NUMBER 40, continued

THE PARASITES OF AMPHIBIA

by

A. C. Walton
Knox College, Galesburg, Illinois

HOST LIST OF ANNELIDA PARASITES
(Parts I & II combined).

BUFO REGULARIS -- Africa.
"Leech" of Loveridge, 1932.

DESMOGNATHUS sp? of Moore, 1900 -- U.S.A.
Oligobdella biannulata.

DISCOGLOSSUS PICTUS -- Africa.
Batrachobdella algira.

"Frogs" -- China.
Batrachobdella singularis.

"Frogs" -- Europe.
Protoclepsis occidentalis.

"Frogs" -- U.S.A.
Haementeria montifera (in both tadpoles and adults), Macrobdella decora.

HYDROMANTES GENEI GENEI -- Europe (Sardinia). Batrachobdella algira.

HYLA ALBOMARGINATA (= H. infulata) -- Brazil. Schmardaella lutzi.

HYLA APPENDICULATA -- Venezuela.
Schmardaella sp? of Lutz, 1928.

HYLA BILINEATA -- Brazil.
Schmardaella lutzi.

HYLA FABER -- Brazil.
Schmardaella lutzi.

HYLA GOUGHI -- Venezuela.
Schmardaella sp? of Lutz, 1928.

HYLA MISERA -- Brazil and Venezuela.
Schmardaella lutzi.

HYLA RUBRA -- Brazil.
Schmardaella lutzi.

HYLA SEPTENTRIONALIS -- Cuba.
Schmardaella lutzi.

HYLA SQUIRELLA -- U.S.A.
Schmardaella hylae.

HYLA VENULOSA -- Brazil and Venezuela.
Schmardaella lutzi.

OEDIPUS spp? of Cabellero y C., 1940 -- Mesico. Hygrobdella pelaezi.

PELOBATES FUSCUS -- Europe.
Batrachobdella paludosa, Haementeria costata, Hemiclepsis marginata (only in larvae).

PHRYNOMERUS MICROPS -- Africa (Nigeria).
Nais bauchiensis.

POLYPEDATES BUERGERI -- Japan.
Oligobdella orientalis.

RANA CATESBIANA -- Canada and U.S.A.
Batrachobdella picta (C.), Macrobdella ditetra (U.S.A.).

RANA CYANOPHLYCTIS -- Ceylon.
Haementeria ceylanica.

RANA ESCULENTA ESCULENTA -- Europe.
Batrachobdella algira, Haementeria costata.

RANA ESCULENTA RIDIBUNDA -- Africa.
Limnatis nilotica.

RANA HEXADACTYLA -- India.
Hemiclepsis viridis.

RANA HOLSTI -- Japan.
Haementeria okadai.

RANA NAMIEYI -- Japan.
Haementeria okadai.

RANA TEMPORARIA ORNATIVENTRIS -- Japan. Oligobdella orientalis, O. tagoi.

RANA TIGRINA -- India.
Glossiphonia sp? of Budde-Lund, 1874, Hemiclepsis viridis.

RANA UMBRICULATA -- South Africa.
Marsupiobdella africana.

RANA sp? -- Europe.
Glossiphonia swampina, Hemiclepsis marginata.

RHYACOSIREDON ALTIMIRANI -- Mexico.
Hygrobdella pelaezi.

TARICHA GRANULOSA -- U.S.A.
Erpobdella sp.? of Lehmann, 1958.

"Toads" -- U.S.A.
Haementeria montifera (in both tadpoles and adults).

NUMBER 40, continued

THE PARASITES OF AMPHIBIA

by

A. C. Walton
Knox College, Galesburg, Illinois

BIBLIOGRAPHY FOR ANNELIDS
(Parts I & II combined).

1. AUGENER, H. 1926.
Nachtrag zur Blutegel-fauna der Balkanhalbinsel nebst Bemerkungen über Egel aus andern Gebieten. Zool. Anz. 68 (9/10): 239-247. Illus.

2. AUTRUM, H. J. 1932.
Ein neuer Funort von Haementeria costata (Fr. Müller) in Deutschland und Bemerkungen über den möglichen Wirt des Egels. Zool. Anz. 98(1/2): 45-46.

3. AUTRUM, H. J. 1936.
Hirudineae I. (In Bronn's Klass. u. Ordnung Tierreichs). Abt. III. Bd. 1 (Teil 1, Lief. 1). pp. 1-106. Illus.

4. BLAINVILLE, H. H. D. 1827.
Sangue, Hirudo. Dict. Sci. Nat. 47: 205-273.

5. BLAINVILLE, H. H. D. 1828.
Vers. Dict. Sci. Nat. 57: 365-628. Illus.

6. BLANCHARD, R. 1894.
Hirudinées de l'Italie continentale et insulaire. Bull. Mus. Zool. Anat., Torino. 9(192): 1-84. Illus.

7. BLANCHARD, R. 1896.
Hirudineen aus dem Togoland. Arch. Naturg. 62. J. 1(1): 49-53 illus.

8. BOSC, L. A. G. 1802.
Histoire Naturelle des vers, contenant leur description et leurs moeurs. Vol. 1. 324 pp. Illus.; Vol. 2. 300 pp. Illus.; Vol. 3. 270 pp. Illus. Paris.

9. BRAUN, J. F. P. 1805.
Systematische Beschreibung einiger Egelarten, sowohl nach äusseren Kinnzeichen als nach ihren innern Bau. 74 pp. Illus. Berlin.

10. BUDDE-LUND, G 1874.
Meddelelse om Hirudo lineata O. F. Müller. Ferh. Skand. Naturf., Juli, 1873. pp. 424-425.

11. CABALLERO y C., E. 1940.
Nuevos género especie de hirudineo perteneciente a la subfamilia Haemadipsinae. Ann. Inst. Biol., México. 11(2): 573-583. Illus.

12. CARENA, H. 1821.
Monographie du genre Hirudo. Mem. Accad. Sci., Torino. 25: 273-316. Illus.

13. CARENA, H. 1824.
Monographie du genre Hirudo. Supplément. Mem. Accad. Sci., Torino. 28: 331-337.

14. CHELLADURAI, J. E. 1934.
On a new Indian leech, Hemiclepsis viridis, n. sp. Rec. Indian Mus. 36: 345-352. Illus.

15. DALYELL, J. G. 1853.
The powers of the creator displayed in the Creation. Vol. 2. 51 pp. Illus. London.

16. DIESING, K. M. 1850.
Systema helminthum. Vol. 1. xiii + 680 pp. Vindebonae.

17. FILIPPI, F. de. 1837.
Memoria sugli anellidi della famiglia sanguisughe col'Indicazione di alcune specie indigene della Lombardia. 32 pp. Illus. Milano.

18. GODDARD, E. J. & J. R. MALAN. 1923. (see: J. P. Moore, 1958)

19. GOODCHILD, C. G. 1951.
A new endoparasitic oligochaete (Naididae) from a North American Tree-Toad, Hyla squirella Latreille, 1902. Jour. Parasitol. 37(2): 205-211. Illus.

20. GRANT, J. S. 1958.
An experiment with leeches. Malay. Nat. Jour. 13: 31.

21. HARDING, W. A. 1909.
Note on two leeches from Ceylon. Proc. Camb. Philos. Soc. 15(3): 233-234.

22. JOHANSSON, L. 1926.
Hirudinea. (In Arndt: Beiträge zur Kenntnis der Land- und Süsswasserfauna Korsikas. I.) Mitt. Zool. Mus., Berlin. 12: 226-233.

23. JOHANSSON, L. 1929.
Hirudinea (Egel). (In Dahl: Tierwelt Deutschlands). 15: 133-155. Illus.

24. JOHNSTON, G. 1865.
A catalogue of the British non-parasitic worms in the collection of the British Museum. 366 pp. London.

25. KABURAKI, T. 1921.
Fauna of the Chilka Lade. On some leeches from the Chilka Lake. Mem. Indian Mus. 5(9): 661-675. Illus.

26. LEHMAN, D. L. 1958.
Notes on the biology of Trypanosoma ambystomae Lehmann, 1954. II. The life cycle in the invertebrate host. Jour. Protozool. 5(1): 95-97.

27. LEIGH-SHARPE, W. N. 1933.
Report upon a collection of leeches from Morocco and elsewhere. Bull. Soc. Sci. Nat., Maroc. 13(4/6): 1212-1218. Illus.

28. LOVERIDGE, A. 1936.
Scientific results of an expedition to rain forest regions in Eastern Africa. VII. Amphibians. Bull. Mus. Comp. Zool. (Harvard U.). 79(7): 369-430. Illus.

29. LUTZ, A. 1927.
Sur la Schmardaella lutzi Michaelsen. C. R. Soc. Biol., Paris. 96(7): 485-486.

30. LUTZ, A. 1928.
Estudios de zoologia y parasitologia venezolanas. 133 pp. Illus. Rio de Janeiro.

31. MERTENS, R. 1929.
Glossosiphonia algira Moquin-Tandon als Parasit von Hydromantes genei genei Schlegel. Blätt. Aquarien- u. Terrarienk. 40(12): 206-207.

32. MICHAELSEN, W. 1909-1910.
Oligochaeta und Hirudinea. (see: Michaelsen & Johansson in Brauer's Süsswasserfauna Deutschland). Hft. 13. pp. 1-84. Illus. Jena.

33. MICHAELSEN, W. 1926a.
Schmardaella lutzi, Mich., oligochaete endoparasitico de Hylidas sul-americanas. Mem. Inst. Osw. Cruz. 19(2): 231-236. Illus.

34. MICHAELSEN, W. 1926b.
Schmarotzende Oligochäten nebst Erörterungen über verwandschaftliche Beziehungen der Archioligochäten. Mitt. Mus. Hamburg. 42: 109. Illus.

35. MOORE, J. P. 1900.
A description of Microbdella biannulata with special regard to the constitution of the leech somite. Proc. Acad. Nat. Sci., Philadelphia. 5: 50-73. Illus.

36. MOORE, J. P. 1901.
The Hirudinea of Illinois. Bull. Ill. St. Lab. Nat. Hist. 5: 479-547. Illus.

37. MOORE, J. P. 1906.
Hirudinea and Oligochaeta collected in the Great Lakes region. Bull. Bur. Fisheries (1905). 25: 153-172.

38. MOORE, J. P. 1912.
Classification of the leeches of Minnesota. Zool. Ser. (5), Geol., Nat. Hist. Surv., Minnesota. pp. 63-143. Illus.

39. MOORE, J. P. 1920.
The leeches (Hirudinea). (In: Ward & Whipple's Fresh Water Biology). Chap. 20: 646-660. Illus. New York.

40. MOORE, J. P. 1924.
The leeches (Hirudinea) of Lake Nipigon. Univ. Toronto Stud. Biol. 25: 15-31. Illus.

41. MOORE, J. P. 1939.
Additions to our knowledge of African leeches (Hirudinea). Proc. Acad. Nat. Sci., Philadelphia. 90: 297-360. Illus.

42. MOORE, J. P. 1946.
Leeches (Hirudinea) from the Hawaiian Islands, and two new species from the Pacific region in the Bishop Museum collection. Occas. Pap. Bishop Museum, Honolulu. 18(11): 171-191. Illus.

43. MOORE, J. P. 1953.
Three undescribed North American leeches (Hirudinea). Notul. Nat. Acad., Philadelphia. 1953 (250): 1-13. Illus.

44. MOORE, J. P. 1958.
The leeches (Hirudinea) in the collection of the Natal Museum. Ann. Natal Museum. 14: 303-340. Illus.

45. MOQUIN-TANDON, C. H B. A. 1827.
Monographie de la famille des Hirudinées. 151 pp. Illus. Paris.

46. MOQUIN-TANDON, C. H. B. A. 1846.
Monographie de la famille des Hirudinées. Nouvelle édition revue et augmentée. 448 pp. + Atlas (23pp.). Illus. Paris.

47. MÜLLER, Fr. 1844.
Uber Hirudo tessulata und marginata O. F. Müll. Arch. Naturg. 10(1): 370-376. Illus.

48. MÜLLER, O. F. 1774.
Vermium terrestrium et fluviatilium, seu animalium infusorium, helminthicorum et testacorum, non marinorum, succuncta historia. 1(2): 37-51. Havniae & Lipsiae.

49. OKA, A. 1910.
Synopsis der japonischen Hirudineen, mit diagnosen der neuer Species. Annot. Zool., Japan. 7: 165-183. Illus.

50. OKA, A. 1925.
Notices sur les Hirudinées d'extrème Orient. I-VII. Annot. Zool. Japan. 10: 311-335. Illus.

51. OKA, A. 1926.
Notices sur les Hirudinées d'extrème Orient. VIII. Annot. Zool. Japan. 11: 59-62. Illus.

52. OKA, A. 1928.
Description de deux espèces Japanaises de Glossiphonia (Gl. smaragdina et Gl. lata). Proc. Imp. Acad., Tokyo. 4(9): 543-546. Illus.

53. OKA, A. 1931.
Sur une nouvelle espèce d'Hemiclepsis provenant de Chine. Proc. Inp. Acad., Tokyo. 7(3): 121-123. Illus.

54. PICAGLIA, L. 1877.
Contribuzione alla Fauna del Modense. Ann. Soc. Nat., Modena, 2.s. 11: 146-157.

55. RICHARDSON, L. R. 1949.
The occurrence of the leech Batrachobdella picta (Verrill) in the dorsal lymph spaces of Rana catesbiana. Canad. Field-Nat. 63(2): 85-86.

56. SAINT-AMANS, B. de. 1825.
Description d'une espèce nouvelle de Sangue, l'Hirudo oscillatoria. Mém. Soc. Linn., Paris. 3: 193. Illus.

57. SAVIGNY, J. C. 1820 (1822).
Système des annelids, principale de celles des côtes de l'Égypte et de la Syrie. (In: Description de l'Egypte... pendent l'Expedition de l'Armée francaise). pp. 105-120. Paris.

58. SAY, T. 1824.
Sur les Hirudo parasitica, lateralis, marmorata et decora dans le voyage du Major Long. (In: S. H. Long's "Narrative of an expedition to the source of St. Peter's River, 1823"). Vol. 2. p. 266. Appendix Zool. 1824. Philadelphia.

59. STEPHENSON, J. 1930.
An oligochaete worm parasite in frogs of the genus Phrynomerus. Ann. & Mag. Nat. Hist. 10 s. (34): 6: 367-377. Illus.

60. VERRILL, A. E. 1874.
Synopsis of the North American Fresh-Water Leeches. Rept. U. S. Comm. Fish & Fisheries, 1872-73. Pt. 2. pp. 666-689.

61. VEJDOVSKÝ, F. 1884.
Exkrční soustava Hirudinei. Sitzungsbr. K. Böhm. Gesellsch. Wissensch. in Prag. (1883). pp. 417-433. Illus.

62. VIGUIER, C. 1879.
Anatomie comparée des Hirudinées. C. R. Acad. Sci. 89: 110-112.

63. WALTON, A. C. 1945.
Miscellaneous Parasites of Amphibia (Thallophyta, Annelida, Mollusca, Arthropoda). Mimeotype. 33 pp. Contrib. #100. Knox College, Galesburg, Illinois.

64. WOLTERSTORFF, W. 1900.
Über Discoglossus pictus und Glossosiphonia algira auf Corsica. Zool. Anz. 23: 23-27.

THE PARASITES OF AMPHIBIA

by

A. C. Walton
Knox College, Galesburg, Illinois

FUNGI: List of Parasites

ACHYLA FLAGELLATA Coker, 1923. (Phycomycete). From Notophthalmus viridescens -- U.S.A. (a wound parasite).

BASIDIOBOLUS RANARUM Eidam, 1886. (? = B. myxophilus Fries, 1899; = B. lacertae Eidam, 1886). (Phycomycete). From Rana esculenta, R. temporaria -- Europe.

BLASTOCYSTIS BUFONIS Brumpt, 1912. (Ascomycete). From Bufo bufo -- Europe.

BLASTOCYSTIS ENTEROCOLA Alexieff, 1911. (Ascomycete). From Bufo bufo, Triturus cristatus -- Europe.

DERMOCYSTIDIUM PUSULA (Peréz, 1907) Peréz, 1908 (= Dermocystis pusula Peréz, 1907). (Phycomycete). From Triturus alpestris, T. cristatus, T. helveticus, T. marmoratus -- Europe.

DERMOCYSTIDIUM RANAE Guyénot & Naville, 1922. (Phycomycete). From Alytes obstetricans, Rana esculenta, R. temporaria -- Europe.

DERMOMYCOIDES ARMORIACUS Poisson, 1936. (Phycomycete). From Triturus helveticus -- Europe.

DERMOMYCOIDES BECCARII Granata, 1919. (Phycomycete). From Triturus vulgaris -- Europe.

DERMOSPORIDIUM GRANULOSUM Broz & Privora, 1952. (Phycomycete). In skin of Rana temporaria -- Europe.

DERMOSPORIDIUM HYLARUM Carini, 1940. (Phycomycete). From Hyla rubra -- Brazil.

HEPATOSPHAERA MOLGARUM Gambier, 1924. (Phycomycete). From Triturus alpestris, T. cristatus, T. helveticus -- Europe. (in leucocytes in liver lesions).

HISTOCYSTIDIUM RANAE Goodchild, 1953. (Phycomycete). Encysted in skin of Rana catesbiana -- U.S.A.

MONILIA BATRACHEA Scott, 1926
(? = Candida batrachea of Walton, 1945).
(Deuteromycete). On Frogs, Salamanders, Toads -- Europe (Zool. Gardens, England. (According to Langeron & Guerra, 1938, this form belongs to Candida, Berkhout, 1923, as emended by L. & G., 1938, bot comb. not made. Comb. used by Walton, 1945).

SAPROLEGNIA PARASITICA Coker, 1923.
(Phycomycete). From Notophthalmus viridescens, Rana pipiens -- U.S.A.

SAPROLEGNIA spp? of Záleský, 1926.
(Phycomycetes). Rana dalmatina, Salamanders -- Europe (Czechoslovakia).

THE PARASITES OF AMPHIBIA

by

A. C. Walton
Knox College, Galesburg, Illinois

HOST LIST OF FUNGI

ALYTES OBSTETRICANS -- Europe.
Dermocystidium ranae.

BUFO BUFO (= B. vulgaris) -- Europe.
Blastocystis bufonis, B. enterocola.

HYLA RUBRA -- Brazil.
Dermosporidium hylarum.

NOTOPHITHALMUS VIRIDESCENS (= Triturus viridescens) -- U.S.A. Achyla flagellata, Saprolegnia parasitica.

RANA CATESBIANA -- U.S.A.
Histocystidium ranae.

RANA DALMATINA (? = R. agilis) -- Europe. Saprolegnia sp? of Zalesky, 1926.

RANA ESCULENTA -- Europe.
Basidiobolus ranarum, Dermocystidium ranae.

RANA PIPIENS -- U.S.A.
Saprolegnia parasitica.

RANA TEMPORARIA (= R. platyrrhina) -- Europe. Basidiobolus ranarum, Dermocystidium ranae, Dermosporidium granulosum.

TRITURUS ALPESTRIS -- Europe.
Dermocystidium pusula, Hepatosphaera molgarum.

TRITURUS CRISTATUS -- Europe.
Blastocystis enterocola, Dermocystidium pusula, Hepatosphaera molgarum.

TRITURUS HELVETICUS (= T. palmatus) -- Europe. Dermocystidium pusula, Dermomycoides armoriacus, Hepatosphaera molgarum.

TRITURUS MARMORATUS -- Europe.
Dermocystidium pusula.

TRITURUS VULGARIS (= T. taeniatus) -- Europe. Dermocystidium beccarii.

"Frogs" -- Europe.
Monilia (Candida) batrachea.

"Salamanders" -- Europe.
Monilia (Candida) batrachea, Saprolegnia sp? of Zalesky, 1926.

"Toads" -- Europe.
Monilia (Candida) batrachea.

NUMBER 40, continued

THE PARASITES OF AMPHIBIA

by

A. C. Walton
Knox College, Galesburg, Illinois

BIBLIOGRAPHY FOR FUNGI

1. ALEXIEFF, A. G. 1911.
Sur le nature des formations dites kystes de Trichomonas intestinalis. C. R. Soc. Biol. An. 63. Vol. 71. 2(28): 296-298. Illus.

2. BROZ, O. & M. PRIVORA. 1952.
Two skin parasites of Rana temporaria. Dermocystidium ranae Guyénot & Naville and Dermosporidium granulosum n. sp. Parasitology. 42(1/2): 65-69. Illus.

3. BRUMPT, E. J. A. 1912.
Blastocystis hominis n. sp., et formes viosines. Bull. Soc. Path. Exot. 5(9): 725-730. Illus.

4. CARINI, A. 1940.
Sobre um parasita semelhante ao "Rhinosporidium", encontrada em quistos de pele de uma "Hyla". Arq. Inst. Biol., S. Paulo. 11: 93-96. Illus.

5. COKER, W. C. 1923.
The Saprolegniaceae, with notes on other water molds. 201 pp. Illus. Chapel Hill, N. C., U.S.A.

6. EIDAM, E. 1886.
Basidiobolus, eine neue Gattung der Entomophthoraceen. Cohn's Beitr. z. Biol. Planzen. 4(2): 181-251. Illus.

7. FRIES, R. E. 1899.
Basidiobolus myxophilus en ny Phycomycet. Bihang till K. Svensk. Vet. Akad. Handl. 25(3): 1-3. Illus.

8. FRIES, R. E. 1928.
Vad ar Basidiobolus myxophilus? (= B. ranarum). Svensk. Bot. Tidskr. 23(1): 149-150.

9. GAMBIER, H. 1924.
Sur un protiste parasite et pathogene des tritons; Hepatosphaera molgarum, n.g., n. sp. C. R. Soc. Biol. 90(6): 439-441. Illus.

10. GOODCHILD, C. G. 1953.
A subcutaneous cyst-parasite of bullfrogs, Histocystidium ranae, n.g., n. sp. Jour. Parasitol. 39(4, Sect. 1): 395-405. Illus.

11. GRANATA, L. 1919.
Dermomycoides beccarii n. g., n. sp. nuovo enigmatico parassita di Molge vulgaris L. Monitore Zool. Ital., Firenze. 30(9): 153-160. Illus.

12. GUYÉNOT, E. & A. NAVILLE. 1922.
Un nouveau Protiste, du genre Dermocystidium, parasite de la grenouille. Dermocystidium ranae n. sp. Rev. Suisse Zool. 29(3): 133-145. Illus.

13. LANGERON, M. & P. GUERRA. 1938.
Nouvelles recherches de zymologie medicale (1). Ann. Parasitol., Hum. et Comp. 16(2): 162-179; 16(5): 429-476.

14. LEVISOHN, I. 1927.
Beitrag zur Entwicklungsgeschichte und Biologie von Basidiobolus ranarum Eidam. Jahrb. Wiss. Bot. 66(3): 513-555. Illus.

15. PERÉZ, C. 1907.
Dermocystis pusula, organisme nouveau parasite de la peau des tritons. C. R. Soc. Biol. 63(32): 445-446.

16. PERÉZ, C. 1908.
Rectification de nomenclature à propos de Dermocystis pusula. C. R. Soc. Biol. 64(15): 739.

17. PERÉZ, C. 1913.
Dermocystidium pusula parasite de la peau des tritons. Arch. Zool. Exp. et Gen. 52: 342-357. Illus.

18. POISSON, R. 1936.
Dermomycoides amoriacus n. sp., parasite cutane de Triturus palmatus (Schneider) (Batracien urodele). Structure de la zoospore. C. R. Acad. Sci. 202: 987-989. Illus.

19. SCOTT, H. H. 1926.
A mycotic disease of Batrachians. Proc. Zool. Soc., London. 1926 (3): 683-692. Illus.

20. TIFFNEY, W. N. 1939.
The host range of Saprolegnia parasitica. Mycologia. 31(3): 310-321. Illus.

21. TIFFNEY, W. N. & F. T. WOLF. 1937. Achyla flagellata as a fish parasite. Jour. Elisha Mitchell Sci. Soc. 53(2): 298-300.

22. WALTON, A. C. 1945.
Miscellaneous Parasites of Amphibia. Mimeotype. 33 pp. Contrib. #100. Knox College, Galesburg, Illinois.

23. ZÁLESKÝ, H. 1926.
Choroby žab (Anura) v. přírodě. [Fish molds on anurans and salamanders] (From the Czech language). Věda Přírodni. 7(4/5): 123-127. Illus.

ISSUED

SEPT. 30,

1964

THE PARASITES OF AMPHIBIA

by

A. C. Walton
Knox College, Galesburg, Illinois

HOST LIST OF BACTERIA

"Amphibians" -- Europe.
Bacillus panis, B. tumescesns, Escherichia coli.

"Amphibians" -- U.S.A.
Bacillus adhaerans.

BUFO AMERICANUS -- U.S.A.
Serratia anolium.

BUFO BUFO -- Europe.
Borrelia bufonis, Treponema microtum. (to Protozoa)

BUFO MELANOSTICTUS -- South Viet-Nam.
"Ballerup-Bethesda" strain of Enterobacteriaceae.

BUFO REGULARIS -- South Africa.
Borrelia sp? of Fantham, 1924. (to Protozoa)

"Frogs" -- Europe.
Bacillus krusei, Bacillus B., Proteus hydrophilus, Salmonella ranicida, Vibrio piscium.

"Frogs" -- U.S.A.
Bacillus krusei, Mycobacterium marinum, M. piscium, M. thamnopheos, Proteus hydrophilus.

"Frogs" -- Puerto Rico.
Mycobacterium sp? of Gonzalez, 1938.

HYLA ARBOREA -- Europe.
Micrococcus batrachorum.

HYLA SEPTENTRIONALIS -- Cuba.
Borrelia cubensis. (to Protozoa).

LEPTODACTYLUS OCELLATUS -- Brazil.
Haemobartonella ranarum. (Classification doubtful).

LYMNODYNASTES DORSALIS -- Australia.
Bacillus sp? of Willis, 1932.

RANA ESCULENTA -- Europe (Rumania).
Anaplasma sp? of Mello, Sá, Sousa Dias & Noronha, 1917, Haemobartonella ranarum, Mycobacterium butyricum, M. cheloni, M. crottin, M. freiburgense, M. graminis, M. pelligrini, M. phlei, M. piscium, M. rabinowitsch, M. ranae, M. thamnopeos, Phytomonas tumefaciens, Coli-Typhoid type Bacillus of Gheorghiu & Balmus, 1931.

RANA PIPIENS -- U.S.A.
Mycobacterium ranae, M. thamnopheos (only in tadpoles), Serratia anolium.

RANA TEMPORARIA -- Europe.
Borrelia omelianskyi, B. sp? of Galli-Valerio, 1930. (to Protozoa).

RANA TIGRINA -- India (Portugese Goa).
Anaplasma sp? of Mello, Sá, Sousa, Dias & Noronha, 1917.

SALAMANDRA ATRA -- Europe.
Borrelia sp? of Galli-Valerio, 1930. (to Protozoa).

SALAMANDRA SALAMANDRA -- Europe.
Borrelia sp? of Galli-Valerio, 1930. (to Protozoa).

"Salamanders" -- Europe.
Bacillus krusei, Proteus hydrophilus.

"Salamanders" -- U.S.A.
Bacillus krusei, Proteus hydrophilus.

"Toads" -- Europe.
Bacillus krusei.

XENOPUS LAEVIS -- South Africa.
Bacillus fulminans, Borrelia sp? of Fantham, 1924 (to Protozoa), Escherischia coli, Flavobacterium flavotenuae, Micrococcus xenopus, Vibrio xenopus.

XENOPUS spp. -- South Africa.
Eberthella xenopa.

NUMBER 40, continued

THE PARASITES OF AMPHIBIA

by

A. C. Walton
Knox College, Galesburg, Illinois

BACTERIA: List of Bacteria.

ANAPLASMA sp? of de Mello, de Sá, de Sousa, Diàs & Noronha. 1917. From blood of Rana esculenta -- Europe; Rana tigrina -- India (Goa). (probably decomposition products, not living organisms).

BACILLUS ADHAERANS Laubach, 1916. Intestines of Amphibia -- U.S.A.

BACILLUS FULMINANS Schrire & Greenfield, 1929. Muscle abscess in Xenopus laevis -- South Africa.

BACILLUS KRUSEI Laveran, 1899. In red blood cells of Frogs, Salamanders and Toads -- Europe, U.S.A. (always associated with Cytamoeba bacterifera).

BACILLUS PANIS Migula, 1900. Intestines of Amphibia -- Europe.

BACILLUS TUMESCENS Zopf, 1885 (= B. garveolens Gottheil, 1901). Intestines of Amphibia -- Europe.

BACILLUS "B" of Vercellanna, 1928. In Rana sp? -- Italy. (isolated from human sputum -- lethal to frogs when injected, related to Koch's bacillus).

BACILLUS sp? of Willis, 1932. From Limnodynastes dorsalis -- Australia. (normally in lizards).

"Ballerup-Bethesda" strain of Enterobacteriaceae. From Bufo melanostictus -- South Viet-Nam. (see: Chambon, Minor & Martin, 1959).

BORRELIA BUFONIS (Dobell, 1912) (= Spirchaeta bufonis Dobell, 1912). (? to Protozoa). From Bufo bufo -- Europe.

BORRELIA CUBENSIS (Hoffman, 1923) (= Spirochaeta cubensis Hoffman, 1923). (? to Protozoa). From Hyla septentrionalis -- Cuba.

BORRELIA OMELIANSKYI (Yakamoff, 1925) (= Spirochaeta omelianskyi Yakamoff, 1925). (? to Protozoa). From Rana temporaria -- Europe.

BORRELIA sp? of Fantham, 1924. (? to Protozoa). From Bufo regularis -- South Africa.

BORRELIA sp? of Galli-Valerio, 1930. (? to Protozoa). From Salamandra salamandra -- Europe.

"Coli-typhoid type bacillus" of Gheorghiu & Balmus, 1931. From Rana esculenta -- Europe.

EBERTHELLA XENOPA Schrire, 1928. From wound abscesses in Xenopus spp. -- South Africa.

ESCHERICHiA ALBA Schrire, 1928 (= Bacillus coli of Migula; = Escherischia coli of Castellani & Chalmers as parasitic in amphibia). From wound abscesses in Xenopus laevis -- South Africa.

ESCHERISCHIA ? COLI (of Migula, 1895) of Castellani & Chalmers, 1919 (= Bacillus coli of Migula, 1895). From wound abscesses in 9 spp. of amphibia -- Europe. (Frogs, Toads, Salamanders).

FLAVOBACTERIUM FLAVOTENUAE Schrire, 1928. From Xenopus laevus -- South Africa. (in wound abscesses).

HAEMOBARTONELLA RANARUM (Cunha & Muniz, 1926). (= Bartonella batrachorum Zavattari & Defendi, 1931, = Bartonella ranarum Cunha & Muniz, 1926). From Leptodactylus ocellatus -- Brazil; Experimentally in in Rana esculenta -- Europe. (Tyzzer & Weinmann, 1939, suggest the transfer from Bartonella to Haembartonella but did not make the combination). (Not a true bacterium and not a protozoan).

MICROCOCCUS BATRACHORUM Yakimoff, 1930. From Hyla arborea -- Europe. (actually parasitic in the Trichomonas batrachorum present in the feces).

MICROCOCCUS XENOPUS Schrire & Greenfield, 1929. From Xenopus laevis -- South Africa. (in muscle abscess).

MYCOBACTERIUM BUTYRICUM of Bonciu et alli, 1960. Experimentally in Rana esculenta -- Rumania.

MYCOBACTERIUM CHELONI of Bonciu et alii, 1960. Experimentally in Rana esculenta -- Rumania.

MYCOBACTERIUM CROTTIN of Bonciu et alii, 1960. Experimentally in Rana esculenta -- Rumania.

MYCOBACTERIUM FREIBURGENSE of Bonciu et alii, 1960. Experimentally in Rana esculenta -- Rumania.

MYCOBACTERIUM GRAMINIS of Bonciu et alii, 1960. Experimentally in Rana esculenta -- Rumania.

MYCOBACERIUM MARINUM of Aronson, 1926. Experimentally in Frogs -- U.S.A.

MYCOBACTRIUM PELLIGRINI of Bonciu et alii, 1960. Experimentally in Rana esculenta -- Rumania.

MYCOBACTERIUM PHLEI of Bonciu et alii, 1960. Experimentally in Rana esculenta -- Rumania.

MYCOBACTERIUM PISCIUM (Kral & Dubard, 1897) Bergey et al., 1928. (= Bacillus piscium K. & D., 1897). Experimentally in Rana esculenta -- Europe; and Frogs -- U.S.A. (see: Aronson, 1926).

MYCOBACTERIUM RABINOWITSCH of Bonciu et alii, 1960. Experimentally in Rana esculenta -- Rumania.

MYCOBACTERIUM RANAE (Küster, 1905) Bergey et al., 1923. (= Bacillus ranae Küster, 1905, = B. tuberculosis ranae of Bataillon, Dubarre & Torré, 1897). Experimentally in Rana esculenta -- Rumania; in liver abscess in Rana pipiens -- U.S.A.

MYCOBACTERIUM THAMNOPHEOS of Aronson, 1929. Experimentally in Rana esculenta -- Rumania; in abscesses in Frogs and Tadpoles, especially of Rana pipiens -- U.S.A.

MYCOBACTERIUM sp? of Gonzalez, 1938. (near M. ranae). From a frog -- Puerto Rico.

PHYTOMONAS TUMEFACIENS (Smith & Townsend, 1907) Bergey et al., 1923. (= Bacterium tumefaciens Smith & Townsend, 1907; = Bacillus tumifaciens of Israilsky, 1926; = Pseudomonas tumefaciens of Stevens, 1913; = Polymonas tumefaciens of Lieske, 1928). From a tumor in Rana esculenta -- Europe. (see: Cantoni, 1935).

PROTEUS HYDROPHILUS (Chester, 1901) Bergey et al., 1923. (=Bacillus hydrophilus fuscus Sanarelli, 1891; = Bacterium hydrophilus fuscus Chester, 1897; = Bacillus hydrophilus Chester, 1901; = Bacillus ranicidus Ernst, 1890, e.p.; = Bacterium ranicida of Lehmann & Neumann, 1901, e.p.). Cause of "Red-leg" disease in Frogs and Salamanders -- Europe; U.S.A.

SALMONELLA RANICIDA Hauduroy, et al., 1937. From wound abscesses in frogs -- Europe. (The relationship of this form with Bacillus ranicidus Ernst, 1890; Bacterium ranicida of Lehmann & Neumann, 1901; Bacillus septicemia ranarum Venulet & Padlewski, 1913; and B. fulminans Schrire & Greenfield, 1929, is not as yet satisfactorily settled).

SERRATIA ANOLIUM Duran-Reynals & Clausen, 1937. From Bufo americanus, Rana pipiens and lizards -- North America.

TREPONEMA MINUTUM Dobell, 1912. (Identification doubtfull, see: Castellani & Chalmers, 1919). From Bufo bufo -- Europe. (to Protozoa).

VIBRIO PISCIUM David, 1927. Experimentally in Frogs -- Europe.

VIBRIO XENOPUS Schrire & Greenfield, 1929. In muscle abscesses in Xenopus laevis -- South Africa.

NUMBER 40, continued

THE PARASITES OF AMPHIBIA

by

A. C. Walton
Knox College, Galesburg, Illinois

BIBLIOGRAPHY FOR BACTERIA

1. ARONSON, J. D. 1926. Spontaneous tuberculosis in salt water fish. Jour. Infect. Diseases. 39(8): 315-320.

2. ARONSON, J. D. 1929. Spontaneous tuberculosis in snakes. Jour. Infect. Diseases. 44(3): 215-223. Illus.

3. BURGER, J. W. & S. THOMAS. 1933. B. coli in cold-blooded animals. Jour. Amer. Water Works Assoc. 25(9): 1238-1244.

4. BATAILLON, E., DUBARD, & TERRÉ. 1897. Un nouveau type de tuberculose. C. R. Soc. Biol., Paris. 10.s. 4(17): 446-449.

5. BERGEY, D. H., E. C. HARRISON, R. S. BREED, B. W. HAMMER & F. N. HUNTOON. 1923. Manual of Determinative Bacteriology. 1st. Ed. xii + 442 pp. Baltimore.

6. BONCIU, C., O. BONCU, M. PETROVICI & R. DEMETRESCU. 1960. Contribution à l'étude de l'action pathogène expérimentale des Bacilies paratuberculeux, isolés de l'eau et la boue du lac noire de sovata. Arch. Rum. Path. Exptl. et Microbiol. 19(3): 419-437. Illus.

7. CANTONI, G. 1935. Descrizione di una neoplasia in Rana esculenta L. Atti Soc. Ital. Sci. Nat. e Mus. civ. Storia Nat., Milano. 74 (3): 223-231. Illus.

8. CASTELLANI, A. & A. J. CHALMERS. 1919. Manual of Tropical Medicine. 3rd. Ed. 2436 pp. Illus. London.

9. CHAMBON, L., L. Le MINOR & P. MARTIN. 1959(1960). Recherche d'enterobacteries chez des animaux à sang froid du Centro- et du Sud-Vietnam. Bull. Soc. Pathol. Exot. 52(6): 720-723.

10. CHESTER, F. D. 1897.
A preliminary arrangement of the species of the genus Bacterium. Pt. I. Delaware Coll. Agric. Exp. Sta. 9th. Ann. Rept. pp. 53-145.

11. CHESTER, F. D. 1901.
A Manual of Determinative Bacteriology. 1st. Ed, vi + 410 pp. Illus. New York.

12. CLAUSEN, H. J. & F. DURAN-REYNALS. 1937. Studies on the experimental infection of some reptiles, amphibia and fish with Serratia anolium. Amer. Jour. Pathol. 13(3): 441-451. Illus.

13. CUNHA, A. da & J. MUNIZ. 1927.
Sur la Bartonella ranarum Cunha & Muniz, 1926. C. R. Soc. Biol., Paris. 97(27): 1090-1092. Illus.

14. DAVID H. 1927.
Ueber eine durch choleraähnliche Vibrionen hervorgerufene Fischseuche. Centralbl. Bakt. 1. Abt., Orig. 102:46-60. Illus.

15. DOBELL, C. 1908.
On the intestinal Protozoa parasites of frogs and toads. Proc. Camb. Philos. Soc. 14(4): 428-433.

16. DOBELL, C. 1912.
Researches on the spirochaetes and related organisms. Arch. Protistenk. 26(2): 117-240. Illus.

17. DURAN-REYNALS, F. & H. J. CLAUSEN. 1937. A contageous tumor-like condition in the lizard (Anolis equestris) induced by a new bacterial species, Serratia anolium (sp. n.). Jour. Bact. 33(4): 369-376. Illus.

18. ERNST, P. 1890.
Die Frühjahrsseuche der Frösche und ihre Abhängogkeit von Temperatur einflüssen. Beitr. Path. Anat., Allg. Pathol. 8: 203-220. Illus.

19. FANTHAM, H. B. 1924.
Some parasitic protozoa found in South Africa. VII. S. Afr. Jour. Sci. 21(4): 435-444.

20. GALLI-VALERIO, B. 1930.
Observations et recherches sur les parasites et les maladies parasitaires des animaux sauvages. Bull. Murith., Soc. Valois. Sci. Nat. 47: 50-89.

21. GHEORGHIU, L. & G. BALMUS. 1931. Contribution à l'étude d'une maladie contagiuese de la grenouille. C. R. Soc. Biol., Paris. 108(36): 1002-1004.

22. GONZALEZ, L. M. 1938.
Tuberculosis in a frog. Puerto Rico Jour. Pub. Health & Trop. Med. 13(3): 399-426.

23. GOTTHEIL, O. 1901.
Botanische Beschreibung einiger Boden bakterien. Centralbl. Bakt. II. Abt. 7(12):430-436; 7(13): 449-465.

24. HAUDUROY, P., G. EHRINGER, A. URBAIN, G. GUILLIOT & J. MAGROU. 1937. Dictionnaire des Bacteries Pathogenes. 597 pp. Illus. Paris.

25. HOFFMAN, W. H. 1923. Spirochaeta cubensis, una nueva espiroqueta parasitica. San. y. benefic. Bol. Ofic., Habana. 28(1/3): 76-78.

26. ISRAILSKY, W. P. 1926. Bakteriophage und Pflanzenkrebs. Centralbl. Bakt. II. Abt. 67: 236-242. Illus.

27. KRAL, & DUBARD. 1897. (complete reference not available) Bull. Acad. Med. 1897: p. 580.

28. KÜSTER, E. 1905. Ueber Kaltblütertuberculose. Münch. Med. Wochenschr. 52(2): 57-59.

29. LAUBACH, C. A. 1916. Spore-bearing Bacteria in Dust. Jour. Bact. 1(5): 493-505.

30. LAVERAN, M. A. 1899. Sur le bacille parasite des hematies de Rana esculenta. C. R. Soc. Biol., Paris. 11. s. 51. 1(16): 355-358. Illus.

31. LEHMANN, K. B. & R. O. NEUMANN. 1899. Bakt. Diag. 2. Aufl. Vol. X, Pt. 2. xv + 495 + 19 pp. Illus. München.

32. LIESKEM, R. 1928. Untersuchungen über die Krebskrankheit bei Pflanze, Tieren und Menchen. Centralbl. Bakt. I. Abt. Orig. 108: 118-146. Illus.

33. MELLO, I. F. de, B. da SÁ, L. de SOUSA, A. DIAS & R. NORONHA. 1917. Hematozoaires et pseudo-hematozoaires de l'Inde Portugaise. Anais Sci. Fac. Med. Porto. 3: 5-24. Illus.

34. MIGULA, W. 1895. In Engler & Prantl: "Die Natürlichen Pflanzenfamilien" 1(Ia): 1-44. Illus. Leipzig.

35. MIGULA, W. 1900. System der Bakterien. Vol. 2. 576 pp. Jena.

36. NONIDEZ, J. F. & M. C. KAHN. 1934. Tuberculosis induced in the tadpoles by feeding. Proc. Soc. Exp. Biol. & Med. 31(7): 783-787. Illus.

37. SANARELLI, G. 1891. Ueber einen neuen mikroorganismus des Wassers, welcher für Thiere mit veränderlicher und konstanter Temperatur pathogen ist. Centralbl. Bakt. 9: 222-228. Illus.

38. SCHRIRE, T. 1928. On some new species of bacteria isolated from Xenopus laevis. Trans. Roy. Soc. S. Africa. 17(1): 43-49.

39. SCHRIRE, T. & E. C. GREENFIELD. 1929. On Bacillus fulminans and certain other new organisms from Xenopus laevis. Trans. Roy. Soc. S. Africa. 17(4): 309-319.

40. SCOTT, H. H. 1926. Report on the deaths occurring in the Society's Gardens during the year 1925. Proc. Zool. Soc. London. 1926. pp. 231-244.

41. SMITH, E. F. & C. O. TOWNSEND. 1907. A plant-tumor of bacterial origin. Science, N. S. 26: 671-673.

42. STEVENS, F. L. 1913. The Fungi which cause plant disease. xi + 754 pp. Illus. New York.

43. TYZZER, E. E. & D. WEIMAN. 1939. Haemobartonella, n. g. (Bartonella Olim, pro parte). H. microti, n. sp., of the field vole, Microtus pennsylvanicus. Amer. Jour. Hyg., Sect. B. 30(3): 141-157. Illus.

44. VENULET, F. & L. PADLEWSKI. 1913. Ueber einen neuen während einer Froschepizootie gezüchteten Bacillus. Centralbl. Bakt. I. Abt. Orig. 71(57): 343-348. Illus.

45. VERCELLANA, G. 1928. Le lesioni prodotte dal bacillo B. nei tessuti degli animali a sangue freddo. Pathologeia. 20(442): 406-410.

46. WALTON, A. C. 1942. The Bacteria as parasites of Amphibia. Mimeotype. 9 pp. Contrib. # 80. Knox College, Galesburg, Illinois.

47. WELDIN, J. C. 1927. The Colon-Typhoid Group of Bacteria and Related forms. Relationship and Classification. Iowa St. Coll. Jour. Sci. 1(2): 181-197.

48. WILLIS, R. A. 1932. A bacillary disease of the blue-tongued lizard (Tilia scincoides). Med. Jour. Australia. 19: 149-157. Illus.

49. YAKIMOFF, W. L. 1925. Bacillus flagellatus Omel, et Spirochaeta omelianskyi n. sp. Bull. Soc. Path. Exot. 18(4): 303-304.

50. YAKIMOFF, W. L. 1930. Micrococcus batrachorum n. sp. in Trichomonas batrachorum Perty in feces of Hyla arborea. Arch. Protistenk. 72(1): 135-138.

51. ZAVATTARI, E. 1931. Bartonellosi nelle rane smilzate. Boll. Soc. Ital. Biol. Sperim. 6(2): 120-122.

52. ZAVATTARI, E. & S. DEFENDI. 1931. Studi sulle bartonelle. I. Bartonellosi delle rane smilzate di Pavia. Boll. Soc. Med. -Chir., Pavia. 45(1): 53-56.

53. ZOPF, W. 1885. Die Spaltpilze. 3rd. Ed. Halle.

NUMBER 40, continued

THE PARASITES OF AMPHIBIA

by

A. C. Walton
Knox College, Galesburg, Illinois

HOST LIST OF ACARINA*

AMBYSTOMA MACULATUM -- U.S.A.
Hannemania dunni.

AMBYSTOMA OPACUM -- U.S.A.
Hannemania dunni.

"Amphibians" -- U.S.A.
Hannemania hegneri (experimentally).

ARTHROLEPTES MINUTUS -- Africa.
Endotrombicula penetrans.

BUFO FOWLERI -- U.S.A.
Hannemania penetrans -- U.S.A.

BUFO MARINUS -- South America.
Amblyomma cajennense, A. dissimile, A. göldii, A. rotundatum, A. varium, Boöphilus microplus.

BUFO MAURITANICUS (= B. pantherinus, e.p.) -- Africa (Morocco). Ornithodoros erraticus.

BUFO PARACNEMIS -- Brazil.
Amblyomma dissimile.

BUFO PELTOCEPHALUS -- Cuba.
Amblyomma sp? of Vigueras, 1934.

BUFO VARIEGATUS -- Argentina.
Hannemania edwardsi.

BUFO VIRIDIS -- Africa (Morocco).
Ornithodoros marocanus.

DESMOGNATHUS FUSCUS FUSCUS -- U.S.A. Hannemania dunni.

ELEUTHERODACTYLUS GOLLMERI -- Brazil. Hannemania stephensi.

ELEUTHERODACTYLUS RICORDII -- U.S.A.
Hannemania penetrans.

ELEUTHERODACTYLUS sp? (= Hylodes sp?) -- Brazil. Hannemania hylodeus.

EURYCEA BISLINEATA CIRRIGERA -- U.S.A. Hannemania dunni.

EURYCEA LONGICAUDA GUTTO-LINEATA-- U.S.A. Hannemania dunni.

"Frogs" -- Bristish West Indies (Jamaica).
Endotrombicula lynni.

HYLA ARENCOLOR -- U.S.A.
Hannemania hylae.

---

* Mainly nymphal forms.

HYLA RUBRA -- Brazil.
Eutrombicula yorkei, Hannemania newsteadi.

HYLA SQUIRELLA -- U.S.A.
. Eutrombicula splendens.

LEPTODACTYLUS OCELLATUS -- Argentina.
Hannemania argentina.

LEPTODACTYLUS OCELLATUS -- Brazil.
Hannemania hepatica.

MANTIDACTYLUS LUTEUS -- Madagascar.
Schöngastia madagascarensis.

PHRYNOBATRACHUS GRAUERI -- Africa.
Larval mite of Loveridge, 1929.

PHRYNOBATRACHUS NATALENSIS --
Africa. Schöngastia pillarsi.

PLETHODON GLUTINOSUS -- U.S.A.
Hannemania dunni.

PLEURODEMA BIBRONI -- Argentina.
Hannemania samboni.

PLEURODEMA BUFONINA -- Brazil.
Hannemania hobdayi.

PSEUDOTRITON MONTANUS -- U.S.A.
Hannemania dunni.

RANA CATESBIANA -- U.S.A.
Hannemania penetrans.

RANA CLAMITANS -- U.S.A.
Hannemania penetrans.

RANA PIPIENS -- U.S.A.
Hannemania penetrans.

RANA SPHENOCEPHALA -- U.S.A.
Hannemania eltoni, H. hegneri, H.
penetrans, Larval mite of Hubert, 1927.

"Toads" -- North America.
Eutrombicula alfreddugèsi.

NUMBER 40, continued

THE PARASITES OF AMPHIBIA

by

A. C. Walton
Knox College, Galesburg, Illinois

ACARINA: List of Parasites

Ixodides

Argasidae

ORNITHODOROS ERRATICUS Lucas, 1846 (? = O. marocanus Vélu, 1919). From Bufo pantherinus -- Africa. (only nymphs found).

ORNITHODOROS MAROCANUS Vélu, 1919 (? = O. erraticus Lucas, 1846). From Bufo viridis -- North Africa. (only nymphs found).

Ixodidae (only nymphs found on or in Amphibia).

AMBLYOMMA CAJENNENSE (Fabricius, 1787) Koch, 1844 (= Acarus cajennense Fab., 1787; = Ixodes cajennense of Fab., 1805; = I. crenatus Say, 1821; = Amblyomma tenellum Koch, 1844; = A. mixtum Koch, 1844; = Ixodes herrerae Dugès, 1897; = Amblyomma sculptum Berlese, 1888; = A. versicolor Nuttall & Warburton, 1908). From Bufo marinus -- South America.

AMBLYOMMA DISSIMILE Koch, 1844 (= A. adspersum Koch, 1844; = A. infumatum Koch, 1844; = A. irreratum Koch, 1844; = Ixodes flavidus Koch, 1844; = I. humanus Koch, 1844; = I. pulchellus Lucas, 1846; = I. boarum Stoll, 1886; = Amblyomma cooperi Nuttall & Warburton, 1908; = A. humanum of N. & W., 1911; = A. flavidus of Neumann, 1911). From Bufo marinus, B. paracnemis -- South America.

AMBLYOMMA GÖLDII Neumann, 1899. From Bufo marinus -- South America.

AMBLYOMMA ROTUNDATUM Koch, 1844 (= A. agamum Aragão, 1912). From Bufo marinus -- South America (Brazil).

AMBLYOMMA VARIUM Koch, 1844 (= A. crassipunctatum Stoll, 1890). From Bufo marinus -- South America.

AMBLYOMMA sp? of Vigueras, 1934 (near A. scutatus Neumann, 1899). From Bufo peltocephalus -- Cuba.

BOÖPHILUS MICROPLUS Canestrini, 1890 (? 1888) (= Rhiphicephalus annulatus caudatus Neumann, 1897e.p.; = Margaropus annulatus australis

COPEPODS: BIBLIOGRAPHY.

1. GMELIN, J. F. 1791.
Caroli a Linne -- Systema naturae...etc. Vol. 2. 2 Pts. xl + 1661 pp. Lipsiae.

2. LEIGH-SHARPE, W. H. 1925.
Lernaea (Lernaeocera) elegans n. sp., a parasitic copepod of Anguilla japonica. Parasitol. 17(3): 245-251. Illus.

3. LINNAEUS, C. 1758.
Systema naturae ... etc. 10th ed. Vol. 1. 823 pp. Holmiae.

4. NAKAI, N. 1927.
On the development of a parasitic copepod, Lernaea elegans Leigh-Sharpe, infesting Cyprinus carpio L. Jour. Imp. Fish. Inst., Tokyo. 23(3): 39-59. Illus.

5. ODLAUG, T. O. 1954.
Parasites of some Ohio Amphibia. Ohio Jour. Sci. 54(2): 126-128.

6. OKADA, Y. K. 1927.
Copepod parasite des amphibiens. Nouveau parasitisme de Lernaea cyprinacea L. Annot. Zool., Japan. 11: 185-187. Illus.

7. PEARSE, A. S. 1932.
Parasites of Japanese salamanders. Ecology. 13(2) : 135-152.

8. STUNKARD, H. W. & R. M. CABLE. 1931.
Notes on a species of Lernaea parasitic in the larvae of Rana clamitans. Jour. Parasitol. 15(2): 92-97. Illus.

9. TIDD, W. M. 1933.
A new species of Lernaea (parasitic Copepoda) from the goldfish. Ohio Jour. Sci. 33(6): 465-469. Illus.

10. TIDD, W. M. 1962.
Experimental infectation of frog tadpoles by Lernaea cyprinacea. Jour. Parasitol. 48(6): 870.

11. WALTON, A. C. 1945.
Miscellaneous parasites of Amphibia. Mimeotype. 33 pp. Contrib. #100. Knox College, Galesburg, Illinois.

MOLLUSCA USING AMPHIBIA AS TEMPORARY HOSTS.

MEGALONAEAS GIGANTEA (=Quadrula heros). Glochidia on gills of Necturus maculosus -- U.S.A.

MYTILUS sp? of Seshaiya, 1941. Glochidia attached to gills of larval Racophorus sp? and to gills of older tadpoles of Rana sp? -- India.

SIMPSONICONCHA AMBIGUA (= Alasmodonta ambigua; = Unio hildrethianus; = Hemilastina of Simpson, 1900, nec Agassiz, 1852) ambigua). Glochidia on gills of Necturus maculosus -- U.S.A.

MOLLUSCA: Host List.

NECTURUS MACULOSUS -- U.S.A.
Glochidia of Megalonaeas gigantea, Simpsoniconcha ambigua. (See: Harris, 1954).

RACOPHORUS sp? of Seshaiya, 1941 -- India. Glochidia of Mytilus sp? on gills of larvae.

RANA sp? of Seshaiya, 1941 -- India. Glochidia of Mytilus sp? on gills of older tadpoles.

MOLLUSCA: BIBLIOGRAPHY.

1. HARRIS, J. P. Jr. 1954. The parasites of Amphibia. Field & Lab. 22(2): 52-58.
2. RANKIN, J. S. 1937. An Ecological survey of parasites of some North Carolina salamanders. Ecol. Monogr. 7: 169-269. Illus.
3. SESHAIYA, R. V. 1941. Tadpoles as hosts for the glochidia of the freshwater mussel. Curr. Sci. (India). 10(12): 535-536.
4. SIMPSON, C. T. 1914. A descriptive catalogue of the Naiades. 1540 pp. Detroit.
5. WALTON, A. C. 1945. Miscellaneous parasites of Amphibia. Mimeotype. 33 pp. Contrib. #100, Knox College, Galesburg, Illinois.

PENTASTOMIDA: List of Parasites.

KIRICEPHALUS PATTONI (Stephens, 1908) Sambon, 1922 (= Pentastomum proboscidium coarctatum Diesing, 1850, e.p.; = Porocephalus pattoni Stephens, 1908; = Pentastomum javanicum Bovien, 1927; = Cayerina mirabilis Kishida, 1928). (Porocephalidae). Larvae in Bufo melanostictus, Microhyla inornata, Rana cancrivora, R. tigrina, R. limnocharis -- India & S. E. Asia. (usually in snakes). Adults probably in cats.

RAILLIETIELLA (Heymonsia) INDICA Gedoelst, 1921 (? = R. affinis Bovien, 1927). (Cephalobaenidae). In lungs of Bufo melanostictus -- India. (see: Hett, 1934).

RAILLIETIELLA MEDITERRANEA Hett, 1915. (Cephalobaenidae). In lungs of Bufo melanostictus -- Zool. Gardens, England.

RAILLIETIELLA sp? of Larousse, 1925. (Cephalobaenidae). In lungs of Bufo mauritanicus -- North Africa.

PENTASTOMIDA: Host List.

BUFO MAURITANICUS (= B. pantherinus, e.p.) -- North Africa. Raillietiella sp? of Larousse, 1925. (in lungs).

BUFO MELANOSTICTUS -- India: Ceylon. Larval Kiricephalus pattoni (Ceylon), Raillietiella indica (India). (in lungs).

BUFO MELANOSTICTUS -- Zool. Gardens, England. Raillietiella mediterranea. (in lungs)

MICROHYLA ORNATA -- South East Asia. Larval Kiricephalus pattoni.

RANA CANCRIVORA -- South East Asia. Larval Kiricephalus pattoni.

RANA LIMNOCHARIS -- South East Asia. Larval Kiricephalus pattoni.

RANA TIGRINA -- India. Larval Kiricephalus pattoni.

PENTASTOMIDA: BIBLIOGRAPHY.

1. BOVIEN, P. 1927. Ueber einige Pentastomen aus Java. Vidensk. Medd. Dansk Naturh. Forening., Kjøbenhavn. 84(8. Aart., 8. Aarg., II.). pp. 1-9. Illus.

2. DIESING, K. M. 1850. Systema helminthum. Vol. 1. xiii + 680 pp. Vindebonae.

3. GEDOELST, L. 1921. Un Linguatulide nouveau parasite d'un Batracien. Rec. Indian Mus. 22(1): 25-26.

4. HETT, M. L. 1915. On some new pentastomids from the Zoological Society's Gardens, London. Proc. Zool. Soc. London. 1915(1): 115-121. Illus.

5. HETT, M. L. 1934. On a collection of Linguatulida (Pentastomida) from Burma with a description of a new subgenus. Proc. Zool. Soc. London. 1934(2): 425-431. Illus.

6. HEYMONS, R. 1935. Pentastomida. Bronn's Klass, u. Ordnung Tierreichs. 5(Abt. 4; Buch 1, 2. Lief). pp 161-268. Illus.

7. KISHIDA, K. 1928. Fauna of Japan. A new linguatulid, Armillifer yoshidae, with notes on the Porocephalidae. Annot. Zool., Japan. 11(4):397-405. Illus.

8. LAROUSSE, F. 1925. Larve de Linguatulidae parasit de Bufo mauritanicus. Arch. Inst. Pasteur, Tunis. 14(1): 101-104. Illus.

9. SAMBON, L. W. 1922. A synopsis of the Family Linguatulidae. Jour. Trop. Med. & Hyg. 25(12): 118-206. Illus.; 25(24): 391-428. Illus.

10. STEPHENS, J. W. W. 1908. Two new human cestodes and a new Linguatulid. Ann. Trop. Med.& Parasitol. 1(4): 549-556. Illus.

11. WALTON, A. C. 1945. Miscellaneous parasites of Amphibia. Mimeotype. 33pp. Contrib.= 100. Knox College, Galesburg, Illinois.

INSECTA: List of Parasites.

DIPTERA

Calliphoridae

COCHLIOMYIA AMERICANA Cushing & Patton, 1933. Exper. feeding on Bufo americanus -- U.S.A. (see: Melvin & Bushland, 1940).

LUCILIA BUFONIVORA Moniez, 1876 (= L. sylvarum of Dunkar, 1891; = L. splendida of Girschner in Hesse, 1906; = Bufolucilia bufonivora of Townsend, 1919; = B. silvarum Meigen of Townsend, 1919; = Lucilia elongata of Shannon, 1924; = L. silvarum Meigan of Knipling, 1936). (This form is related to L. sericata Meigan, 1826, and only the larval form is parasitic). From Alytes obstetricans, Bombina bombina, Bufo bufo, B. calamita, Hyla arborea, Pelobates cultripes, Rana esculenta, R. temporaria, R. terrestris, Salamandra salamandra, Triturus cristatus, T. helveticus, T. marmoratus -- Europe.

Ceratopogonidae

FORCIPOMYIA FAIRFAXENSIS Wirth, 1961. Feeds on Rana pipiens -- U.S.A.

FORCIPOMYIA VELOX Winnertz, 1852. Feeds on Rana esculenta, Triturus spp. -- France. (also on other frogs and on toads. see: Desports & Harant, 1939).

Chloropidae

BATRACHOMYIA spp? of Macleay in Krefft, 1863-64. Feeds on Crinia signifera, Hyla citropa, Pseudophryne bibroni, Uperoleia marmorata -- Australia.

Culicidae

AËDES AEGYPTI L., 1758 (= Culex fasciatus Fabricius, 1803; = Stegomyia fasciata of Theobald, 1901). Feeds on Rana clamitans, R. pipiens, R. sphenocephala -- U.S.A.

AËDES ATROPALPUS Coquillett, 1902. Feeds on Rana pipiens, R. sphenocephala -- U.S.A.

CULEX APICALIS Adams, 1903. Feeds on Rana pipiens, R. sphenocephala -- U.S.A.

CULEX FATIGANS Wiedemann, 1828 (?= C. quinquefaciatus Say, 1823). Feeds on Rana pipiens, R. sphenocephala -- U.S.A.

CULEX HORTENSIS Ficalbi, 1889. Feeds on Rana pipiens -- U.S.A.

CULEX PIPIENS Linnaeus, 1758. Feeds on Rana clamitans, R. pipiens, R. sphenocephala -- U.S.A.

CULEX QUINQUEFASCIATUS Say, 1823 (? = C. fatigans Wiedemann, 1828). Feeds on Rana clamitans, R. pipiens, R. sphenocephala -- U.S.A.

CULEX TERRITANS Walker, 1856.
Feeds on Rana catesbiana -- U.S.A.
(Members of the Ceratopogonidae, the Culicidae and the Psychodidae are known vectors of such helminth parasites of amphibia as Icosiella neglecta and several species of Foleyella (Nematoda), and possibly others).

Oestridae

ACANTHOSOMELLA CHRYSALIS (Mayer, 1844) Strand, 1928 (= Acanthosoma chrysalis Mayer, 1844). From Rana esculenta esculenta -- Europe.

Psychodidae

PHLEBOTOMUS SQUAMIROSTRIS Newstead, 1923. (carries frog trypanosomes). Feeds on Bufo bufo gargarizans -- China.

SYCORAX SILACEA Curtis, 1829.
Feeds on Rana esculenta esculenta -- Europe (France); ? Rana pipiens -- U.S.A.

Rhagionidae

ATRICHOPS CRASSIPES (Meigan, 1826)
Feeds on Rana pipiens -- U.S.A.

Sarcophagidae

NOTOCHAETA BUFONIVORA Souza Lopez & Vogelsang, 1953. Larvae embedded in skin of Bufo granulosus -- Venzuela. (normally in Oligochaetes).

SARCOPHAGUS RURALIS of Lestage, 1926. From Bufo bufo -- Europe.

Tabanidae
Larvae, gen. et sp. inquir., of Hindle, 1924. In Bufo regularis -- Africa. (a case of myiasis).

HEMIPTERA

Reduviidae (=Triatomidae).
Triatoma sanguisuga ambigua Neiva, 1911. Exper. feeds on Hyla sp? -- U.S.A. (Florida). (see: Pachchanian, 1940).

INSECTA: Host List.

ALYTES OBSTETRICANS -- Europe.
Lucilia bufonivora.

BUFO AMERICANUS -- U.S.A.
Cochliomyia americana.

BUFO BUFO (= B. vulgaris) -- Europe.
Lucilia bufonivora, Sarcophaga ruralis.

BUFO BUFO GARGARIZANS -- China.
Phlebotomus squamirostris.

BUFO CALAMITA -- Europe.
Lucilia bufonivora.

BUFO GRANULOSUS -- Venezuela
Notochaeta bufonivora larvae in skin.

BUFO REGULARIS (= B. pantherinus e.p.) -- Africa. Tabanid larvae of Hindle, 1924, embedded in flesh.

CRINIA SIGNIFERA SIGNIFERA (= Cystignathus sydneyensis) -- Australia. Batrachomyia sp? of Macleay, 1863, in Krefft, 1864.

HYLA ARBOREA -- Europe.
Lucilia bufonivora.

HYLA CIRTOPA -- Australia.
Batrachomyia sp? of Macleay, 1863, in Krefft, 1864.

HYLA sp? -- U.S.A. (Florida).
Triatoma sanguisuga ambigua (experimentally fed).

PELOBATES CULTRIPES -- Europe.
Lucilia bufonivora -- Europe.

PSEUDOPHRYNE BIBRONII -- Australia.
Batrachomyia sp? of Macleay, 1863, in Krefft, 1864.

RANA CATESBIANA -- U.S.A.
Culex territans.

RANA CLAMITANS -- U.S.A.
Aëdes aegypti, Culex pipiens, C. quinquefasciatus.

RANA ESCULENTA ESCULENTA -- Europe.
Acanthosomella chrysalis, Forcipomyia velox, Lucilia bufonivora.

RANA PIPIENS -- U.S.A.
Aëdes aegypti, A. atropalpus, Atrichops crassipes, Culex apicalis, C. fatigans, C. hortensis, C. pipiens, C. quinquefasciatus, Forcipomyia fairfaxensis, (?) Sycorax silacea. (see: Pachuman & Wirth, 1961).

RANA SPHENOCEPHALA -- U.S.A.
Aëdes aegypti, A. atropalpus, Culex apicalis, C. fatigans, C. pipiens, C. quinquefasciatus.

RANA TEMPORARIA (= R. platyrrhina) -- Europe. Lucilia bufonivora.

RANA TERRESTRIS (= R. oxyrrhina) -- Europe. Lucilia bufonivora.

SALAMANDRA SALAMANDRA (= S. maculosa) -- Europe. Lucilia bufonivora.

TRITURUS CRISTATUS -- Europe.
Lucilia bufonivora.

TRITURUS HELVETICUS (= T. palmatus) -- Europe. Lucilia bufonivora.

TRITURUS MARMORATUS -- Europe.
Lucilia bufonivora.

TRITURUS spp? -- Europe.
Forcipomyia velox.

UPEROLEIA MARMORATA -- Australia.
Batrachomyia sp? of Macleay, 1863, in Krefft, 1864.

"Frogs" and "Toads" --Europe. Forcipomyia velox.

INSECTA: BIBLIOGRAPHY.

1. ADAMS, C. F. 1903.
Dipterological Contributions. Kans. Univ. Sci. Bull. 2(2): 21-47.

2. AUBERTIN, D. 1933.
Revision of the genus Lucilia R. -D. (Diptera). Jour. Linn. Soc., London. (Zool). 38(260): 389-436. Illus.

3. BEQUAERT, J. C. 1933.
Notes on the Hippoboscidae, 4. On the larger species of Lynchia Weyenbergh. Psyche. 40(2): 68-82.

4. CAUSEY, O. R. 1939a.
Aëdes and Culex mosquitoes as intermediate hosts of frog filaria, Foleyella sp. Amer. Jour. Hyg., Sect. C. 29(2): 79-81.

5. CAUSEY, O. R. 1939b.
The development of frog filariae larvae, Foleyella ranae, in Aëdes and Culex mosquitoes. Amer. Jour. Hyg., Sect. D. 29(3): 131-132.

6 CAUSEY, O. R. 1939c.
Development of the larval stages of Foleyella brachyoptera in mosquitoes. Amer. Jour. Hyg., Sect. D. 30(2): 69-71.

7. COQUILLETT, D. W. 1902.
Three new species of Culex. Can. Entomol. 34: 292-293.

8. CURTIS, J. 1829.
A guide to an arrangement of British insects; being a catalogue of all the named species hitherto discovered in Great Britain and Ireland. London. vi pp. (256 columns). London.

9. CUSHING, E. C. & W. S. PATTON. 1933. Cochliomyia americana sp. nov., the screw-worm fly of the new world. Ann. Trop. Med. & Parasitol. 27(4): 539-551. Illus.

10. DESPORTES, C. 1942.
Forcipomyia velox, Winn., et Sycorax silacea Curtis, vecteurs d'Icosiella neglecta (Diesing), filaire commune de la grenouille verte. Ann. Parasitol., Hum. et Comp. 19(1/3): 53-68. Illus.

11. DESPORTES, C. & H. HARANT. 1939-40. Observations sur la biologie d'un caratoponine hematophage, Forcipomyia velox Winn., 1852, piquer de la grenouille verte. Ann. Parasitol., Hum. et Comp. 17(5): 369-374.

12. DUNKAR, G. 1891.
Auffällige Entwicklung von Lucilia sylvarum Meig. Zool. Anz. 14: 453-455.

13. FABRICIUS, J.C. 1805.
Systema antiliatorum . . ., etc. xiv + 15-372 + 30 pp. Brunsvigae.

14. FALCOZ, L. 1931.
Matériaux pour la connaissance des diptères pupipaires. I. Parasitol. 23(2): 264-269. Illus.

15. FENG, L. -C. & H-L. CHUNG. 1940.
Phlebotomus squamirostris Newstead, transmitter of Trypanosoma bocagei França in the toad, Bufo bufo gargarizans (Cantor). Chin. Med. Jour., Suppl. 3. pp. 198-211. Illus.

16. FERRIS, G. F. 1927.
Some American Hippoboscidae (Diptera, Puparia). Can. Entomol. 59(10): 246-251. Illus.

17. FICALBI, E. 1889.
Descrizione di una specie nuova (Culex hortensis). Bull. Soc. Entomol. Ital. 21(1/2): 20-30.

18. HESSE, E. 1906.
Lucilia in Bufo vulgaris Laur., schmarotzend. Biol. Centralbl. 26: 633-640.

19. HINDLE, E. 1924.
Myiasis in Bufo regularis caused by a tabanid larva. Parasitol. 16(1): 111-112. Illus.

20. JOHNSON, C. W. 1895.
Diptera of Florida. Proc. Acad. Nat. Sci., Philadelphia. 1895: 303-340.

21. KNIPLING, E. F. 1936.
Some specific taxonomic characters of common Lucilia larvae (Calliphorinae: Diptera). Iowa St. Coll. Jour. Sci. 10(3): 275-293. Illus.

22. KOTCHER, E. 1941.
Studies of the development of frog filariae. Amer. Jour. Hyg., Sect. D. 34(2): 36-58.

23. KREFFT, G. 1864.
Notes sur les metamorphoses d'un insecte diptere du genre Batrachomyia Macleay, dont les larves sont parasites de diverses especes de grenouilles australiennes. Trans. Entomol. Soc. N.S. Wales. 1: 100.

24. LESTAGE, J. A. 1926.
La batrachomyase. Quelque mots sur les crapauds devores vivant par les larves de mouches. Naturalistes Belges. 7(10): 157-159; 7(11): 162-163.

25. LINNAEUS, C. 1758.
Systema naturae ..., etc. 10th Ed. Vol. I.823 pp. Holmiae.

26. LUTZ, A., N. NEIVA & A. COSTA LIMA. 1915. Sobre "Pupipara" ou "Hippoboscidae" de aves brasilieras. Mem. Inst. Osw. Cruz. 7(2): 173-199. Illus.

27. MACQUERT, J. 1844-45.
Dipteres exotiques ou peu connus. Mem. Soc. Sci., Lille (1844). Pt. 2, Suppl. 1, pp. 133-364. Illus.

28. MAYER, A. F. J. C. 1844.
Acanthosoma chrysalis, eines neues Entozoon. Med. Cor. -Bl. rhein u. westfäl. Aerzte, Bonn. 3(5): 73-76.

29. MEIGEN, J. W. 1826.
Lucilia. Syst. Beschr. bek. Europ. zweiflügl. Insek. 5: 55-56.

30. MELVIN, R. & R. C. BUSHLAND. 1940. The nutritional requirements of the screw worm larvae. Jour. Econ. Entomol. 33(6): 850-852.

31. MONIEZ, R. 1876.
Un diptere parasite du crapaud. Bull. Dept. Nord., Lille. 8: 25.

32. NEIVA, A. 1911.
Notas de entomoligia medica. Duas novas especies nort-americanas de hemipteras hematophagos. Brasil Med. 25(42): 421-422.

33. NEWSTEAD, R. 1923.
On a new species of Phlebotomus from Japan. Ann. Trop. Med. & Parasitol. 17: 531-532. Illus.

34. PACKCHANIAN, A. 1940.
Experimental transmission of Trypanosoma cruzi infection in animals by Triatoma sanguisuga ambigua. Pub. Health Rept. 55(34): 1526-1532.

35. PECHUMAN, L. L. & W. W. WIRTH. 1961. A new record of Ceratopogonidae (Diptera) feeding on frogs. Jour. Parasitol. 47(4, Sect. 1): 600.

36. ROBINEAU-DESVOIDY, A. J. B. 1830. Essai sur les myodaires. Mem. Soc. Hist. Nat., Paris. Vol. 2. 813 pp. Paris.

37. RONDANI, C. 1878. Fragmentum IV. Hippoboscita exotica non vel minus cognata. Ann. Mus. Civ., Geneva. 12: 150-169.

38. RONDANI, C. 1879. Hippoboscita italica in familias et genera distributo. Boll. Soc. Entomol. Ital., Firenze. 11(1/2): 3-28. Illus.

39. SAY, T. 1823. Descriptions of Dipterous Insects of the United States. Jour. Acad. Nat. Sci., Philadelphia. 3(1): 9-54.

40. SHANNON, R. C. 1915. Mosquitoes attacking a frog. Proc. Entomol. Soc. Washington. 17(2): 99.

41. SHANNON, R. C. 1924. Nearctic Calliphoridae, Lucilini (Diptera). Insect. Inseit. Mens. 12: 67-81.

42. SOUZA LOPEZ, H. de & E. G. VOGELSANG. 1953. Notochaeta bufonivora n. sp., parasita de Bufo granulosus Spix en Venezuela (Diptera: Sarcophagidae). An. Acad. Brasil. Cien. 25(2): 139-143. Illus.

43. STRAND, E. 1928. Miscellanea nomenclatorica zoologica et palaeontologica. I. II. Arch. Naturg. 92, Abt. A, No. 8. pp. 30-75.

44. SWENK, M. H. 1916. Descriptions and records of North American Hippoboscidae. Jour. New York Entomol. Soc. 24(2): 126-136.

45. THEOBALD, F. V. 1901. A Monograph of the Culicidae or mosquitoes. Vol. I. xviii + 424 pp. Illus.; Vol. 2. viii + 391 pp. Illus. London.

46. TOWNSEND, C. H. T. 1919. Bufolucilia gen. nov., type L. bufonivora. Proc. U. S. Nat. Mus. 56: 542.

47. WALKER, F. 1850-56. Diptera. Insecta Saundersiana. Pt. 5. Illus. (3 Vols., 1850-56).

48. WALTON, A. C. 1945. Miscellaneous parasites of Amphibia. Mimeotype. 33 pp. Contrib. #100, Knox College, Galesburg, Illinois.

49. WIEDEMANN, C. R. W. 1828. Diptera. Aussereurop. Zweiflüg. Insek. I. 32 + 608 pp. Illus.

50. WINNERTZ, 1852. (Reference not verified).

51. WIRTH, W. W. 1961. (see: Pachuman & Wirth, 1961).

52. WOKE, P. A. 1937.
Cold-blooded vertebrates as hosts for Aëdes egypti L. (Rana clamitans).
Jour. Parasitol. 23(3): 310-311.

53. WULP, F. M. van der. 1896.
Hippoboscidae. Biol. Central American Diptera. 2(2): 273-344.

ISSUED

SEPT. 30,

1964