

A Checklist of Parasites and Commensals  
Reported for the Taiwan Macaque  
(*Macaca cyclopis* SWINHOE, 1862)\*

ROBERT E. KUNTZ and BETTY JUNE MYERS

Departments of Parasitology  
Division of Microbiology and Infectious Diseases  
Southwest Foundation for Research Education  
and  
U. S. Naval Medical Research  
Unit No. 2, Taipei

The Taiwan macaque, the only nonhuman primate indigenous to Taiwan, is a member of a widely distributed and very successful group of cercopithecids which constitute the genus *Macaca*. This genus geographically occupies extensive ranges in Southeast Asia (including Malaysia and a number of islands of the Indian Ocean and the South China Sea), parts of India, Ceylon, the Orient (China, Taiwan and Japan) and the Philippine Islands. Although more than a century has passed since SWINHOE (1862) assigned the name *Macaca cyclopis* to this monkey, it is perhaps among the least known of the macaques. Its taxonomic position has been a point of question in the minds of vertebrate zoologists although SWINHOE, at the time he obtained living specimens in 1862, recognized distinct differences between this mammal and the well known rhesus (*M. mulatta*) of Mainland Asia. A recent evaluation of skins and skeletal materials taken in the course of survey type studies on the parasites of vertebrates of Taiwan indicates that this macaque is sufficiently different from other members of the genus to warrant specific designation (JOHNSON, unpublished).

In a rather general, original description of *M. cyclopis*, SWINHOE (1862) referred to the rock inhabiting tendencies of this monkey and stated that it fed upon insects, crustacea and molluscs, as well as on berries and vegetation. Mention was also made of its preference for living at the lower altitudes and especially on grassy hills near

---

\* This study was supported initially under Public Law 480 (Section 104 (c), by funds provided by the Bureau of Medicine and Surgery, Navy Department Work Unit MF 022.03.07-2003 and especially by aid provided by Contract (NR103-690/N0014-66-C0094) between the Office of Naval Research, Department of the Navy and Southwest Foundation for Research and Education. Partial support was also provided through Grant No. 5 P01-GM-13252-02 from the National Institute of Allergy and Infectious Diseases, USPH.

the sea. In zoological literature there has been repeated reference to the Taiwan macaque as a crab-eating monkey which inhabits caves, frolics in the surf, and, in general, is associated with the sea.

Recent observations tend to indicate that this mammal, due perhaps in part to the pressures of civilization and expanding human populations, has changed its habits drastically in the past few decades. BERGNER and JACHOWSKI's (1968) study on this macaque and its parasites, along with the ecology of certain host-parasite relationships, tends to substantiate this surmise. As intimated by these authors, most of the macaques have been driven into the highlands which run the length of the island.

There are a number of scattered references to *M. cyclopis* in the Chinese and especially in Japanese literature. Much of this information, however, is quite brief and repetitive. TADAO KANO (1940), on the other hand, contributed much to the vertebrate zoology of Taiwan at the time it was a part of the Japanese empire. In his ecological investigations he listed the Taiwan macaque as a part of the mammal complex in habitats from near sea level up to approximately 10000 feet, the animal being more common, however, at elevations of 2000 to 6000 feet.

*M. cyclopis* has long been recognized by the peoples of Taiwan and it apparently figures, to a certain extent, in the folklore of some of the aborigines. It is referred to as "Futton," "Nubon," "Rodon," "Yogai," etc., in the dialects common to the different tribes of the island. The 'monkey' on Taiwan as in other parts of China constitutes one of the years in the cycle of the Chinese calendar, thus the year 1968 is designated as the "year of the monkey." The macaque is maintained by families as a pet and is considered a symbol of good luck. It has been stated that the aborigines are forbidden to kill the animal due to its likeness to man. However, it is used as an item of food. In recent years the flesh has been served in village restaurants and after removal of meat from carcasses, the skeletal system is processed to prepare Chinese medicinal mixtures with aphrodisiac attributes.

It is assumed, even though references are few, that macaques have been used for biomedical and related work in the laboratories of Chinese and Japanese investigators, and it seems likely that there are hidden references to *M. cyclopis* in scientific papers written in Oriental languages. Even though numbers of these animals were sent from Taiwan to Japan in the 1950's and have since been exported to other parts of the world, only limited reference is made to this macaque in the literature of primatology. Parasites have been reported from *M. cyclopis* by Chinese and Japanese biologists, but most of the parasitological information has been derived from studies made in the past few years. The lack of basic information on the parasites of the Taiwan macaque became apparent with the recent preparation of a report on the parasites of this vertebrate (KUNTZ et al., 1968).

A paucity of specific or even general information on known and recognized parasites and a lack of compilations of data indicating disease potentials as well as

host-parasite relationships constitute one of the major shortcomings in the developing field of primate parasitology. The need for a listing of parasites which infect specific hosts has become more apparent with the expanded use of primates as models in wide range biomedical investigations. The present checklist has been prepared with the hope that it may lend assistance to parasitologists and other biologists concerned with the parasitic and commensal fauna of the Taiwan macaque. It is the second in a series intended as a contribution toward a better understanding of the primates and their parasites. The first was a checklist of the parasites of baboons, commonly used cercopithecids exported from Africa to laboratories throughout the world (MYERS & KUNTZ, 1965).

In the present compilation parasites and commensals are listed as they appear in the original articles and there has been no attempt to clarify, justify or make reference to other taxonomic considerations. Genera are listed in alphabetical order under the major taxonomic groupings of parasites. In a few instances it has been necessary to use only generic designation and in still others, although undesirable, employ general names, e.g. "microfilaria," "malaria," etc. Even though *M. cyclopi* has been used for attempted information with several parasites under experimental conditions, only those in which infections were established have been listed and designated as "experimental" in this host.

In a separate category, under Taxonomic References, we have provided several pertinent works which may be used as guides for additional information and for descriptions of parasites which occur in primates or mammals other than the Taiwan macaque. Such works as SKRJABIN and YAMAGUTI have not been used as specific sources of host-parasite information for the present checklist.

## PARASITES AND COMMENSALS OF THE TAIWAN MACAQUE

### ANNELIDA-LEECHES

*Dinobdella ferox* (BLANCHARD, 1896)

KUNTZ et al. 1968

### ARTHROPODA-LICE

*Pedicinus (Pedicinus) eurygaster* (Burmeister)

KUHN and LUDWIG, 1967a,b  
KUNTZ et al. 1968

*Pedicinus longiceps* (PIAGET, 1880)

ANSARI, 1958  
KUHN and LUDWIG, 1967b  
NEUMANN, 1913  
STILES and NOLAN, 1929\*

---

\* The asterisk (\*) is used to indicate that this author has cited an earlier study in which the parasite may have been described, discussed or merely mentioned. It is *not* the original reference to the parasite.

*Pedicinus obtusus* (RUDOW, 1869)

ANSARI, 1958

KUHN and LUDWIG, 1967b

KUNTZ et al. 1968

*Pedicinus obtusus* subsp.

KUHN and LUDWIG, 1967a,b

#### ARTHROPODA-TICKS

*Boophilus annulatus* (SAY, 1812)

STILES and NOLAN, 1929\*

*Margaropus annulatus* SAY, 1812

NEUMANN, 1913

#### CESTODA

*Bertiella studeri* (BLANCHARD, 1891)

STILES and HASSAL, 1902

KUNTZ, et al. 1968

*Taenia hydatigena* PALLAS, 1766

KUNTZ and MYERS, 1967

KUNTZ et al. 1968\*

*Taenia solium* LINNAEUS, 1758 (larva)

(*Cysticercus cellulosae*) (Experimental)

HSIEH, 1960b

KUNTZ et al. 1968\*

#### PROTOZOA

(Digestive Tract)

*Balantidium coli* (MALMSTEN, 1857) STEIN, 1862

KUNTZ et al. 1968

*Endolimax nana* WENYON and O'CONNOR, 1917

KUNTZ et al. 1968

*Entamoeba coli* (MALMSTEN, 1857) STEIN, 1862

KUNTZ et al. 1968

*Entamoeba hartmanni* VON PROWAZEK, 1912

KUNTZ et al. 1968

*Entamoeba histolytica* SCHAUDINN, 1903

KUNTZ et al. 1968

*Entamoeba polecki* VON PROWAZEK, 1912

KUNTZ et al. 1968

*Entamoeba* sp.

KUNTZ et al. 1968

*Iodamoeba bütschlii* (VON PROWAZEK, 1912)

DOBELL, 1919

KUNTZ et al. 1968

*Giardia* sp.

KUNTZ et al. 1968

*Trichomonas* sp.

KUNTZ et al. 1968

*Trichomonas hominis* (DAVAINE, 1860)

LEUCKART, 1879

KUNTZ et al. 1968

#### PROTOZOA

(Blood)

*Hepaticystis taiwanensis* (YOKOGAWA, KOBAYASHI,

RO and YUMOTO, 1941)

BRAY, 1963\*

GARNHAM, 1966\*

KUNTZ et al. 1968\*

*Hepaticystis* sp.

MANWELL, 1965, 1968

MANWELL and KUNTZ, 1966

TOKURA and WU, 1961\*

KUNTZ et al. 1968\*

"Malaria"-like organisms

BERGNER and JACHOWSKI, 1968

*Plasmodium cyclopis* INOKI, TAKEMURA,

MAKIURA and HOTTA, 1941

BRAY, 1963\*

- Plasmodium cynomolgi* MAYER, 1907  
*Plasmodium cynomolgi cyclopis* (INOKI,  
 TAKEMURA, MAKIURA and HOTTA, 1941)  
*Plasmodium cynomolgi ceylonensis* DISSANAIKE,  
 NELSON and GARNHAM, 1965  
*Plasmodium inui* var. *cyclopis* (INOKI, TAKEMURA,  
 MAKIURA and HOTTA, 1942) HSIEH, 1960  
*Plasmodium inui* (HALBERSTADTER and VON  
 PROWAZEK, 1907)  
*Plasmodium knowlesi* SINTON and MULLIGAN, 1932  
*Plasmodium knowlesi arimai* YOKOGAWA, 1941  
*Plasmodium shortti* BRAY, 1963  
*Plasmodium taiwanensis* YOKOGAWA,  
 KOBAYASHI, RO and YUMOTO, 1941  
*Plasmodium* sp.  
*Trypanosoma* sp.
- GARNHAM, 1963\*  
 INOKI et al., 1942  
 WARREN and WHARTON, 1963\*  
 GARNHAM, 1966\*  
 MANWELL, 1968\*  
 BRUCE-CHWATT, 1965\*  
 GARNHAM, 1966\*  
 HSIEH, 1960a  
 INOKI et al., 1951  
 INOKI, 1949  
 INOKI et al., 1942  
 GARNHAM, 1963\*, 1966\*  
 HSIEH, 1960a  
 KUNTZ et al. 1968\*  
 WARREN and WHARTON, 1963\*  
 WARREN and WHARTON, 1963\*  
 GARNHAM, 1966\*  
 YOKOGAWA et al., 1941  
 HSIEH, 1960a  
 BRUCE-CHWATT, 1965\*  
 HSIEH, 1960a  
 YOKOGAWA et al., 1941  
 ARIMA, 1933  
 HSIEH, 1960a  
 KUNTZ et al. 1968\*  
 WANG and HSIEH, 1950  
 YOKOGAWA et al., 1941  
 BERGNER (unpubl.)  
 KUNTZ et al. 1968\*

## NEMATODA

- Edenofilaria* sp.  
 Filaria  
*Globocephalus asmilius* RAILLIET, HENRY  
 and JOYEUX, 1913  
*Macacanema formosana* SCHAD and ANDERSON, 1963  
 Microfilaria  
*Oesophagostomum aculeatum* (LINSTOW, 1879)  
*Oesophagostomum bifurcum* (CREPLIN, 1849)  
 RAILLIET and HENRY, 1906  
 Oxyurid
- WONGSATHYAYTHONG, 1961  
 KIM and BERGNER, 1964  
 MORISHITA, 1925  
 BERGNER and JACHOWSKI, 1968  
 KUNTZ et al. 1968\*  
 MYERS and KUNTZ, 1964  
 SCHAD and ANDERSON, 1963  
 HSIEH, 1961  
 KIM and BERGNER, 1964  
 KUNTZ et al. 1968\*  
 YAMASHITA, 1963\*  
 KUNTZ et al. 1968\*  
 KUNTZ et al. 1968\*

- Phyaloptera tumefaciens* HENRY and BLANC, 1912  
*Streptopharagus pigmentatus* (LINSTOW, 1897)  
RAILLIET and HENRY, 1918  
*Strongyloides fülleborni* LINSTOW, 1905  
*Ternidens* sp.  
Trichostrongylid  
*Trichuris trichuris* (LINNAEUS, 1771) BLANCHARD, 1895  
Trichurid  
*Trichuris* sp.

MYERS and KUNTZ, 1964  
KUNTZ et al. 1968\*  
MYERS and KUNTZ, 1964  
KUNTZ et al. 1968\*  
TOMITA, 1939  
KUNTZ et al. 1968  
KUNTZ et al. 1968  
MYERS and KUNTZ, 1964  
KUNTZ et al. 1968  
KUNTZ et al. 1968

## TREMATODA

- Ogmocotyle indica* (BHALERAO, 1942) RUIZ, 1946  
*Clonorchis sinensis* (COBB, 1875)  
*Paragonimus westermani* (KERBERT, 1878)  
(Taiwan strain) (Experimental)  
*Schistosoma haematobium* (BILHARZ, 1852) WEINLAND, 1858  
(Iran strain) (Experimental)  
*Schistosoma japonicum* KATSURADA, 1904  
(Taiwan strain) (Experimental)  
*Schistosoma japonicum* KATSURADA, 1904  
(Japanese strain) (Experimental)  
*Schistosoma japonicum* KATSURADA, 1904  
(Philippine strain) (Experimental)

COIL, 1965  
KUNTZ et al. 1968  
KUNTZ et al. 1968  
KIM et al., 1964  
KUNTZ (unpubl.)  
KUNTZ et al. 1968\*  
KUNTZ and MYERS (unpubl.)  
Hsü and Hsü, 1956a, b  
1957, 1962  
KUNTZ, 1955  
KUNTZ et al. 1968\*  
SWANSON and WILLIAMS, 1963  
WILLIAMS and SWANSON, 1963  
Hsü and Hsü, 1956a  
KUNTZ, 1955  
KUNTZ (unpubl.)  
SWANSON and WILLIAMS, 1963  
Hsü and Hsü, 1956a, 1957  
KUNTZ, 1955, (unpubl.)  
KUNTZ et al. 1968\*

## REFERENCES

In presenting the references we have followed the form and listings as given in the Index Catalogue of Medical and Veterinary Zoology. The sequence of parts, sections, volumes, although inconsistent with current practices for some journals and publications, has been given as listed. The Index Catalogue of Medical and Veterinary Zoology (United States Department of Agriculture), Parts 1 through 16 inclusive, is available through the United States Government Printing Office, Superintendent of Documents, Washington, D. C. The abbreviations enclosed in parentheses following the reference indicates the libraries from which the publications may be obtained.

## Abbreviations for Libraries

- (Lib. Doss) — Library of Miss Mildred A. Doss, Animal Disease and Parasite Research Division, Beltsville, Maryland.
- (Lib. Hall) — Library of Dr. Maurice C. Hall, Zoological Division, United States Bureau of Animal Industry, Washington, D. C.
- (Lib. McIntosh) — Library of Dr. Allen McIntosh, Animal Disease and Parasite Research Division, Beltsville, Maryland.
- (W<sup>a</sup>) — (Ransom Coll.) Washington, D. C. United States Department of Agriculture Library. Collection of the library of the late Brayton Howard Ransom. (Reprints from this collection are filed in Lib. Animal Parasite Lab.)
- (W<sup>m</sup>) — Washington, D. C., National Library of Medicine. Formerly Army Medical Library.
- ANSARI, M. A. R., 1958. Liste alphabétique des hotes de Phthiraptera de la collection de l'institut de Parasitologie de la faculté de médecine de Paris. *Ann. Parasitol.* 33(3): 267-283. (W<sup>a</sup>)
- ARIMA, I., 1933. Ueber eine Art von Affenmalariaparasiten. (Abstract of report before Sitzungsb. Freien Aerztl. Verein. Med. Fak. Kaiserl. Kyushu-Univ. Fukuoka). *Fukuoka Ikwadaigaku Zasshi* 26(11): 106-107. (W<sup>m</sup>)
- BERGNER, J. F., JR. Unpublished data.
- BERGNER, J. F., JR. & L. A. JACHOWSKI, JR. 1968. The filarial parasite *Macacacnema formosana* from the Taiwan monkey and its development in various arthropods. *Formosan Sc.* 22(1): 1-68.
- BRAY, R. S., 1963. Malaria infections in primates and their importance to man. *Ergebn. der Mikrobiol., Immunitätsforsch.* 36: 168-213.
- BRUCE-CHWATT, L. J., 1965. Malaria research for malaria eradication. *Tr. Roy. Soc. Trop. Med. and Hyg.* 59(2): 105-137. (W<sup>m</sup>)
- COIL, W. H., 1965. Egg shell formation in the notocotyloid trematode, *Ogmocotyle indica* (BHALERAO, 1942) RUIZ, 1946. *Ztschr. f. Parasitenk.* 27: 205-209. (W<sup>m</sup>)
- GARNHAM, P. C. C., 1963. A new subspecies of *Plasmodium knowlesi* in the long tailed macaque. *J. Trop. Med. and Hyg.* 66(6): 156-158. (W<sup>a</sup>)
- GARNHAM, P. C. C., 1966. *Malaria Parasites and Other Haemosporidia*. Blackwell, Scientific Publications, Oxford. 1114 pp. (W<sup>m</sup>)
- HSIEH, H. C., 1960a. Malaria parasites of the Taiwan monkey. *Formosan Sc.* 14(5): 477-487. (W<sup>a</sup>)
- HSIEH, H. C., 1960b. Experimental transmission of *Cysticercus cellulosae* in Taiwan monkey *Macacus (sic) cyclopis* (SWINHÖE, 1862). *Formosan Sc.* 14(2): 66-80. (W<sup>a</sup>)
- HSIEH, H. C., 1961. *Microfilaria* sp. found in blood of the Taiwan monkey. *J. Formosan Med. Ass.* 60(2): 289-294.
- HSÜ, H. F. & S. Y. LI HSÜ, 1956a. On the infectivity of the Formosan strain of *Schistosoma japonicum* in macaques. *Am. J. Trop. Med. and Hyg.* 5(1): 136-144. (W<sup>m</sup>)
- HSÜ, H. F. & S. Y. LI HSÜ, 1956b. On the infectivity of the Formosan strain of *Schistosoma japonicum* in *Homo sapiens*. *Am. J. Trop. Med. and Hyg.* 5(3): 521-528. (W<sup>m</sup>)
- HSÜ, H. F. & S. Y. LI HSÜ, 1957. On the intraspecific and interstrain variations of the male sexual glands of *Schistosoma japonicum*. *J. Parasitol.* 43(4): 456-463. (W<sup>a</sup>)
- HSÜ, H. F. & S. Y. LI HSÜ, 1962. Parasitological Reviews. *Schistosoma japonicum* in Formosa: A critical review. *Exper. Parasitol.* 12(6): 459-464. (W<sup>m</sup>)

- INOKI, S., 1949. Studies on the exoerythrocytic schyzogonies in the malaria parasites. (*Plasmodium inui* var. *cyclopis*). (Japanese text) *Osaka Daigaku Igaku Zasshi*, 1(1): 3-6. (W<sup>m</sup>)
- INOKI, S., 1951. Studies on the exoerythrocytic schizogony of the malaria parasite. Exoerythrocytic forms of the Formosan monkey malaria parasite, *Plasmodium inui* var. *cyclopis*. *Med. J. Osaka Univ.* 2(2): 45-53. (W<sup>m</sup>)
- INOKI, S., Y. OKUNO, & A. AOYAMA, 1951. On the length of the asexual life cycle of *Plasmodium inui* var. *cyclopis*. *Med. J. Osaka Univ.* 2(2): 37-43. (W<sup>m</sup>)
- INOKI, S., S. TAKEMURA, Y. MAKIURA, & F. HOTTA, 1942. A species of malarial parasite found in the Formosan monkey *Macacus (sic) cyclopis* SWINHÖE (*Plasmodium inui* var. *cyclopis*) (INOKI, TAKEMURA, MAKIURA and HOTTA, 1941). (Japanese text) *Osaka Igakkai Zasshi* 41(9): 1327-1343. (W<sup>m</sup>)
- JOHNSON, D. H. Unpublished data.
- KANO, T., 1940. *Zoogeographical Studies of the Tsugitaka Mountains of Formosa*. Shibusawa Inst. Ethnogr. Res., Tokyo. pp. 145, 12 pl., 27 fig.
- KIM, C. H. & J. F. BERGNER, JR., 1964. A study of filaria in Taiwan monkeys. *Korean J. Parasitol.* 2(1): 81-86.
- KIM, D. C., S. C. SUN, & J. F. BERGNER, JR., 1964. Chemotherapy with Bithionol-S-oxide in animals infected with *Paragonimus westermani*. *Report of N. I. H.* 1(1): 153-166.
- KUHN, H.-J. & H. W. LUDWIG, 1967a. Die Affenläuse der Gattung *Pedicimus*. *Ztschr. Zool. Syst. Evolutionsforschung* 5(2): 144-256.
- KUHN, H.-J. & H. W. LUDWIG, 1967b. Die Affenläuse der Gattung *Pedicinus*. *Ztschr. Zool. Syst. Evolutionsforschung* 5(3): 257-297.
- KUNTZ, R. E., 1955. Biology of the schistosome complexes. *Am. J. Trop. Med. and Hyg.* 4: 383-413. (W<sup>m</sup>)
- KUNTZ, R. E. Unpublished data.
- KUNTZ, R. E. & B. J. MYERS. Unpublished data.
- KUNTZ, R. E. & B. J. MYERS, 1967. Primate cysticercosis: *Taenia hydatigena* in Kenya vervets (*Cercopithecus aethiops* LINNAEUS, 1758) and Taiwan macaques (*Macaca cyclopis* SWINHÖE, 1864 (*sic*)). *Primates* 8: 83-88.
- KUNTZ, R. E., B. J. MYERS, J. F. BERGNER, JR., & D. E. ARMSTRONG, 1968. Parasites and commensals of the Taiwan macaque (*Macaca cyclopis* SWINHÖE, 1862) *Formosan Sc.* 22 (3/4): 120-136
- MANWELL, R. D., 1965. The lesser haemosporidina. *J. Protozool.* 12(1): 1-9. (W<sup>a</sup>)
- MANWELL, R. D., 1968. *Infectious Blood Diseases of Man and Animals*. II. Malaria. pp. 25-95. Academic Press.
- MANWELL, R. D. & R. E. KUNTZ, 1966. *Hepatic cystis* in Formosan mammals with a description of a new species. *J. Protozool.* 13(4): 670-672.
- MORISHITA, K., 1925. Note on an ankylostome nematode, (*Globocephalus asmilius*) from the Formosan macaque. *Contrib. Dept. Hyg., Govt. Research Inst., Formosa* (48), (8) pp. English summary. (Text in Japanese and English) (Lib. Hall)
- MYERS, B. J. & R. E. KUNTZ, 1964. Nematode parasites from mammals taken on Taiwan (Formosa) and its offshore islands. *Canad. J. Zool.* 42(5): 863-868. (W<sup>a</sup>)
- MYERS, B. J. & R. E. KUNTZ, 1965. A checklist of parasites reported for the baboon. *Primates*, 6(2): 137-194.
- NEUMANN, L. G., 1913. Pediculidae, Siphonaptera, Ixodidae (In H. SAUTER's Formosa-Aiesbeute). *Entom. Mitt. V. 2 Suppl. Entom.* (2): 134-137. (W<sup>a</sup>)
- SCHAD, G. A. & R. C. ANDERSON, 1963. *Macacacnema formosana* n.g., n.sp. (Onchocercidae:



- Dirofiliariinae) from *Macaca cyclopsis* (sic) of Formosa. *Canad. J. Zool.* 41(5): 797-800. (W<sup>a</sup>)
- STILES, C. W. & M. NOLAN, 1929. Key-catalogue of primates for which parasites are reported. (In: STILES and HASSALL. 1929. Key-catalogue of parasites reported for primates (monkeys and lemurs (etc.), q.v.) (W<sup>a</sup>)
- SWANSON, V. L. & J. E. WILLIAMS, 1963. Pathology of *Schistosoma japonicum* in the Taiwanese monkey (*Macaca cyclopsis*). I. Comparison of Formosan and Japanese strains. *Am. J. Trop. Med. and Hyg.* 12(5): 748-752.
- SWINHOE, R., 1862. On the mammals of the island of Formosa (China). *Proc. Zool. Soc. London*, 42: 347-365.
- TOKURA, N. & C. L. WU, 1961. A malarial parasite, *Hepatocystes* (sic) of the flying squirrel from Taiwan. Abstract of Report before 30th Ann. Meet. Japan Soc. Parasitol. (Japanese text). *Kiseichugaku Zasshi*, 10(4): 505. (W<sup>a</sup>)
- TOMITA, S., 1939. On the species of *Strongyloides* harbouring in Formosan pig and monkey. *Taiwan Igakkwai Zasshi, Taihoku*, 38(11): 1613-1624. (W<sup>a</sup>)
- WANG, C. C. & H. C. HSIEH, 1950. Classification of the plasmodia found in the indigenous monkey (black-leg monkey) of Formosa. *J. Formosa Med. Ass.* 49(1): 11. (W<sup>m</sup>)
- WARREN, M. & R. H. WHARTON, 1963. The vectors of simian malaria: Identity, biology, and geographical distribution. *J. Parasitol.* 49(6): 892-904. (W<sup>a</sup>)
- WILLIAMS, J. E. & V. L. SWANSON, 1963. Pathology of *Schistosoma japonicum* in the Taiwanese monkey (*Macaca cyclopsis*). II. Effect of passing Formosan strain through Japanese snails. *Am. J. Trop. Med. and Hyg.* 12(5): 753-757. (W<sup>a</sup>)
- WONGSATHUAYTHONG, S., 1961. Detection of *Microfilaria* in peripheral blood of monkeys by the microcapillary technique. *J. Trop. Med. and Hyg.* 64(10): 255-257. (W<sup>a</sup>)
- YAMASHITA, J., 1963. Ecological relationships between parasites and primates. I. Helminth parasites and primates. *Primates*, 4(1): 1-96.
- YOKOGAWA, S., H. KOBAYASHI, M. RO, & Y. YUMOTO, 1941. On two species of malaria parasites found for the first time in the indigenous monkey (*Macacas* (sic) *cyclopsis*, SWINHOE, 1862) of Formosa. *J. Med. Ass. Formosa*, 40(11): 2173-2181. (W<sup>a</sup>)

## (Taxonomic)

- YAMAGUTI, S., 1958. *Systema Helminthum*. Volume I. The digenetic trematodes of vertebrates. Part I. pp. 1-979; Part II. pp. 980-1575. New York, London (Lib. Doss).
- YAMAGUTI, S., 1959. *Systema Helminthum*. Volume II. The cestodes of vertebrates. 860 pp. New York, London. (Lib. Doss)
- YAMAGUTI, S., 1962. *Systema Helminthum*. Volume III. The nematodes of vertebrates. Part I. pp. 1-679; Part II. pp. 681-1261. New York, London. (Lib. McIntosh)
- YORKE, W. & P. A. MAPLESTONE, 1926. *The Nematode Parasites of Vertebrates*, with a foreword by C. W. STILES. 536 pp. London. (W<sup>a</sup>)
- WARDLE, R. A. & J. A. MCLEOD, 1952. *The Zoology of Tapeworms*. 780 pp. Minneapolis. (W<sup>a</sup>)

## ADDENDUM

- MAA, T. C. and J. S. KUO, 1966. Catalogue and bibliography of ticks and mites parasitic on vertebrates in Taiwan. *Quart. J. Taiwan Mus.* 19 (3-4): 373-413.
- YOSHIMURA, K., Y. HISHINUMA and M. SATO, 1968. Note on two trematode species from Taiwanese monkeys (*Macaca cyclopsis* SWINHOE). *Japan. J. Parasitol.* 17 (4): 292-293.

YOSHIMURA, K., Y. HISHINUMA and M. SATO, 1969. *Ogmocotyle ailuri* (PRICE, 1954) in the Taiwanese monkey, *Macaca cyclopis* (SWINHOE, 1862). *J. Parasitol.* 55 (2): 460-461.

[Received January 6, 1969]

Authors' Address: ROBERT E. KUNTZ, BETTY JUNE MYERS, Department of Parasitology, Division of Microbiology and Infectious Diseases, Southwest Foundation for Research and Education, San Antonio, Texas 78226, U.S.A.