

**Catalogue of the named Megascolecidae
(Oligochaeta : Annelida)
in the National Museum of Natural History, Paris**

by B. G. M. JAMIESON *

Résumé. — Le catalogue donne la liste des 22 genres et 61 espèces appartenant à la famille des Megascolecidae, de la collection du Muséum d'Histoire naturelle de Paris.

INTRODUCTION

The named Megascolecidae (*sensu lato*) in the National Museum of Natural History, Paris, form a significant collection representing 22 genera with 61 species, including 8 generic type-species and types of no less than 41 species. The collection has been the subject of papers by VAILLANT (1868 *a*), PERRIER (1872, 1873, 1874, 1875), EISEN (1893), CERNOSVITOV (1934 *a, b*, 1935, 1938, 1939), MICHAELSEN (1907 *a*, 1910 *a, b*, 1915, 1934) and JAMIESON (1971). The chief aims of this catalogue are to record the species present with their label-data, to assign registration numbers to them, to list them under the binomina applicable to them in current classification, with major synonyms, and to indicate references to the material in the literature. Collecting data given in the publications are included to confirm that the published accounts refer to the material specified in the catalogue, and to augment the often inadequate labels.

The catalogue is restricted to specimens which have been identified to species with rare exceptions where a published generic, but not specific identification exists. Few specimens had been labelled as types and designation of numerous specimens in the catalogue as types rests largely on deduction from the relevant literature. The author has not attempted the lengthy revision necessary to confirm the specific identifications, though some are confirmed, as this should be unnecessary for type-specimens and because other identifications have been made by reliable workers such as CERNOSVITOV, GATES and MICHAELSEN.

The collection, when examined, was contained in many large glass jars, or "bocaux", each "bocal" having its own registration number and containing several to many phials of one or normally more species. Each phial is given a unique number in this catalogue but, owing to the shortness of time available for this work, no attempt has been made to

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record the number of specimens in each tube or to give each specimen an individual registration number. The numbering system adopted conforms with the system required by the museum.

The following format is used for each species : Specific name. Major synonymy. New registration number. Local number. Data on label. Status if type-material. Reference to published account of this material, if any, with collecting data. Remarks where appropriate.

Genus **ACANTHODRILUS** Perrier, 1872

Acanthodrilus obtusus Perrier, 1872

Acanthodrilus obtusus Perrier, 1872 : 87.

Notiodrilus obtusus : MICHAELSEN, 1900 *b* : 136.

AE572 (A712) *Acanthodrilus obtusus* Edmond Perrier, Nouvelle Calédonie, Musée des Colonies, 1863. TYPE.

REFERENCE : PERRIER (1872 : 89) — *Acanthodrilus obtusus*, donné en 1863 au Muséum d'Histoire naturelle par le Musée des Colonies ; il est originaire de la Nouvelle Calédonie.

Acanthodrilus ungulatus Perrier, 1872

Acanthodrilus ungulatus Perrier, 1872 : 89 ; MICHAELSEN, 1900 *b* : 127.

AE573 (A712) *Acanthodrilus ungulatus* Edmond Perrier, Nouvelle Calédonie, Musée des Colonies, 1863. TYPE.

REFERENCE : PERRIER (1872 : 92) — *Acanthodrilus ungulatus*, donné... au Muséum en 1863 par le Musée des Colonies.

REMARKS : Designated the type-species of *Acanthodrilus* by MICHAELSEN (1900 *b*).

Genus **AMYNTHAS** Kinberg, 1867

Amyntas alteradamae (Michaelsen, 1934)

Pheretima (Ph.) *alteradamae* Michaelsen, 1934 : 540.

Amyntas alteradamae : SIMS and EASTON, 1972 : 235 (*hawayanus* group).

AE574 (A730) *Pheretima* (Ph.) *alteradamae*, Pulo Dama, Golf v. Siam, montagne boisée ; 24.XI.1931. TYPE.

REFERENCE : MICHAELSEN (1934 : 540) — *Pheretima* (Ph.) *alteradamae*, Pulo Dama im Golf von Siam, auf bewaldeten Berg ; 24 Nov. 1931.

Amynthas aspergillus (Perrier, 1872)

Perichaeta aspergillum Perrier, 1872 : 118.

Amynthas aspergillus : SIMS and EASTON, 1972 : 234 (*auruginosus* group).

AE575 (A725) *Perichaeta aspergillum*. TYPE.

REFERENCE : PERRIER (1872 : 118) — *Perichaeta aspergillus* Edm. Perr., sans désignation d'origine.

Amynthas bangoianus (Michaelsen, 1934)

Pheretima (Ph.) *bangoiana* Michaelsen, 1934 : 505.

Amynthas bangoianus : SIMS and EASTON, 1972 : 236 (*sieboldi* group).

AE576 (A730) *Pheretima* (Ph.) *bangoiana* Michaelsen, Bangoi ; 11.9.30. TYPE.

REFERENCE : MICHAELSEN (1934 : 505) — *Pheretima* (Ph.) *bangoiana*, Süd-Annam, Bangoi (Cam Ranch) ; 11 Nov. 1930.

Amynthas barbadensis (Beddard, 1892)

Perichaeta barbadensis Beddard, 1892 : 167.

Pheretima hawayana var. *barbadensis* : CERNOSVITOV, 1934 b : 49 ; 1935 : 11.

Amynthas barbadensis : SIMS and EASTON, 1972 : 236 (*morrisi* group).

AE577 (A709) *Pheretima hawayana* (Rosa) var. *barbadensis* (Bedd.), Dr L. CERNOSVITOV det., 1933, Brésil, M. WAGNER nr. 63.

REFERENCE : CERNOSVITOV (1934 b : 49, 1935 : 11) — *Pheretima hawayana* var. *barbadensis*, Brasilien. Mr. WAGNER leg. nr. 63.

Amynthas caudanus (Michaelsen, 1934)

Pheretima (Ph.) *caudana* Michaelsen, 1934 : 531.

Amynthas caudanus : SIMS and EASTON, 1972 : 234 (*diffringens* group).

AE578 (A730) *Pheretima* (Ph.) *caudana* Michaelsen. TYPE.

REFERENCE : MICHAELSEN (1934 : 531) — *Pheretima* (Ph.) *caudana*, Süd-Annam, Cauda bei Nhatrang (1 Bruchstück Vorderende).

REMARKS : The specimen, a single anterior end as reported by MICHAELSEN now lacks most of the internal organs but spermathecae and prostate glands are present. The absence (universal in the genus) of copulatory pouches and nephridia from the spermathecal ducts (usual in *Amynthas*) are confirmed.

Amyntas hawayanus (Rosa, 1891)

Perichaeta hawayana Rosa, 1891 : 396.

Pheretima hawayana typica Cernosvitov, 1934 *b* : 49; 1935 : 11.

Amyntas hawayanus : SIMS and EASTON, 1972 : 235 (*hawayanus* group).

AE579 (A704) *Pheretima hawayana* Rosa (no locality).

AE580 (A709) (1) *Pheretima hawayana* Rosa, f. *typica*, Dr L. CERNOSVITOV det. 1933, Brésil, M. WAGNER no. 63.

AE581 (2) *Pheretima hawayana* (Rosa), Dr L. CERNOSVITOV det. 1933, Brésil.

AE582 (3) *Pheretima hawayana* (Rosa)? Dr L. CERNOSVITOV det. 1933, mission F. GEAY, Guyane française, 1902, no. 3222, Maroni.

REFERENCE : CERNOSVITOV (1934 *b* : 49, 1935 : 11) — *Pheretima hawayana typica*, Brésilien, Mr. WAGNER leg. Nr. 63 (AE580) ; Brésilien. loc ?, (AE581) ; Französisch-Guayana, mission GEAY, 1902, nr. 3222 (Nr. 24 — 1904) (AE582).

Amyntas heterochaetus (Michaelsen, 1891)

Perichaeta heterochaeta Michaelsen, 1891 : 6.

Amyntas heterochaetus : SIMS and EASTON, 1972 : 235 (*diffringens* group).

AE583 (A730) *Pheretima heterochaeta*, Poulo Condor, Mr. MAINDRON, 1907, W. MICHAELSEN det.

Amyntas juliani (Perrier, 1875)

Perichaeta juliani Perrier, 1875 : 1045.

Pheretima juliani : MICHAELSEN, 1910 : 102.

Amyntas juliani : SIMS and EASTON, 1972 : 235 (*diffringens* group).

AE584 (A725) *Perichaeta juliani* Ed. Perrier. TYPE.

REFERENCE : PERRIER (1875 : 3) — *Perichaeta juliani*, Saigon. MICHAELSEN, 1910 : 102 (re-examination of types).

Amyntas modiglianii (Rosa, 1889)

Perichaeta modiglianii Rosa, 1889 : 134.

Pheretima modiglianii : MICHAELSEN, 1900 *b* : 285.

Amyntas modiglianii : SIMS and EASTON, 1972 : 235 (*diffringens* group).

AE585 (A730) *Pheretima* (*Ph.*) *modiglianii* Rosa (no locality).

Amyntas primadamae (Michaelsen, 1934)

Pheretima (*Ph.*) *primadamae* Michaelsen, 1934 : 526.

Amyntas primadamae : SIMS and EASTON, 1972 : 235 (*diffringens* group).

AE586 (A730) *Pheretima* (Ph.) *primadamae* Mich. Poulou Dama ?, Golfe Siam, 24.XI.31, Montagne boisée. TYPE.

REFERENCE : MICHAELSEN (1934 : 526) — *Pheretima* (Ph.) *primadamae*, Die Inseln von Pulo Dama in Golf von Siam auf bewaldetem Berge ; 24 Nov. 1931.

***Amyntas robustus* (Perrier, 1872)**

Perichaeta robusta Perrier, 1872 : 112.

Perichaeta cingulata Vaillant (part.) : PERRIER, 1872 : 112.

Pheretima robusta : MICHAELSEN, 1900 b.

Amyntas robustus : SIMS and EASTON, 1972 : 234 (*aeruginosus* group).

AE587 (A721) (1) *Perichaeta robusta* Ed. P. Ile de France, Mr. DESJARDINS. TYPE.

AE588 (2) *Perichaeta robusta* Ed. P. Manille, B. BARROT, 1852. TYPE.

REFERENCE : PERRIER (1872 : 114) — *Perichaeta robusta*, Ile de France, recueillis par M. DESJARDINS, probablement en 1835 (AE587) ; Manille, M. BARROT, 1852 (AE588).

REMARKS : Identification confirmed.

***Amyntas rodericensis* (Grube, 1879)**

Perichaeta rodericensis Grube, 1879 : 554.

Pheretima rodericensis : CERNOSVITOV, 1934 b : 49 ; 1935 : 11.

Amyntas rodericensis : SIMS and EASTON, 1972 : 235 (*diffringens* group).

AE589 (A704) *Pheretima rodericensis* Grube (no locality).

AE590 (A709) *Pheretima rodericensis* Grube, Dr L. CERNOSVITOV det. 1933, Mission F. GEAY, 1902, Guyane française No. 2832, Morne de Montobo (sic ?).

REFERENCE : CERNOSVITOV (1934 b : 49 ; 1935 : 11) — *Pheretima rodericensis* Grube, Französisch-Guayana. Morne de Montabo, dans la terre végétale, mission GEAY col., II.1902, Nr. 2832 (AE590).

***Amyntas tertiadamae* (Michaelson, 1934)**

Pheretima (Ph.) *tertiadamae* Michaelson, 1934 : 535.

Amyntas tertiadamae : SIMS and EASTON, 1972.

AE591 (A730) *Pheretima* (Ph.) *tertiadamae* Mich., Pulo Dama ; 24 Nov. 31. TYPE.

REFERENCE : MICHAELSEN (1934 : 535) — Die Inseln von Pulo Dama im Golf von Siam, auf bewaldetem Berg ; 24 Nov. 1931.

***Amyntas tonkinensis* (Michaelson, 1934)**

Pheretima (Ph.) *tonkinensis* Michaelson, 1934 : 529.

Amyntas tonkinensis : SIMS and EASTON, 1972 : 235 (*diffringens* group).

AE592 (A730) *Pheretima* (*Ph.*) *tonkinensis* Mich., Tonkin, Phu Ho, 10.X.31. TYPE.

REFERENCE : MICHAELSEN (1934 : 529) — *Pheretima* (*Ph.*) *tonkinensis*, Tonkin, Phu-Ho ; 10 Okt. 1931.

Genus **ARGILOPHILUS** Eisen, 1893

Argilophilus marmoratus Eisen, 1893

Argilophilus marmoratus ornatus Eisen, 1893

Argilophilus marmoratus ornatus Eisen, 1893 : 253.

AE593 (A732) *Argilophilus marmoratus ornatus*, collection of California Academy of Sciences, Sebastopol, Sourema Co., California, in mud at Lagune, Eisen, May 1893, No. 1899. TYPE ?

REFERENCE : EISEN (1893 : 253) — *Argilophilus marmoratus ornatus*, North of San Francisco Bay as far up as Oregon.

REMARKS : Desiccated specimens of no taxonomic value.

Genus **BENHAMIA** Michaelsen, 1889

Benhamia michaelsoni Beddard, 1901

Benhamia michaelsoni Beddard, 1901 : 213.

AE594 (A705) *Benhamia michaelsoni* Beddard, Liberia.

REMARKS : The type-locality of *B. michaelsoni* is McCarthy Island, Gambia.

Genus **CHILOTA** Michaelsen, 1899 c

Chilota bicincta (Beddard, 1895 b)

Acanthodrilus bicinctus Beddard, 1895 b : 217.

Chilota bicincta : MICHAELSEN, 1900 b : 148.

Chilota bicinctus : CERNOSVITOV, 1934 a : 254.

AE595 (A711) (1) *Chilota bicinctus* (Beddard), Dr L. CERNOSVITOV det. Cap Horn, Mission du Cap Horn 1882-83, Romanche No. 7, alt. 180 m, 12 Déc. 82 (Terre).

AE596 (2) *Chilota bicincta* (Beddard), Dr L. CERNOSVITOV det. *Acanthodrilus*, Baie Orange, Mission du Cap Horn, 1882-83.

REFERENCE : CERNOSVITOV (1934 a : 254) — No. 7, Sommet du Cap Horn, Romanche, alt. 180 m, 12 décembre 1882 (AE595) ; No. 67, Terre de Feu, Baie Orange (AE596).

REMARKS : There is much additional material in the collection, labelled only *Acanthodrilus*, from the same locality.

Chilota corralensis (Beddard, 1895 *b*)

Acanthodrilus corralensis Beddard, 1895 *b* : 222.

Chilota corralensis belgicae Cernosvitov, 1934 *a*

Chilota corralensis (Beddard) var. *belgicae* Cernosvitov, 1934 *a* : 254.

AE597 (A711) (1) *Chilota corralensis* var. *belgicae*, Dr L. CERNOSVITOV det. *Acanthodrilus*, Romanche, Baie Orange, Mission du cap Horn, 1882-83, No. 37 ; 12 Mai 83, Terre. TYPE.

AE598 (2) *Chilota corralensis* var. *belgicae*, Dr L. CERNOSVITOV det. Lombrics, Terre de Feu, Romanche No. 9, Baie Orange, Mission du Cap Horn, 1883 (Terre). TYPE.

AE599 (3) *Chilota corralensis* var. *belgicae*, Dr L. CERNOSVITOV det. *Acanthodrilus*, No. 324, Baie Orange, Mission du Cap Horn, 1882-83.

REFERENCE : CERNOSVITOV (1934 *a* : 255) — la partie méridionale de la Terre de Feu (55° parallèle à peu près) (AE597-599).

REMARKS : CERNOSVITOV's variety is here designated a subspecies.

Genus **DICHOGASTER** Beddard, 1889

Dichogaster affinis (Michaelsen, 1890)

Benhamia affinis Michaelsen, 1890 : 9.

Dichogaster affinis : MICHAELSEN, 1900 *b* : 345 ; CERNOSVITOV, 1934 *b* : 50 ; 1935 : 12.

AE600 (A723) *Dichogaster affinis* (Michaelsen), Dr L. CERNOSVITOV det. Bas Carsevenne, Guyane française, GEAY, 1898, No. 149.

REFERENCE : CERNOSVITOV (1934 *b* : 50 ; 1935 : 12) — *Dichogaster affinis* (Michaelsen) Brésilien (Contesté franco-brésilien). Bas Carsevenne. Nr. 149, 1898. Mission GEAY.

REMARKS : Widely distributed in warmer parts of the world. Type-locality : Quilimane, Mozambique.

Dichogaster austeni (Beddard, 1901)

Benhamia austeni Beddard, 1901 : 206.

Dichogaster austeni : MICHAELSEN, 1914 : 106 ; 1915 : 32.

AE601 (A715) *Dichogaster austeni* (Beddard) 75, 25.IV.12, Mangapwani.

REFERENCE : MICHAELSEN (1914 : 106) — *Dichogaster austeni*, Sansibar, Dr Ch. ALLUAUD und Dr R. JEANNEL, 25.IV.1912. MICHAELSEN (1915 : 32) — Ile de Zanzibar, Mangapwani, au nord de la ville, st. no. 75 ; 25 avril 1912.

REMARKS : The type-locality is Blantyre, Malawi.

***Dichogaster bolawi* (Michaelsen, 1891)**

Benhamia bolawi Michaelsen, 1891 : 9.

Dichogaster bolawi : CERNOSVITOV, 1934 *b* : 49 ; 1935 : 12.

6 tubes of specimens identified by CERNOSVITOV, their labels agreeing with the following data of CERNOSVITOV (1934 *b* : 49 ; 1935 : 12) :

AE602 (A723) (1) St. Georges d'Oyapock, 1129, 1900, 1131, 1900 ; 268, 1900 (Nr. 45).

AE603 (2) Bas Mahury, Nr. 3806, 1902.

AE604 (3) Ounary, Nr. 1534, 1901.

AE605 (4) Montabo, Nr. 2831.

AE606 (5) Ile de Cayenne, Nr. 25, 1904, Nr. 3783.

AE607 (6) Ilet le Père, Nr. 2935, 1901.

Identified, but not listed by CERNOSVITOV :

AE608 (7) Ilet le Père, No. 2897.

AE609 (8) Mission GEAY, Guyane française, No. 1027.

AE610 (A715) *Dichogaster bolawi* (Michaelsen). Pic de Lang Biang, 2 200 m, Fév. 1931.

REFERENCE : CERNOSVITOV (1934 *b* : 49 ; 1935 : 12) — see above (AE602-607) ; MICHAELSEN (1934 : 499) : Annam, Plateau des Lang Biang, in einer Höhe von 2 200 m, im Walde, Febr. 1931 (AE610).

REMARKS : Widely distributed throughout the world. Type-locality : Bergedorf, Hamburg.

***Dichogaster chappuisi* Cernosvitov, 1938**

Dichogaster chappuisi Cernosvitov, 1938 : 292.

AE611 (A719) *Dichogaster chappuisi* n. sp. CERNOSVITOV det. 20.8.1933. TYPE.

REFERENCE : CERNOSVITOV (1938 : 292) — *Dichogaster chappuisi*, St. 20. Camp IV de l'Elgon, 8.I.1933, alt. 4 000 m, camp dans le cratère de l'Elgon.

***Dichogaster cheranganiensis* Cernosvitov, 1938**

Dichogaster cheranganiensis Cernosvitov, 1938 : 298.

AE612 (A719) *Dichogaster cheranganiensis* n. sp. CERNOSVITOV. 31 ; 13.III.1933, Ethiopia. TYPE.

REFERENCE : CERNOSVITOV (1938 : 298) — *Dichogaster cheranganiensis*, St. 31. Campi Cherangani, 10-18.III.1933, alt. 3 000 m, dans les prairies alpines au-dessus de la forêt du Marakwet...

***Dichogaster gracilis* (Michaelson, 1892)**

Benhamia gracilis Michaelson, 1892 : 258.

Dichogaster gracilis : MICHAELSEN, 1907 a : 1.

AE613 (A777) *Dichogaster gracilis* Michaelson, Regenwald, Ostafrika : Meru, 3 000 m, 21.12.1905, Yngve Sjöstedt. TYPE.

REFERENCE : MICHAELSEN (1907 a : 2) — Meru-Berg, Süd-Abhang, in de Zone des Regenwaldes, 3 000 m hoch ; Y. SJÖSTEDT leg. 21/24.XII.05.

***Dichogaster kenyae* Michaelson, 1914**

Dichogaster kenyae Michaelson, 1914 : 104 ; 1915 : 30.

AE614 (A715) *Dichogaster kenyae* Michaelson. 39 ; 22.I.12. TYPE.

REFERENCE : MICHAELSEN (1914 : 104) — Britisch-Ostafrika, Berg Kenya, 2 400 m, Dr C. L. ALLUAUD and Dr R. JEANNEL, 22.I.1912. MICHAELSEN (1915 : 30) — Afrique Orientale Anglaise : forêts inférieures du versant ouest du Mont Kénia, alt. 2 400 m, st. no. 39, janv. 1912, un seul exemplaire en mauvais état de fixation.

REMARKS : The specimen is shrivelled owing to previous desiccation and is of no taxonomic value. The species was wrongly designated as new in MICHAELSEN (1915), the account being a repetition of that of 1914.

***Dichogaster modiglianii* (Rosa, 1896)**

Benhamia modiglianii Rosa, 1896 : 510.

Dichogaster modiglianii : MICHAELSEN, 1900 b : 346.

Dichogaster modigliani : CERNOSVITOV, 1934 b : 50 ; 1935 : 12.

AE615 (A723) *Dichogaster modiglianii* (Rosa), Dr L. CERNOSVITOV det. 1933, Guyane française, No. 2899, M. GEAY, 1902 ; 73.

REFERENCE : CERNOSVITOV (1934 b, 1935 : 12) — *Dichogaster modiglianii*, Französisch-Guayana. Nr. 2899, 1902 (Nr. 73), Mission GEAY.

***Dichogaster variabilis* Cernosvitov, 1938**

Dichogaster variabilis Cernosvitov, 1938 : 295.

AE616 (A719) *Dichogaster variabilis* n. sp. (CERNOSVITOV det.) 20 ; 8.I.1933. TYPE.

REFERENCE : CERNOSVITOV (1938 : 295) — *Dichogaster variabilis*, St. 20, Camp IV de l'Elgon, 8.I.1933, alt. 4 000 m, Camp dans le cratère de l'Elgon...

Dichogaster sp. Cernosvitov, 1934 *b*

Dichogaster sp. Cernosvitov, 1934 *b* : 50, 1935 : 12.

The following unnamed species of *Dichogaster* are included as they are listed by CERNOSVITOV (1934 *b* : 50 ; 1935 : 12). Locality and other data agree very closely with those given in the publications which, alone, are cited.

AE617 (A715) (1) *Dichogaster* sp. Ekuador. ANDRÉ leg. 1898.

AE618 (2) *Dichogaster* sp. Französisch-Guayana, Mission GEAY Col.

AE619 (i) St. Georges d'Oyapock, Nr. 1132, 1900 ; 1136, 1901.

AE620 (ii) Camopi Nr. 1246, 1900.

AE621 (iii) Maroni, Saint Hermina, Nr. 3687, 1902.

(3) Brésilien (Contesté franco-brésilien), Mission GEAY Col.

AE622 (i) Bas Carsevenne. Nr. 148 ; Nr. 149, 1898 ; 1899.

AE623 (4) *Dichogaster* sp. Venezuela. Haut Carsevenne, Nr. 63, 1898, Mission GEAY col.

AE624 (5) Columbia, Nr. 39, 1896. loc ?

REFERENCE : CERNOSVITOV (1934 *b* : 50, 1935 : 12) — as above (AE617-624).

Dichogaster sp. Cernosvitov, 1938

Dichogaster sp. Cernosvitov, 1938 : 301.

AE625 (A719) *Dichogaster* sp. (group *D. gracilis* (Michaelson)) Dr L. CERNOSVITOV det. 18 ; 2.I.33.

REFERENCE : CERNOSVITOV (1938 : 301) — *Dichogaster* sp. St. 18. Camp III de l'Elgon, 2.I.1933, alt. 3 500 m, camp dans les prairies à Bruyères et Helychrysums de la zone alpine...

REMARKS : There is further *Dichogaster* material in the collections identified only to genus.

Genus **DIGASTER** Perrier, 1872

Digaster lumbricoides Perrier, 1872

Digaster lumbricoides Perrier, 1872 : 94 ; JAMIESON, 1971 : 1303.

AE626 (A715) *Digaster lumbricoides* E. P. Nouvelle-Hollande, M. J. VERREAUX, 1846.

Paralectotype, JAMIESON, 1971. PERRIER, 1872 : Nouvelle-Hollande, 1846, M. Jules VERREAUX.

REFERENCE : JAMIESON (1971 : 1306) designated the two specimens, lectotype and paralectotype.

REMARKS : This is the type-species of the genus.

Genus **ILYGENIA** Beddard, 1893

Ilygenia jeanneli Michaelsen, 1915

Ocnerodrilus (Ilygenia) jeanneli Michaelsen, 1914 : 107 ; 1915 : 33.

AE627 (A731) *Ocnerodrilus (Ilygenia) jeanneli* Mich., St. 45, Kenya. TYPE.

REFERENCE : MICHAELSEN (1914 : 107) — Britisch-Ostafrika, Berg Kenya, 4 000 m, Dr C. ALLUAUD and Dr R. JEANNEL, 1 bis 4.II.1912 ; MICHAELSEN (1915 : 33) — Afrique Orientale Anglaise : camp IV du Kénia, à la limite supérieure des prairies, dans la région des grands *Senecio* (alt. 4 000 m) St. no. 45, févr., 1912.

REMARKS : Wrongly designated a new species in MICHAELSEN 1915.

Ilygenia taste (Eisen, 1895)

Phoenicodrilus taste Eisen, 1895 : 64.

Ocnerodrilus (Ilygenia) taste : EISEN, 1900 : 133.

AE628 (A732) Collection of California Academy of Sciences, *Phoenicodrilus torte* (laps.) Eisen, Sierra Laguna, Baja California, Mexico, collector EISEN.

REMARKS : The type-locality is given as the Sierra el Taste, in the Cape Region of Baja California, some 40 or 50 miles north of Cabo San Lucas, and a garden at Pescadero. It is doubtful that AE628 is type-material.

Genus **LAMPITO** Kinberg, 1867

Lampito mauritii Kinberg, 1867

Lampito mauritii Kinberg, 1867 : 103.

Megascolex mauritii : MICHAELSEN, 1899 a : 441 ; 1900 b : 227.

Perichaeta luzonica (part.) Perrier, 1875 : 1044 (New Synonym).

AE629 (A724) *Perichaeta luzonica* Ed. P. (part.) C. R. 29 9bre 1875, de Bataan, Ile Luçon, Mr. LAGLAIZE, No. 20, 1876. TYPE of *luzonica* (part.).

AE630 (A731) *Lampito mauritii* Kinb. MICHAELSEN det. Lombrics Pondichery, M. MAINDRON, no. 1901.

REFERENCE : PERRIER (1875 : 1044) — *Perichaeta luzonica* (part.), Ile Luçon (AE630).

REMARKS : The specimens AE630 are in poor condition but agree in external characteristics (including stout penial setae protruberant from the male pores) with the description of MICHAELSEN (1900) for *Megascolex mauritii*.

Megascolex (?) coerulea Perrier, 1875

Perichaeta coerulea Perrier, 1875 : 1044.

Megascolex mauritii (part.) : MICHAELSEN, 1900 *b* : 227.

Lampito mauritii (part.) : GATES, 1972 : 133.

AE631 (A725) (1) *Perichaeta coerulea* (remainder illegible). TYPE ?

AE632 (2) *Perichaeta coerulea* Ed. P., C. R. 29 9bre 1875, Brilucan, Ile Luçon, Mr. LAGLAIZE, No. 20. TYPE.

REFERENCE : PERRIER (1875 : 1044) — *Perichaeta coerulea*, Luçon (AE631, 632).

REMARKS : This species appears to be distinct from *Lampito mauritii*. Its generic status is uncertain and it is provisionally placed in the heterogeneous congeries *Megascolex* though its affinities may lie with *Lampito*.

Genus **METAPHERETIMA** Michaelsen, 1928

Metapheretima elongata (Perrier, 1872)

Perichaeta elongata Perrier, 1872 : 124.

Perichaeta biserialis Perrier, 1875 : 1044.

Perichaeta luzonica (part.) Perrier, 1875 : 1044.

Pheretima elongata : MICHAELSEN, 1910 *b* : 84, 85 ; CERNOSVITOV, 1934 *b* : 49, 1935 : 11.

Metapheretima elongata : SIMS and EASTON, 1972 : 233, 252 (*elongata* group and species-complex).

Metapheretima biserialis : SIMS and EASTON, 1972 : 233, 252 (*elongata* group).

AE633 (A709) *Pheretima* sp. (*elongata* Perrier ?) Dr L. CERNOSVITOV det. 1933, immat. Pérou — M. BARAQUIN, 1867 ; (also pencil label) — *Perichaeta elongata* Ed. Perrier, Pérou — M. BARAQUIN 1867. TYPE.

AE634 (A724) *Perichaeta luzonica* (part.) Ed. Perr. C. R. 29.9.1875, de Bataan, Ile Luçon, Mr. LAGLAIZE no. 20, 1876. TYPES of *P. luzonica*.

AE635-644 (A725) *Perichaeta biserialis* Ed. Perr. ; Philippines, Mr. LAGLAIZE, No. 20, 1876 ; C. R. 29 9bre 1875. TYPE.

AE635 (A725) (1) var. A, 3 et 4 papilles, de Bataan, Ile Luçon.

AE636, 637 (2-3) var. B, 4 papilles, de Bataan, Ile Luçon.

AE638 (4) var. B, 4 papilles, de Mindoro.

AE639 (5) var. C, 5 papilles, de Mindoro.

AE640 (6) var. D, 7 papilles, de Mindoro.

AE641 (7) var. E, 6 papilles, de Mindoro.

AE642 (8) var. F, 5 et 6 papilles.

AE643 (9) var. G, 4 et 5 papilles, de Bataan, Ile Luçon.

AE644 (10) var. G, 4 et 5 papilles, de Mindoro.

AE645 (A730) (1) *Pheretima biserialis* (Ed. Perrier), Kurrhachee, Mr. MAINDRON, no. 31, 1896.

AE646 (2) Same, W. MICHAELSEN det.

REFERENCE : PERRIER (1872 : 124) — *Perichaeta elongata*, Pérou, donnés au Musée en 1867 par M. BARAQUIN ; MICHAELSEN (1910 : 85) — 2 type-specimens examined ; CERNOSVITOV (1934 b : 49, 1935 : 11) — *Pheretima elongata*, Peru, Mr. BARAQUIN leg. 1867 (AE633) ; PERRIER (1875 : 1) — *Perichaeta luzonica* (part.), Luçon, Mindoro (AE634) ; PERRIER (1875 : 2) — *Perichaeta biserialis*, Luçon, Mindoro (AE635, 638, 640, 641, 644, etc. ?).

SIMS and EASTON (1972 : 254) — *Metapheretima elongata* species complex, *biserialis* Mindoro, Philippines (syntype) (A725).

REMARKS : The type-material (AE633) of *M. elongata* consists of disintegrating fragments of very little taxonomic value. SIMS and EASTON (1972 : 254) examined a syntype of *M. biserialis* (A725) as an example of the *M. elongata* species-complex which included *elongata*, *biserialis* and several other species.

Genus **METAPHIRE** Sims and Easton, 1972

Metaphire amplexens (Michaelsen, 1934)

Pheretima (Ph.) *amplexens* Michaelsen, 1934 : 501.

Metaphire amplexens : SIMS and EASTON, 1972 : 238 (*houlleti* group).

AE647 (A730) *Pheretima* (Ph.) *amplexens* Mich. Bana, 1 500 m, 1.X.31. TYPE.

REFERENCE : MICHAELSEN (1934 : 501) — Annam, Berg Bana, Tourane, in einer Höhe von 1 500 m ; 1 Oct. 1931. TYPE.

Metaphire bianensis (Stephenson, 1931)

Pheretima bianensis Stephenson, 1931 : 58.

Metaphire bianensis : SIMS and EASTON, 1972 : 237.

Metaphire bianensis duplofasciata (Michaelsen, 1934)

Pheretima (Ph.) *bianensis* f. *duplofasciata* Michaelsen, 1934 : 514.

Metaphire bianensis duplofasciata : SIMS and EASTON, 1972 : 237.

AE648 (A709) Der dunkle gebanderte *Pheretima* (Ph.) *bianensis* Stephenson Nha-trang ; mars 1930. TYPE.

AE649 (A730) Annam, Lang Biang, 1 500-2 000 m (forêt) 1931. TYPE.

REFERENCE : MICHAELSEN (1934 : 514) — Süd Annam, Lang-Biang, in einer Höhe

von 1 500-2 200 m im Walde ; Januar 1931 (A730) AE649 ; Berg Hon-Ba (Nhatrang), 3 Marz 1930 (AE648).

Metaphire dalatana (Michaelsen, 1934)

Pheretima (Ph.) *dalatana* Michaelsen, 1934 : 533.

Metaphire dalatana : SIMS and EASTON, 1972 : 238 (*ignobilis* group).

AE650 (A730) *Pheretima* (Ph.) *dalatana* Mich. Dalat 1 500 m, arbre broyé, 20.I.1931. TYPE.

REFERENCE : MICHAELSEN (1934 : 533) — Süd-Annam, Dalat, 20 Jan. 1931.

Metaphire dawydovi (Michaelsen, 1934)

Pheretima (Ph.) *dawydovi* Michaelsen, 1934 : 517.

Metaphire dawydovi : SIMS and EASTON, 1972 : 238 (*houletti* group).

AE651 (A709) *Pheretima* (Ph.) *dawydoffi* (sic) Mich. Orig ! Arbre broyé, Lang Biang, 8.II.30. TYPE.

REFERENCE : MICHAELSEN (1934 : 517) — Süd-Annam, Lang Biang, « Arbre Broyé », 8 Feb. 1931.

Metaphire hobaensis (Gates, 1941)

Pheretima (Ph.) *helvola* Michaelsen, 1934 : 520.

Pheretima hobaensis Gates, 1941 : 497 nom. nov. pro *Pheretima helvola* Michaelsen (non Ude 1905).

AE652 (A709) *Pheretima* (Ph.) *helvola* Mich. die heller. Nhatrang, mars 1930. TYPE.

REFERENCE : MICHAELSEN (1934 : 520) — Berg Hon-Ba (Nhatrang) ; 3 Marz 1930.

Metaphire houletti (Perrier, 1872)

Perichaeta houletti Perrier, 1872 : 99.

Metaphire houletti houletti (Perrier, 1872)

Perichaeta houletti Perrier, 1872 : 99.

Metaphire houletti houletti : SIMS and EASTON, 1972 : 238 (*houletti* group).

AE653 (A709) *Pheretima*, Guyane française, Mission GEAY, Ilet le Père, avr. 1901, No. 2935, sol humide, 20 m au-dessus du niveau de la mer.

AE654 (A725) *Perichaeta houletti* Ed. P. Serres du Muséum, Mr. HOULLET.

REFERENCES : PERRIER (1872 : 98) — *Perichaeta houletti*, Calcutta ; Cochinchine Vietnam (AE654).

CERNOSVITOV (1934 *b* : 49 ; 1935 : 11) — *Pheretima (houletti)* (Perrier) ?), Französisch-Guayana. Illet le Père. Sol humide... mer. Mission GEAY. IV.1901. Nr. 2935 (E653).

Metaphire langbiangi (Michaelsen, 1934)

Pheretima (Ph.) *langbiangi* Michaelsen, 1934 : 522.

Metaphire langbiangi : SIMS and EASTON, 1972 : 238 (*ignobilis* group).

AE655 (A730) *Pheretima* (Ph.) *langbiangi* Mich. (No locality but label apparently in MICHAELSEN's handwriting). TYPE.

REFERENCE : MICHAELSEN (1934 : 522) — *Pheretima* (Ph.) *langbiangi*, Süd-Annam, Berg Lang Biang, in einer Höhe von 1 500-2 400 m, im Walde ; Jan. 1931.

REMARKS : Presumed to be type-material as the remainder of the French-Indochina collection described by MICHAELSEN is lodged in this museum.

Metaphire posthuma (Vaillant, 1868 *a*)

Perichaeta posthuma Vaillant, 1868 *a* : 228.

Perichaeta affinis Perrier, 1872 : 106.

Metaphire posthuma : SIMS and EASTON, 1972 : 239 (*posthuma* group).

AE656 (A709) (1) *Pheretima posthuma* L. Vaillant (no locality). TYPE ?

AE657-659 (2-4) *Pheretima posthuma* L. Vaillant G. E. GATES det. 1926, Java. TYPE ?

AE660-662 (5-7) *Pheretima posthuma* L. Vaillant G. E. GATES det. 1926 (*Perichaeta affinis* Ed. Perrier) Saigon, Mr. Victor BORIE, 1872. TYPE.

AE663 (8) As (5-7) with "Préparation de l'appareil génital". TYPE.

AE664-668 (9-13) *Pheretima posthuma* L. Vaillant G. E. GATES det. 1926 (*Perichaeta affinis* Ed. Perrier) Cochinchine, Mr. JULIEN, 1874. TYPE ?

AE669 (14) *Perichaeta affinis* E. P. Saigon, Mr. Victor BORIE, 1872. TYPE.

AE670 (A721) (1) *Perichaeta affinis* Ed. Perrier, C. R. (Comptes Rendus) 29.IX.1875, de Bataan, Ile Luçon, M. LAGLAIZE, no. 20, 1876. TYPE.

AE671 (2) *Perichaeta affinis*, Saigon, Mr. BORIE, 1872. TYPE.

AE672 (A725) *Perichaeta affinis*, Saigon (?) M. HOULLET (?).

REFERENCES : VAILLANT (1868 *a* : 228) — *Perichaeta posthuma*, Java (AE656-659) are probably VAILLANT's TYPES as the presence of the latter in this museum is mentioned by PERRIER (1872 : 106).

PERRIER (1872 : 106) — *Perichaeta affinis*, Saigon (Cochinchine), Vietnam (AE660-668, AE671).

PERRIER (1875 : 1044) — *Perichaeta affinis*, Philippines.

REMARKS : AE664-668 is possibly material referred to in PERRIER's account as JULIEN was the collector for *P. juliani*, also from Saigon, described in the same paper. AE670 is certainly the material of *P. affinis* recorded in the account from the Philippines.

Metaphire quadragenaria (Perrier, 1872)

Perichaeta quadragenaria Perrier, 1872 : 122.

Perichaeta cingulata (part.) : PERRIER, 1872 : 122.

Metaphire quadragenaria : SIMS and EASTON, 1972 : 239 [*pulcha* (sic, pro *pulchra*) group].

AE673 (A724) (1) *Perichaeta quadragenaria*, Indes occidentales (pencil), Indes orientales (ink label).

AE674 (2) *Perichaeta quadragenaria* Edm Perrier, Indes orientales. TYPE.

REFERENCE : PERRIER (1872 : 122) — *Perichaeta quadragenaria*, deux des *Perichaeta cingulata* de M. VAILLANT qui sont originaires des Indes orientales (AE673, 674).

Metaphire stephensoni (Michaelsen, 1934)

Pheretima (Ph.) *stephensoni* Michaelsen, 1934 : 543.

Metaphire stephensoni : SIMS and EASTON, 1972 : 239 (monotypic *stephensoni* group).

AE675 (A730) *Pheretima* (Ph.) *stephensoni* Mich. Lang Biang 1 500-2 000 m, Annam forêt. TYPE.

REFERENCE : MICHAELSEN (1934 : 543) — *Pheretima* (Ph.) *stephensoni*, Süd-Annam, Berg Lang Biang, in einer Höhe von 1 500-2 200 m, Wald ; Jan. 1931.

Metaphire varellana (Michaelsen, 1934)

Pheretima (Ph.) *varellana* Michaelsen, 1934 : 511.

Metaphire varellana : SIMS and EASTON, 1972 : 239 (monotypic *varellana* group).

AE676 (A730) (1) *Pheretima* (Ph.) *varellana* Mich. S. Annam. TYPE.

AE677 (2) *Pheretima* (Ph.) *varellana* Mich. f. *gilva* Mich. Dalat, 1 500 m, arbre broyé, 20.I.31. TYPE.

REFERENCE : MICHAELSEN (1934 : 511) — *Pheretima* (Ph.) *varellana*, Annam, Kap Varella (stark pigmentierte Form).

AE676 ; Dalat, in einer Höhe von 1 500 m. Arbre broyé, 20 Jan. 1931 (blasse Form; p. 512, "f. *gilva*") (AE677).

Metaphire sp. (Cernosvitov, 1934 b)

Pheretima sp. Cernosvitov, 1934 b : 49 ; 1935 : 11.

AE678 (A709) *Perichaeta* sp. n. (2) Rio Janeiro, HOULLET 1878, Serres du Muséum. *Pheretima* sp.

REFERENCE : CERNOSVITOV (1934 b : 49 ; 1935 : 11) — *Pheretima* sp., Brasilien. Rio de Janeiro. Serres du Musée. HOULLET 1878.

REMARKS : Agreeing in all pertinent respects with the genus *Metaphire* as defined by SIMS and EASTON (1972).

CERNOSVITOV reports only one (immature) specimen but there are three such specimens in the tube, of which only one has here been examined.

Genus **MICROSCOLEX** Rosa, 1887

Microscolex dubius (Fletcher, 1888)

Eudrilus (?) *dubius* Fletcher, 1888 : 378.

Microscolex dubius : ROSA, 1890 : 511 ; MICHAELSEN, 1907 *b* : 147.

Deltania elegans Eisen, 1893 : 251.

Microscolex elegans : BEDDARD, 1895 *a* : 466 ; MICHAELSEN, 1900 *b* : 142.

AE679 (A715) *Deltania elegans* Eisen, Collection of California Academy of Sciences, San Francisco, California. Collector EISEN ; 1893 February. TYPE ?

REFERENCE : EISEN (1893 : 251) — San Francisco, Berkeley, Mount Diablo, Santa Rosa : the country surrounding San Francisco Bay.

Microscolex michaelsoni (Beddard, 1895 *b*)

Microscolex michaelsoni Beddard, 1895 *b* : 231.

Microscolex michaelsoni hermitensis Pickford, 1932

Microscolex michaelsoni hermitensis Pickford, 1932 : 278.

Microscolex michaelsoni var. *hermitensis* : CERNOSVITOV, 1934 *a* : 252.

AE680 (A726) *Microscolex michaelsoni* ssp. *hermitensis* det. Dr L. CERNOSVITOV, Baie Orange, Terre de Feu, Mission du Cap Horn, 1883, No. 9.

REFERENCE : CERNOSVITOV (1934 : 252) — No. 9 Terre de Feu, Baie Orange, 1883.

Genus **NEOGASTER** Cernosvitov, 1934 *b*

Neogaster americanus Cernosvitov, 1934 *b*

Neogaster americanus Cernosvitov, 1934 *b* : 51 ; 1935 : 15.

AE681 (A715) (1) *Neogaster americanus* n. g. n. sp. Dr L. CERNOSVITOV det. et descr. 1933 ; 149, Bas Carsevenne, M. GEAY 1898. TYPE.

AE682 (A715) (2) Same data but no number. TYPE.

REFERENCE : CERNOSVITOV (1934 *b* : 51 ; 1935 : 15) — Brasilien, Bas Carsevenne, Mission GEAY col. Nr. 148, 149 ; 1898.

REMARKS : The type-specimens are shrivelled owing to previous desiccation and are of little taxonomic value.

Genus **PERIONYCHELLA** Michaelsen, 1907 *b*

Subgenus *Vesiculodrilus* Jamieson, 1972

Perionychella (Vesiculodrilus) peregrinus (Cernosvitov, 1934 *b*)

Plutellus peregrinus Cernosvitov, 1934 *b* : 48 ; 1935 : 9.

AE683 (A715) *Plutellus peregrinus* n. sp. CERNOSVITOV, M. GEAY No. 6, 1911 ; Dr L. CERNOSVITOV det. et descr. 1933. TYPE.

REFERENCE : CERNOSVITOV (1934 *b* : 48 ; 1935 : 9) — Mission GEAY col. Nr. 6, 1911. Fundort nicht angegeben, jedenfalls aus dem nördlichen Teil Süd-Amerikas.

REMARKS : CERNOSVITOV's grounds for considering these specimens to have originated from South America must be questioned as the date given on the label is almost a decade later than other dates given for the Mission GEAY. The label, though giving GEAY as the collector, does not mention the expedition. *Perionychella*, in which this species is here placed with certainty, is known only from Australia (and, probably, New-Zealand) and the specimens are probably, therefore, of antipodean origin.

Genus **PHERETIMA** Kinberg, 1867

Subgenus *Pheretima* Kinberg, 1867

Pheretima (Ph.) crassicystis (Michaelsen, 1896)

Perichaeta crassicystis Michaelsen, 1896 : 204.

Pheretima sangirensis crassicystis + *Ph. s. chica* : MICHAELSEN, 1900 *b* : 300.

AE684 (A724) (1) *Perichaeta laglaizi* E. P. (Manuscript name), Philippines, 1876, Mr. LAGLAIZE.

AE685 (2) *Perichaeta laglaizi*, Iles Philippines, Mr. LAGLAIZE, 1876.

AE686 (3) *Perichaeta laglaizi* ? Ed. Per. Iles Philippines, Mr. LAGLAIZE, 1876.

REMARKS : No published account of *Perichaeta laglaizi* is known and it must be considered a manuscript name only with no priority over *Perichaeta crassicystis* to which the material is here shown to belong.

Pheretima (Pheretima) darnleiensis (Fletcher 1887)

Perichaeta darnleiensis Fletcher, 1887 : 966.

Perichaeta cingulata (part) Vaillant, 1868 *a* : 228 ; (part) Vaillant, 1868 *b* : 146.

Megascolex cingulatus : VAILLANT, 1889 : 72.

(non) *Perichaeta cingulata* Schmarda, 1861 : 14.

Pheretima (Pheretima) darnleiensis : SIMS and EASTON, 1972 : 260.

AE687 (A725) *Perichaeta cingulata* Schmarda, individu déterminé et disséqué par Mr. L. VAILLANT, Ile de France, M. DESJARDINS 1835. (*Pheretima (Ph.) darnleiensis* (Fletcher, 1887)).

REMARKS : SIMS and EASTON (1972) have already shown that *Megascolex cingulatus sensu* Vaillant was a synonym of *Ph. (Ph.) darnleiensis* but they did not examine AE687 which is here referred to *Ph. (Ph.) darnleiensis* for the first time, thus confirming VAILLANT's misidentification of *M. cingulatus*.

Pheretima (s. lat.) touranensis Michaelsen, 1934

Pheretima (Ph.) touranensis Michaelsen, 1934 : 499.

Pheretima (s. lat.) touranensis : SIMS and EASTON, 1972 : 225 (*Species incertae sedis*).

AE688 (A730) *Pheretima (Ph.) touranei* Mich. Col de Nuages, Tourane, Annam ; dec. 1929. TYPE.

REFERENCE : MICHAELSEN (1934 : 499) — *Pheretima (Ph.) touranensis*, Annam, Tourane, col de Wuega ; 1 Dec. 1931.

REMARKS : SIMS and EASTON (1972 : 225) note that MICHAELSEN was unable to determine whether intestinal caeca were present or absent and that *Ph. touranensis* was therefore a *species incertae sedis*. Absence of copulatory pouches excluded it from *Pheretima* s. strict. and *Metaphire*. The single specimen is shrivelled owing to previous desiccation and is of little, if any, taxonomic value.

Genus **PITHEMERA** Sims and Easton, 1972**Pithemera bicincta** (Perrier, 1875)

Perichaeta bicincta Perrier, 1875 : 1044.

Pheretima bicincta : MICHAELSEN, 1910 *b* : 84.

Pithemera bicincta : SIMS and EASTON, 1972 : 202, 232 (*bicincta* group).

AE689-692 (A724) (1-4) *Perichaeta bicincta* Perrier, Philippines, Mr. LAGLAIZE, No. 20, 1876. TYPE.

REFERENCE : PERRIER (1875 : 1044) — *Perichaeta bicincta*. Iles Philippines. MICHAELSEN (1910 *b* : 84) — an original specimen examined.

REMARKS : *Perichaeta bicincta* was placed by MICHAELSEN (1900 *b* : 419) in a list of *genera et species dubiae Megascolecidarum*. SIMS and EASTON (1972 : 202) erected *Pithe-mera* for *bicincta* which they redescribed from the original description and from examination of the type-specimens of *Perichaeta violacea* Beddard, 1895 *a*, and of other, unspecified material.

Genus **PLUTELLUS** Perrier, 1873

Plutellus heteroporus Perrier, 1873

Plutellus heteroporus Perrier, 1873 : 245 ; JAMIESON, 1971 : 1301.

AE693 (A715) (1) *Plutellus heteroporus* Perrier, 1873. Fragmentary lectotype.

AE694 (2) Spermatheca of lectotype.

AE695 (3) Residue of type-series.

REFERENCE : PERRIER (1873 : 249) — mêlés dans le même bocal avec... Lombrics, provenant de la Pennsylvanie.

REMARKS : JAMIESON (1971) redescribed a type-specimen and designated it the lectotype. The original locality was almost certainly Australia.

Genus **PONTODRILUS** Perrier, 1874

Pontodrilus littoralis (Grube, 1855)

Lumbricus littoralis Grube, 1855 : 127, 135.

Pontodrilus littoralis : BEDDARD, 1895 *a* : 469 ; MICHAELSEN, 1910 *a* : 89.

Pontodrilus marionis Perrier, 1874 : 1582.

AE696 (A731) (1) *Pontodrilus littoralis* (Grube) 1855. Zone subterrestre, dans Posidonies, cap Kara-Burnu, Salonique, P. REMY, 30 août 1933, A. SCHWEITZER det.

AE697, 698 (2 and 3) *Pontodrilus littoralis* (sic) Cannes, 6.8.1903, coll. M. le Baron de S. JOSEPH, No. 20, 1911.

Pontodrilus bermudensis Beddard, 1891

Pontodrilus bermudensis Beddard, 1891 : 96 ; MICHAELSEN, 1910 *a* : 84.

Pontodrilus michaelsoni Eisen, 1895 : 73.

AE699 (A731) *Pontodrilus michaelsoni* Eis. Californie, No. 1899.

REMARKS : The type-locality is the supralittoral on the shores of the Gulf of California around Guaymas, Mexico. A731..... does not appear, therefore, to be type-material.

Genus **PYGMAEODRILUS** Michaelsen, 1890

Pygmaeodrilus montanus Michaelsen, 1907 *a*

Pygmaeodrilus montanus Michaelsen, 1907 *a* : 2.

AE700 (A777) *Pygmaeodrilus montanus* Mich. cotype, Bergwiesen, Ostafrika : Kilimandjaro 3 000-3 500 m, Febr. 1906, Yngve SJÖSTEDT. TYPE.

REFERENCE : MICHAELSEN (1907 *a* : 3) — *Pygmaeodrilus montanus*, Kilimandjaro, Kiboscho, Bergwiesen Oberhalb des Regenwaldes, 3 000-3 800 m hoch ; Y. SJÖSTEDT leg. Febr. 1906.

REMARKS : The single specimen is a postclitellar portion only.

Genus **WEGENERIONA** Cernosvitov, 1939

Wegeneriona michaelsoni (Cernosvitov, 1934 *b*)

Wegeneriella michaelsoni Cernosvitov 1934 *b* : 50 ; 1935 : 13.

Howascolex michaelsoni : PICKFORD, 1937 : 608.

Wegeneriona michaelsoni : CERNOSVITOV, 1939 : 116.

Wegeneriella (*Wegeneriona*) *michaelsoni* Omodeo, 1955 : 1.

AE701 (A732) *Wegeneriella michaelsoni* n. sp. Cernosv. Bas Carsevenne, M. GEAY 1898 No. 149 ; Dr L. CERNOSVITOV det. 1933. TYPE.

REFERENCE : CERNOSVITOV (1934 *b* : 50 ; 1935 : 13) — Brasilien (Contesté franco-brésilien). Bas Carsevenne. Mission GEAY col. Nr. 148, 1898. 1 Ex. Nr. 149, 1898.

REMARKS : CERNOSVITOV (1939) erected *Wegeneriona* for *Wegeneriella beauforti*, *W. michaelsoni* and for a new species, *Wegeneriona brasiliana*, the type species.

Genus **YAGANSIA** Michaelsen, 1899 *b*

Yagansia papillosa (Beddard, 1895 *b*)

Microscolex papillosus Beddard, 1895 *b* : 230.

Yagansia papillosa : Michaelsen, 1900 *a* : 23 ; CERNOSVITOV, 1934 *a* : 255.

AE702 (A731) *Yagansia papillosa*, CERNOSVITOV det. Terre de Feu, Baie Orange, Mission du Cap Horn, 1883. TYPE.

REFERENCE : CERNOSVITOV (1934 *a* : 255) — No. 9, Terre de Feu, Baie Orange, 1883.

Species dubiae

? **Perichaeta viridis** Schmarda, 1861

Perichaeta viridis Schmarda, 1861 : 13.

Megascolex viridis : VAILLANT, 1889 : 87.

Perichaeta viridis : Michaelsen, 1900 b : 419 (*Genus et species incertae sedis*).

AE703 (A725) *Perichaeta viridis*, Chine. MR. MARION, 1875.

REMARKS : The type-locality is Ceylon. AE703 consists only of a desiccated now unidentifiable specimen and two fragments of a green worm, one of which is quadrangular in cross section and has 8 setae per segment, dorsolateral gills and a posterodorsal anus. This caudal fragment appears to belong to a branchiate *Alma* (Glossoscolecidae) and to have no relevance to *P. viridis* which (SCHMARD, 1861 : 13) had more than 50 setae in each ring.

INDEX

Subgeneric and specific names are followed by the generic name while subspecific names are followed by the specific binomen. Names are listed thus : generic name with a capital initial letter and no parentheses, e. g. *Acanthodrilus* ; subgeneric name with a capital initial letter but in parentheses, e. g. (*Vesiculodrilus*) *Perionychella* ; specific name in lower case, e. g. *affinis* *Dichogaster* ; subspecific name in lower case, e. g. *belgicae* *Chilota corralensis*. The obsolete 'variety' and 'forma' are listed as subspecies but no trinomials listed have conclusively been shown to be good subspecies. Names in italics are junior synonyms at least in the combinations in which the name occurs in the text. Numerals are the registration numbers which appear sequentially in the text, e. g. AE572. For genera and subgenera, bold numerals indicate textual entries under the name listed while italicised numerals indicate that the taxon appears in synonymy under a different generic heading. Asterisked genera are non-megascolecoid names previously attributed to megascolecoid species.

Acanthodrilus, AE **572-573**.

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affinis *Dichogaster*, 600.

affinis *Perichaeta*, 656-672.

alteradamae *Amyntas*, 574.

alteradamae *Pheretima*, 574.

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REFERENCES

- BEDDARD, F. E., 1889. — On certain points in the structure of *Urochaeta* E. P., and *Dichogaster* nov. gen., with further remarks on the nephridia of earthworms. *Q. Jl microsc. Sci.*, n. ser., **29** : 235-282.
 — 1891. — Abstract of some investigations into the structure of the Oligochaeta. *Ann. Mag. nat. Hist.*, ser. 6, **7** : 88-96.
 — 1892. — On some species of the genus *Perichaeta* (sensu stricto). *Proc. zool. Soc. Lond.*, 1892 : 153-172.
 — 1893. — On some new species of earthworms from various parts of the world. *Proc. zool. Soc. Lond.*, 1892 : 666-706.
 — 1895 a. — A monograph of the order Oligochaeta. Oxford, Clarendon Press, 769 p.
 — 1895 b. — Preliminary account of new species of earthworms belonging to the Hamburg Museum. *Proc. zool. Soc. Lond.*, 1895 : 210-239.
 — 1901. — On some species of earthworms of the genus *Benhamia* from tropical Africa. *Proc. zool. Soc. Lond.*, 1901, 2 : 190-216.
 CERNOSVITOV, L., 1934 a. — Oligochètes de la Mission du Cap Horn en 1882-1883. *Bull. Mus. natn. Hist. nat.*, Paris, 2^e sér., **6** (3) : 252-256.
 — 1934 b. — Les Oligochètes de la Guyane Française et d'autres Pays de l'Amérique du Sud. *Bull. Mus. natn. Hist. nat.*, Paris, 2^e sér., **6** (1) : 47-59.

- 1935. — Oligochaeten aus dem tropischen süd-Amerika. *Capita Zoologica*, **6**, 1 : 1-36.
- 1938. — Oligochaeta. Mission scientifique de l'Omo, IV (Zoologie). *Mém. Mus. natn. Hist. nat.*, Paris, n. sér., **8** : 255-318.
- 1939. — Oligochaeta. Résultats scientifiques des croisières du Navire-école belge « Mercator ». *Bull. Mus. r. Hist. nat. Belg.*, **15** (2) : 115-122.
- EISEN, G., 1893. — Californian earth-worms of the family of Eudrilidae. *Zoe*, **4** : 248-254.
- 1895. — Pacific Coast Oligochaeta. I. *Mem. Calif. Acad. Sci.*, **2** (4) : 63-122.
- 1900. — Researches in American Oligochaeta, with especial reference to those of the Pacific Coast and adjacent islands. *Proc. Calif. Acad. Sci.*, **2** (2) : 85-276.
- FLETCHER, J. J., 1887. — Notes on Australian earthworms. Part III. *Proc. Linn. Soc. N.S.W.*, **1** : 943-973.
- 1888. — Notes on Australian earthworms. Part III. *Proc. Linn. Soc. N.S.W.*, **2** : 375-402.
- GATES, G. E., 1941. — Preoccupied names in the Oligochaeta. *Rec. Indian Mus.*, **43** : 497.
- 1972. — Burmese earthworms. *Trans. Am. phil. Soc.*, n. ser., **62** (7) : 1-326.
- GRUBE, E., 1855. — Beschreibungen neuer oder wenig bekannter Anneliden. *Arch. Naturgesch.*, 1^{re} part., 1855 : 81-136.
- 1879. — Annelida. *Phil. Trans. R. Soc.*, London, **168** : 554-556.
- JAMIESON, B. G. M., 1971. — Descriptions of the type-species of the earthworm genera *Plutellus* and *Digaster* (Megascolecidae : Oligochaeta). *Bull. Mus. natn. Hist. nat.*, Paris, 2^e sér., **42** (6) : 1300-1310.
- 1972. — The Australian earthworm genus *Spenceriella* and description of two new genera (Megascolecidae : Oligochaeta). *Mem. natn. Mus. Vict.*, **33** : 73-87.
- KINBERG, J. G. H., 1867. — Annulata nova. *Öfvers. K. VetenskAkad. Förh.*, **23** : 97-103.
- MICHAELSEN, W., 1889. — Oligochaeten des Naturhistorischen Museums in Hamburg. *Jb. hamb. wiss. Anst.*, **6** : 1-17.
- 1890. — Beschreibung der von Herrn. Dr. Franz Stuhlmann im Mundungsgebiet des Zambesi gesammelten Terricolen. *Jb. hamb. wiss. Anst.*, **7** : 3-50.
- 1891. — Oligochaeten des Naturhistorischen Museum in Hamburg, IV. *Jb. hamb. wiss. Anst.*, **8** (2) : 1-42.
- 1892. — Terricolen der Berliner Zoologischen Sammlung, II. *Arch. Naturgesch.*, **58** : 209-261.
- 1896. — Oligochäten Kükenthal-Ergebnisse einer zool. Forschungsreisen in den Malukken und in Borneo. *Abh. senckenb. naturforsch. Ges.*, **23** : 192-243.
- 1899 a. — Revision der Kinbergschen Oligochäten-Typen. *Öfvers. K. VetenskAkad. Förh.*, **56** : 413-448.
- 1899 b. — Oligochäten von den Inseln des Pacific, nebst Erörterungen zur Systematik der Megascoleciden. *Zool. Jb. (Syst.)*, **12** : 211-246.
- 1899 c. — Oligochäten des Naturhistorischen Museums in Hamburg. *Jb. hamb. wiss. Anst.*, **6** : 59-69.
- 1900 a. — Terricolen (Nachtrag). *Ergeb. Hamb. Magalh. Sammelr.*, 28 p.
- 1900 b. — Oligochaeta. *Tierreich*, Berlin, **10** : 1-575.
- 1907 a. — Oligochaeta. In : Wissenschaftliche Ergebnisse der Schwedischen Zoologischen Expedition nach dem Kilimandjaro, dem Meru und den Umgebenden Massai-Steppen Deutsch-Ostafrikas 1905-1906 unter Leitung von Prof. Dr. Yngve Sjöstedt. 22 : Vermes, 1, Uppsala, Königl. Schwed. Akad. Wiss. : 1-10.
- 1907 b. — Oligochaeta. Die Fauna Südwest-Australiens, I (2) Fischer, Jena : 117-232.
- 1910 a. — Oligochäten von verschiedenen Gebieten. *Jb. hamb. wiss. Anst.*, **27** : 47-169.

- 1910 b. — Die Oligochäten — Fauna der vorderindisch-ceylonischen Region. *Abh. Gesch. Naturw. Hamburg*, **19** (5) : 1-108.
- 1914. — Oligochäten von tropischen Afrika. *Jb. hamb. wiss. Anst.*, **31** : 81-127.
- 1915. — Vers. II. Oligochètes. In : Voyage de Ch. ALLUAUD et R. JEANNEL en Afrique Orientale (1911-1912). Résultats scientifiques, Paris, Schulz : 23-42.
- 1928. — Die Oligochäten Borneos. *Ark. Zool.*, **20** (3) : 1-60.
- 1934. — Oligochäten von Französisch-Indochina. *Archs Zool. exp. gén.*, **76** : 493-546.
- OMODEO, P., 1955. — Nuove specie dei generi a distribuzione anfiatlantica *Wegeneriella* e *Neogaster*. *Annuar. R. Mus. zool. R. Univ. Napoli*, **7** (3) : 1-29.
- PERRIER, E., 1872. — Recherches pour servir à l'histoire des Lombriciens terrestres. *Nouv. Archs Mus. Hist., nat., Paris*, **8** : 5-198.
- 1873. — Étude sur un genre nouveau de Lombriciens (Genre *Plutellus* E. P.). *Archs Zool. exp. gén.*, **2** : 245-268.
- 1874. — Sur un nouveau genre indigène de Lombriciens terrestres (*Pontodrilus Marionis*, E. P.), *C. r. hebd. Séanc. Acad. Sci., Paris*, **78** : 1582-1586.
- 1875. — Sur les vers de terre des îles Philippines et de la Cochinchine. *C. r. hebd. Séanc. Acad. Sci., Paris*, sér. D, **81** : 1043-1046.
- PICKFORD, G. E., 1932. — Oligochaeta. Part II. Earthworms. « *Discovery* » *Rep.*, **4** : 265-292.
- 1937. — A monograph of the acanthodriline earthworms of South Africa. Heffer, Cambridge, 612 p.
- ROSA, D., 1887. — Sui generi *Pontodrilus Microscolex* et *Photodrilus*. *Boll. Musei Zool. Anat. comp. R. Univ. Torino*, **3** (39), 4 p.
- 1889. — I lombri chi raccolti nell' isola nais dal Signor E. Modigliani. *Annali Mus. civ. Stor. nat. Giacomo Doria*, **7** : 125-136.
- 1890. — Terricoli Argentini raccolti dal Dott. Carlo Spegazzini. *Annali Mus. civ. Stor. nat. Giacomo Doria*, **29** : 509-521.
- 1891. — Die exotischen Terricolen des k. k. naturhistorischen Hoffmuseums. *Annln naturh. Mus. Wien*, **6** : 379-406.
- 1896. — I lombrichi raccolti a Sumatra dal dott Elio Modigliani. *Annali Mus. civ. Stor. nat. Giacomo Doria*, **16** : 502-532.
- SCHMARDA, L. K., 1861. — Oligochaeta. In : Neue wirbellose Thiere beobachtet und gesammelt auf einer Reise um die Erde, I (2), Leipzig : 7-14.
- SIMS, R. W., and E. G. EASTON, 1972. — A numerical revision of the earthworm genus *Pheretima* auct. (Megascolecidae : Oligochaeta) with the recognition of new genera and an appendix on the earthworms collected by the Royal Society North Borneo Expedition. *Biol. J. Linn. Soc.*, **4** : 169-268.
- STEPHENSON, J., 1931. — Oligochaeta from Burma, Kenya and other parts of the World. *Proc. zool. Soc. Lond.*, 1931, (1) : 33-92.
- TEMPLETON, R., 1844. — Description of *Megascolex caeruleus*. *Proc. zool. Soc. Lond.*, (12) : 89-91.
- VAILLANT, L., 1868 a. — Note sur l'anatomie de deux espèces du genre *Perichaeta* et essai de classification des Annélides Lombricins. *Annls Sci. nat.*, **10** : 225-256.
- 1868 b. — Note sur l'anatomie de deux espèces du genre *Perichaeta* et essai de classification des Annélides Lombricines. *Mém. Acad. Sci. Lett. Montpellier*, **7**, 1867-1871 : 143-173.
- 1889-1890. — Histoire naturelle des Annelés marins et d'eau douce, 3, Paris, Roret, 768 p.

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