**
Last tarsal segment of hind leg pale, two and about three quarters of the third tarsal segment continuously white 137
137. Wing with three dark spots on vein 6. Scaling of wing not Myzorhynchus like in general effect. Mesothorax with narrow scales. Prothoracic tuft present.
(Malay States) (119) **watsonii**
Wing with more than three dark spots on vein 6. Scaling of wing with general Myzorhynchus like effect 138
138. Mesothorax with short golden hairs. Prothoracic tuft present.
(Africa) (114) **natalensis**
Mesothorax with broad golden scales. Prothoracic tuft present.
(Africa) (115) **aureosquamiger**
139. Sixth vein with more than three spots. A broad pale band involving both sides of the tibio tarsal articulation conspicuously visible to naked eye. Prothoracic tuft present 140
Sixth vein with three dark spots only. Without such a band 141
140. Female palpi about same length as proboscis.
(Oriental Region) (121) **leucosphyrus**
Female palpi much shorter than the proboscis, the latter unusually long, longer than the palpi by almost or more than the last two palpal segments. White bands on palpi very narrow. Dark markings of wing more extensive; the spots on the first longitudinal vein more fused.
(Malay States) (121.a) var. **hackeri**

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141. Femora and tibiae with pale spots. Mesothorax with hairs only except anteriorly. Abdomen devoid of scales. Prothoracic tuft present.
 (Africa) (118) *ardensis*
 Femora and tibiae without pale spots. Mesothorax with vestiture of broad scales. Abdomen with scales on most of the segments. Prothoracic tuft present.
 (Africa) (117) *christyi*
142. Vein 6 and vein 3 without in either case more than three dark spots 143
 Vein 6 and vein 3 both with more than three dark spots, or at least vein 3 has many spots 144
143. Female palpi with two broad bands closely followed by a narrow band and this by a further narrow band more basally situated. No projecting tufts of black scales on ventral aspect of abdominal segments. Wing markings of ordinary Neocellia type. No prothoracic tuft.
 (Oriental Region) (107) *karwari*
 Female palpi with three broad pale bands followed by a narrower band more basally situated. Ventral surface of abdominal segments with projecting tufts of black scales. Dark areas of wing marks much reduced. Small accessory spot in region of sector spot. Prothoracic tuft present.
 (Oriental Region) (120) *kochi*
144. Legs entirely unicolorous. Third vein with about six dark spots, sixth vein with four or sometimes three. Palpi of female with three almost equal broad pale bands in apical half and a narrow band more basally; palpi long and thin. Proboscis pale in apical half. Mesothorax with hairs, shiny, some scales on anterior promontory. Abdomen devoid of scales, cerci without obvious scales. Prothoracic tuft present.
 (Malay States) (126) *aurostris*
 Legs highly ornamented, spotted and banded 145
145. Mesothorax with vestiture of hairs only. Palpi of female with three broad pale bands in apical half. Proboscis pale in apical half. Second segment of female palpi very long, longer than third and fourth segments together. Abdomen of female with at most a few delicate scales apically, cerci with small

- delicate scales not forming dense tuft.
Prothorax with some scales.
(Oriental Region) (122) **tessellatus**
- Mesothorax with vestiture of quite broad scales. Abdomen more or less scaly at least on last segment or so. Cerci of female with numerous scales forming dense tufts 146
146. With an additional narrow band below the most basally situated pale band on the apical half of the palpi, forming a narrow black ring near the apex of white apical half of second palpal segment 147
- Without such an additional band, the second palpal segment being completely white in its apical half 148
147. The additional black band narrow. Apical half of proboscis pale. Prothoracic scale tuft small.
(North Coast of New Guinea) .. (123) **punctulatus**
- The additional black band broader. Apical half of proboscis dark or with trace of flavescence. Prothoracic scales tuft small.
(Moluccas, Western New Guinea) .. (123.a) var. **moluccensis**
- Larva with leaflets of fans very slender, not serrated and without pigmentation to apex. No developed palmate hair on second abdominal segment. Adult as in type.
(Moluccas, Northern Celebes, Eastern Java) (123.b) var. **orientalis**
148. Abdomen not especially scaled. Proboscis with apical half pale. Antenna of female more delicate, with scaling not specially developed.
(Australia) (124) **annulipes**
- Abdomen heavily scaled. Proboscis entirely dark. Antenna of female stouter, with conspicuous scaling. Prothorax with prominent tuft.
(Australia) (125) **amictus**