

RECORDS OF THE ZOOLOGICAL SURVEY OF INDIA

(A Journal of Indian Zoology)

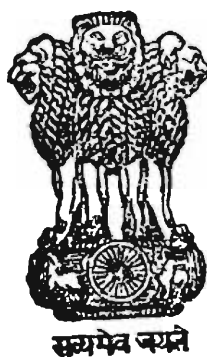
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NOTICE

The volumes of the publication entitled *Records of the Indian Museum* (A Journal of Indian Zoology) will be issued henceforth, *i e.*, from Volume No. 61 (Parts 1 and 2 onward), under the title *Records of the Zoological Survey of India* (abbreviation . *Rec. zool. Surv. India*), in accordance with the decision of the Government of India. Except for the above change in the title of the publication, its scope, periodicity, format, distribution and exchange relationship will continue as hitherto. The serial number of the publication under its new title *viz.*, *Records of the Zoological Survey of India* runs in continuation with the earlier volumes issued under the title *Records of the Indian Museum*.

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ADVANCES IN THE STUDY OF PREHISTORIC AND ANCIENT ANIMAL REMAINS IN INDIA : A REVIEW

By

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Zoological Survey of India, Calcutta

(With 3 Tables ; and 4 Plates)

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I—INTRODUCTION

The work done on the prehistoric and ancient zoological remains obtained from the excavation sites of India is of comparatively recent origin and commenced from about 1930 onwards.

The importance of the study is three fold : First, it gives an idea of the domestication of animals by the prehistoric people. Secondly, it helps us to know the geographical, topographical and climatic conditions

(1)

So far some 17 different sites (Table 1) have been worked out, three of which (Mohenjodaro; Harappa and Taxilla) are now in West Pakistan. The oldest of these sites are Mohenjodaro and Harappa (both *ca.* 2500—1500 B.C.). The most recent site is Sarnath (12th century A.D.). In many sites, several periods of culture are met with in the different layers.

I—VERTEBRATA :

II—INVERTEBRATA :

The most numerous remains are those of mammals, and in certain places (*e.g.* Nevasa site) Mollusca are also quite common. Among mammals the following 14 families are met with :—

1. **Equidae** (horse, ass).
2. **Rhinocerotidae** (rhinoceros).

3. Bovidae (zebu cattle, buffalo, nilgai, gaur, sheep, goat, four-horned antelope, blackbuck).
4. Cervidae (several species of deer).
5. Suidae (wild boar).
6. Camelidae (one-humped camel).

(C) Proboscidea—

7. Elephantidae (Indian elephant).

(D) Primates—

8. Colobidae (langurs).

(E) Carnivora—

9. Canidae (dog, wolf, jackal).
10. Felidae (cat).
11. Viverridae (mongoose).

(F) Lagomorpha—

12. Leporidae (hares and rabbits).

(G) Rodentia—

13. Muridae (rats, gerbilles, porcupines).

(H) Insectivora—

14. Soricidae (shrews).

Among the reptiles are found remains of the monitor lizards (*Varanus* spp.), the Gharial, the Muggar and several species of turtles and tortoises.

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II—ANIMAL REMAINS FROM VARIOUS EXCAVATION SITES

(Tables 2 and 3)

A brief account of the animal remains of the various excavation sites, both prehistoric (Table 2) and historic (Table 3), in India and West Pakistan is now given below, only the more important points being mentioned.

1. Mohenjodaro (2500—1500 B.C.)

(Table 2)

The first report on the remains of the Indus civilization was from Mohenjodaro (Larkana District, Sind, now in W. Pakistan) and was

studied by Sewell & Guha (1931). It represented about 37 species of animals which may be classified into five categories as follows :—

- (a) Animals which were probably maintained in a state of domestication were : *Bos indicus* L. (Indian Humped Cattle); *Bubalus bubalis* (L.) (Indian Buffalo); *Ovis* sp. (sheep); *Canis familiaris* L. (domestic dog); *Sus scrofa cristatus* Wagner (Indian Pig); *Camelus dromedarius* L. (One-humped Camel); *Elephas maximus* L. (Indian Elephant); and *Gallus* sp. (fowl); and at a later period, *Equus caballus* L. (horse).
- (b) Animals that were not actually domesticated but which frequently lived in the vicinity of human habitation were : *Herpestes auropunctatus* (Hodg.) (Small Indian Mongoose); *Suncus stoliczkanus* (And.) (Anderson's Shrew); *Rattus rattus* L. (Common Rat).
- (c) Animals that were caught and utilised as food were : *Gavialis gangeticus* (Gmelin) (Gharial); several turtles and tortoises, viz., *Trionyx gangeticus* Cuv. ; *Geoclemys hamiltoni* (Gray), *Chitra indica* (Gray) and *Batagur baska* (Gray); *Lissemys punctata* (Bonn.); and the fishes *Rita rita* (Ham.-Buch.); *Wallago* sp. and *Arius* sp. (an estuarine cat fish).
- (d) The remains of shells imported for use as ornaments and other purposes were those of : *Lamellidens marginalis* Lamk. (a freshwater mussel), *Arca granosa* L. (Marine Ark Shell), *Erosaria ocillata* (L.), *Arabica arabica* (L.) (a cowry), *Babylonia spirata* (L.) (a marine Gastropod), *Fasciolaria trapezium* L. (a marine Gastropod); *Xancus pyrum* var. *acuta* Hornell and var. *fuscus* Sowerby (the Chank Shell); *Viviparus bengalensis* (Lamk.) (Banded Pond-Snail); *Indoplanorbis exustus* (Desh.); *Parreyssia favidens* (Benson) (a bivalve).
- (e) The following deer species were imported for medicinal purposes according to Sewell & Guha (1931, p. 672) : *Cervus hanglu* (Wag.) (Kashmir Stag), *Cervus unicolor* Kerr. (Sambar), *Axis axis* (Ersl.) (Chital) and *Axis (Hyelaphus) porcinus* (Zimm.) (Hog Deer).

Thus, it appears that the inhabitants of the Indus civilization from Mohenjodaro practised a high grade of domestication of animals, and also utilized them for food, medicine and ornamentation.

2. Harappa (2500—1500 B.C.)

(Table 2)

The next site of importance is that of Harappa (Montgomery District, Punjab, now in W. Pakistan) which was studied by Prashad (1936). He listed 30 species of animals and also traced the probable ancestries and the areas of domestication of some of them.

In general, the bony remains from Harappa resemble those described by Sewell & Guha (1931) from Mohenjodaro. Several species are identical, while some like the shrew, *Suncus stoliczkanus* (And.), and a number of stags and deer are not represented in Harappa. On the other hand, the Monitor Lizard (*Varanus* sp.), the cat (*Felis ochreata* Gm. race *domestica*), the Jackal (*Canis aureus* L.), the wolf (*Canis lupus* L.) the rhinoceros (*Rhinoceros unicornis* L.), the goat (*Capra hircus aegagrus* Erxl.), found at Harappa were not represented in Mohenjodaro.

The presence of the remains of rhinoceros (*Rhinoceros unicornis* L.) and water buffalo (*Bubalus bubalis* L.) which live in marshy land mixed with forests, indicates that the climatic conditions of Punjab at that time were different from those found today. The occurrence of the rhinoceros is particularly interesting as this animal is no longer found in that region. The other animal remains, except those of the invertebrates and the reptiles, all belong to those of domestic animals. As in Mohenjodaro, there is a large number of bones which seem to have belonged to young animals which had apparently been killed for food.

Prashad (1936, p. 22) also described a new dog from Harappa, *Canis tenggeranus* race *harappensis* Prashad, resembling the original ancestral type of dog found in the orient in diluvial times and which was of the greyhound type (with an elongated snout having distinct affinities to the Indian wolf, *Canis lupus* L.). It is interesting to note the occurrence of dog from the early days of the Harappan culture. Prashad (1936, p. 37) also noted that the cattle remains from Harappa belong to two distinct types : (i) a large, massive form probably of the type of long-horned humped cattle; and (ii) a smaller form with short horns.

Recently, Nath (1962) has reported on the remains of the horse (*Equus caballus* L.) and the Indian Elephant (*Elephas maximus* L.) from the prehistoric site of Harappa, found in the unworked collections with the Zoological Survey of India. This is the first record of the true horse and the Indian Elephant from the region. The horse remains were obtained from Area G (Harappa) at the end of the Harappa civilization when alien invaders overran this prehistoric city and destroyed it (Piggot, 1950, p. 230). On the other hand, the elephant remains occur in the Harappan period (2500—1500 B.C.).

3. *Rupar* (2000—900 B.C.)

(Table 2)

Another site of Harappan culture recently excavated is that of Rupar (Ambala district, East Punjab), Nath (in press) has found 18 species, all of which are identical with those of Harappa and Mohenjodaro, with the exception of two, viz., *Francolinus francolinus* (L.) (Black Partridge) and *Bandicota bengalensis* Gray & Hardw. (Bandicoot Rat). A few cut marks on the bones, particularly those of *Bos indicus*, *Bubalus bubalis*, *Ovis vignei*, *Capra hircus aegagrus* and *Sus scrofa cristatus*, indicates the probable use of these animals as food.

The Rupar remains are mostly those of the domestic animals which resemble in their species those of the Harappan culture. Both domestic ass (*Equus asinus* L.) and the true horse (*Equus caballus* L.) are found in the late period of Harappan culture of Rupar.

4. Rangpur (2000—800 B.C.)

(Table 2)

Recently, the excavations at Rangpur (Ahmadabad district, Gujarat) by the Archaeological Survey of India, has brought to light the large extension of the Harappan culture to Gujarat, south of Sind. Nath (in press) has studied these remains and found 10 species. All the remains are of domestic animals which resemble, in their species, those of the Harappan culture. The presence of the domestic ass, *Equus asinus* L. but not of the horse, is noteworthy. The remains of the dog, *Canis familiaris* L., have been found from the earliest times of Harappan culture at Rangpur. The other remains of domestic animals, e.g., cattle, goat, sheep and pig, are akin to those of Harappa, Mohenjodaro and Rupar.

5. Lothal (2000—1200 B.C.)

(Table 2)

Nath (unpublished) has worked out the animal remains from excavations at Lothal (Ahmadabad district, Gujarat), the most notable Harappan cultural site in Gujarat excavated recently by the Archaeological Survey of India. The number of species represented is 23. The majority of remains are of domestic animals, those *Bos indicus* being by far the most common. The remains of other domestic animals, e.g., the buffalo, goat, sheep, and pig are akin to those of Harappa, Mohenjodaro, Rupar and Rangpur. The dog, *Canis familiaris*, is found from the earliest times of Harappan culture at Lothal. The presence of the remains of the rhinoceros, *Rhinoceros unicornis* L., and the Indian elephant, *Elephas maximus* L., which live in marshy land mixed with forest, indicates that the climatic conditions of Gujarat at that time were different from those found today. Among wild species two species of deer, *Axis axis* (Erxl.) (Chital) and *Cervus unicolor* Kerr. (Sambar) are represented. The remains of the Nilgai (*Boselaphus tragocamelus*), the common house rat (*Rattus rattus* L.), and the Indian Black-naped Hare (*Lepus nigricollis* Cuv.) are also found. The remains of the small Indian Mongoose (*Herpestes auropunctatus* Hodg.) and the Jackal (*Canis aureus* L.) are akin to those of Harappa and Mohenjodaro. The presence of the true horse, *Equus caballus* L., from the late period of Harappan culture at Lothal is noteworthy. The remains of the fowl (*Gallus* sp.) are akin to those of Harappa and Rupar. The reptilian remains are those of the river turtle, *Chitra indica*. The molluscan shell remains are mainly of the chank shell (*Xancus pyrum*), the Banded Pond-snail (*Viviparus bengalensis* Lamk.), and other marine Gastropod shells such as *Telescopium telescopium* (L.), *Olivancillaria subulata* (Lamk.), and *Conus* (*Rhizoconus*) *rattus* Brug.

6. Nevasa (1500—1000 B.C.)

(Table 2)

Eapen (1960, pp. 531-536) has studied the remains of the Nevasa excavations (Ahmadnagar district, Maharashtra) and found 13 species

of which *Bos indicus* L. is the most common. The remains of the goat, *Capra hircus aegagrus* Erxl., are numerous. Among wild animals, two species of deer, *Axis axis* (Erxl.) and *Cervus duvauceli* Cuv., are comparatively well represented. The remains of fish and a bird (*Gallus* sp.) are also found. The reptilian remains are mainly of the turtle, *Chitra indica* (Gray).

The bony remains of the Chalcolithic period in Nevasa are mainly those of domestic cattle (*Bos indicus* L.) and wild Barasinga (*Cervus duvauceli* Cuv.). Remains of the goat (*Capra hircus aegagrus* Erxl.) and turtles are less common. The absence of pig is rather surprising.

7. Nasik (1500—500 B.C.)

(Table 2)

The animal remains at Nasik (Maharashtra), were studied by Georg (1955, pp. 142-143) who reported 13 species. The remains are mostly those of domesticated animals, viz., *Bos indicus* L., *Bubalus bubalis* (L.) *Ovis* sp., *Capra* sp. and *Sus cristatus* Wag. Among wild species three species of deer, *Cervus unicolor* Kerr., *Axis axis* (Erxl.) and *Tetraceros quadricornis* Blainv., the Nilgai (*Boselaphus tragocamelus* Pall.) and the rat (*Rattus rattus* L.) are reported. The occurrence of a Primate (*Semnopithecus* sp., the langur) is noteworthy, as Primates have not been recorded from any other prehistoric sites in India.

8. Nagda (1500—200 B.C.)

(Table 2)

Recently, Nath (in press) has studied the remains from Nagda (Chambal Valley, Madhya Pradesh) and has recorded 16 species. The majority of remains are of domestic animals, those of *Bos indicus* L., being by far the most common. The remains of the goat (*Capra hircus aegagrus* Erxl.) and the sheep (*Ovis vignei* Blyth) are fairly numerous and that of *Bubalus bubalis* (L.) fewer. Among the wild species, two species of deer, *Cervus unicolor* Kerr. (Sambar) and *Cervus duvauceli* Cuv. (Barasingha) are present. The occurrence of the Muggar or Great Indian Crocodile, *Crocodilus palustris* Lesson, is noteworthy as this animal has so far not been reported from any other prehistoric site of India. The other reptilian remains are mainly those of the turtles *Lissemys punctata* (Bonn.), *Chitra indica* (Gray) and *Trionyx gangeticus* Cuvier.

9. Hastinapura (1100 B.C.—3rd Century A.D.)

(Table 2)

Hastinapura, (Meerut district, Uttar Pradesh) is a site which is also mentioned in the oldest Indian epic, the *Mahabharata*. The remains have been studied by Nath (1955) who found 13 species. As in Mohenjodaro and Harappa, there is a large number of bones which belong to young animals. A number of bones of *Bos indicus* L., *Bubalus bubalis* (L.), *Ovis vignei* Bly., and *Sus scrofa cristatus* Wag. have definite cut

marks by sharp instruments, suggesting that the inhabitants used these animals for food.

The majority of the remains are those of the domestic animals, those of *Bos indicus* L., being by far the most common. The remains of the goat (*Capra hircus aegagrus*) and the sheep (*Ovis vignei* race *domesticus*) are fairly numerous. The remains of *Bubalus bubalis* (L.) are fewer, but *Sus scrofa cristatus* Wag. is well represented. The Indian Elephant, *Elephas maximus* L., the *Cervus duvauceli* Cuv., are also represented. The presence of the horse, *Equus caballus* L., during the painted greyware period of Hastinapura is significant, as this animal played an important part in the everyday life of the people. Besides, in this period people seemed to have been fond of hunting deer the bones of which were used for style and other decorative objects. The remains of a carp is the only record of fish from this site.

10. Brahmagiri (1000 B.C.—200 A.D.)

(Table 2)

Nath (1968) has studied the collection from Brahmagiri (Chitradurga district, Mysore State). The remains belong to three cultures : (i) *Brahmagiri Stone Age Culture* (1000 B.C.) divided into two sub-cultures : (A) Early Stone Age Culture and (B) Late Stone Age Culture. (ii) *Megalithic Culture* (200 B.C.—mid-1st century A.D.); and (iii) *Andhra Culture* (mid-1st century—3rd century A.D.). The species represented in these cultures are as follows :—

(i) Brahmagiri Stone Age Culture—

(A) Earlier Stone Age : *Equus* sp., *Bos indicus* L., *Ovis vignei* Bly. race *domesticus* and *Lepus nigricollis* Cuv.

(B) Late Stone Age : *Canis familiaris* L., *Bos indicus* L., *Bubalus bubalis* (L.), *Ovis vignei* Bly. race *domesticus*; *Capra hircus aegagrus* Erxl., *Sus scrofa cristatus* Wag. and *Axis axis* (Erxl.).

(ii) Brahmagiri Megalithic Culture—

Bos indicus L., *Bubalus bubalis* (L.), *Ovis vignei* Bly. race *domesticus*; *Capra hircus aegagrus* Erxl., *Axis axis* (Erxl.) and *Gallus* sp. (fowl).

(iii) Brahmagiri Andhra Culture—

Bos indicus L., *Bubalus bubalis* (L.), *Ovis vignei* Bly. race *domesticus*; *Capra hircus aegagrus* Erxl., *Lepus nigricollis* Cuv. and *Pila globosa* (Swani.).

Except for the Chital (*Axis axis* Erxl.), the other mammal remains are those of domesticated animals.

11. *Maski* (1000 B.C.—100 A.D.)

(Table 2)

Nath (1957, pp. 121-129) has studied the remains from Maski (Raichur district, Mysore State) and found 8 species. The excavation mainly comprises chalcolithic and megalithic cultures. The animal remains closely resemble those of Harappa and Hastinapura, and the following were found :—

(a) *Chalcolithic* : Invertebrates (Mollusca) : Freshwater mussel (*Parreyssia* sp.) and the Banded Pond-snail (*Viviparus bengalensis* (Lamk.)). Vertebrates : The common Rat (*Rattus rattus* L.), the short-horned humped cattle (*Bos indicus* L.), the buffalo (*Bubalus bubalis* (L.)), the sheep (*Ovis vignei* Bly. race *domesticus*), and the goat (*Capra hircus aegagrus* Erxl.). Of the latter, a large number of short-horned cattle and sheep occur, and apparently herds of these were maintained. The domestication of these animals indicates a pastoral economy tending towards food growing.

(b) *Megalithic* : Only the sheep (*Ovis vignei* Bly. race *domesticus*) has been found but in large numbers.

12. *Nagarjunakonda* (Neolithic—1200 A.D.)

(Tables 2 and 3)

The animal remains from the excavations at Nagarjunakonda (Guntur district, Andhra Pradesh) have been recently studied by Nath (unpublished). They belong to three cultures, viz., (i) Neolithic (date not yet assigned); (ii) Megalithic (200 B.C.—mid-1st century A. D.); and (iii) historical period (2nd century—1200 A.D.). The following species are represented :—

(i) *Neolithic culture* : Eleven species were found. The remains are mostly of domesticated animals, viz., *Bos indicus* L., *Bubalus bubalis* (L.), *Ovis vignei* Blyth race *domesticus* and *Capra hircus aegagrus* Erxl. The absence of the pig, *Sus scrofa cristatus* Wag., is rather surprising. Among wild animals, three species of deer, *Cervus unicolor* Kerr., *Cervus duvauceli* Cuv., and *Axis axis* (Erxl.), occur. The presence of the black buck, *Antelope cervicapra* (L.), is noteworthy as this animal has not so far been reported from any of the other prehistoric sites of India. The remains of the Nilgai (*Boselaphus tragocamelus* Pall.) also occur. The presence of all these animals in the neolithic site suggests that the habitation sites at that time were situated amidst jungles and undulating grassy land, and the settlers were practising pastoral economy tending towards food growing.

(ii) *Megalithic culture* : Five species have been found, all being domestic animals, viz., *Bos indicus* L., *Bubalus bubalis* (L.), *Ovis vignei* Blyth race *domesticus*, *Capra hircus aegagrus* Erxl., and *Sus scrofa cristatus* Wag. These remains were obtained from the megalithic human burials.

(iii) *Historical period* : Thirty species occur. The majority of the remains are of domestic animals, that of *Bos indicus* L. being by far the most common. The other domestic animals, viz., *Bubalus bubalis* (L.) (domestic buffalo), *Capra hircus aegagrus* Erxl. (goat), *Ovis vignei* Blyth race *domesticus* (domestic sheep) and *Sus scrofa cristatus* Wag. (pig) are fairly common. Among wild cattle, the remains of the wild buffalo, *Bubalus bubalis*, the gaur, *Bos gaurus*, and the Nilgai, *Boselaphus tragocamelus*, are noteworthy. Of these, *Bos gaurus* was hitherto not found in any of the prehistoric sites. Remains of both the true horse and the smaller breed or pony (both *Equus caballus* L.) as well as the domestic ass (*Equus asinus* L.) have been found. The remains of a sacrificed pony from the *aswamedh* site of Nagarjunakonda is of especial significance as it throws light on the ritual and cultural practices of the descendants of the Ikshuvaku kings who ruled there at that time. The remains of the Indian Elephant, *Elephas maximus* L., are found in considerable numbers. Among other mammalian remains are those of the following :—The domestic dog (*Canis familiaris* L.); three rodents, viz., the common rat (*Rattus rattus* L.), the Indian Mole Rat (*Bandicota bengalensis* Gr. & Hardw.), and the Large Bandicoot (*Bandicota indica indica* Kerr), and the Indian Crested Porcupine (*Hystrix indica* Kerr). Of these, the occurrence of the porcupine is noteworthy as this animal has not previously been found in any of the prehistoric sites in India. The Indian Black-naped Hare (*Lepus nigricollis* Cuv.), and three species of deer, viz., the Sambhar (*Cervus unicolor*), the Chital (*Axis axis*) and the Barking Deer (*Muntiacus muntjak*) have also been found.

Other vertebrate remains are those of the fowl (*Gallus* sp.), several reptiles, viz., the turtles (*Chitra indica* Gray and *Trinonyx* sp.) and the Muntior lizard (*Varanus griseus* Daud.), and a teleostean fish (*Rita rita* Ham-Buch.).

Among the invertebrates are the molluscan shell remains of the chank shells, *Xancus pyrum* L., and *X. rapa* (Lamk.) and other marine shells such as *Tonna maculata* (Lamk.), *Arca granosa* L., *Meretrix meretrix* (L.) and the Money Cowry, *Monetaria monata* (L.).

13. Ujjain (750 B.C.—1400 A.D.)

(Table 2)

Nath (unpublished) has recently identified the animal remains from the excavations at Ujjain (Madhya Pradesh) and 12 species have been recorded. The remains are mostly of domesticated animals, viz., *Bos indicus*, *Bubalus bubalis*, *Ovis vignei* race *domesticus*, *Capra hircus aegagrus* and *Sus scrofa cristatus*. The domestic ass, *Equus asinus*, and the horse, *Equus caballus*, are both found. The remains of the small Indian Mongoose, *Herpestes auropunctatus* Hodg. and the Indian Elephant *Elephas maximus* L., found at Ujjain are akin to those of Harappa and Mohenjodaro. Among deer only two species occur, viz., the Chital *Axis axis*, and the Black buck, *Antelope cervicapra*. The molluscs are represented by a single species, the chank shell *Xancus pyrum* L.

14. *Jaugada* (400 B.C.—200 A.D.)

(Table 2)

Nath (unpublished) has studied the remains from the excavations at Jaugada (Ganjam district, Orissa), and found ten species. The remains are mostly those of domesticated animals, viz., *Bos indicus*, *Bubalus bubalis*, *Ovis vignei* race *domesticus*, *Capra hircus aegagrus* and *Sus scrofa cristatus*. The occurrence of the dog, *Canis familiaris*, and the domestic ass, *Equus asinus*, from this earliest iron age period is noteworthy. Of wild mammals only a species of deer, the Chital (*Axis axis*) is found. The reptilian remains are mainly those of the turtles, *Chitra indica* (Gray) and *Lissemys punctata* (Bonn.).

15. *Taxilla* (mid-1st century B.C.—2nd century A.D.)

(Table 2)

The remains from the prehistoric site of Taxilla, 22 miles north of Rawalpindi (W. Pakistan) have been studied by Nath (1959), and 5 species found as follows :—*Equus asinus* L., *Equus caballus* L., *Bos indicus* L., *Bubalus bubalis* (L.), and *Sus scrofa cristatus*. All the remains are those of domesticated animals. Of *Bos indicus*, two distinct forms of humped cattle have been found at Taxilla as at Harappa (Prashad, 1936), viz., (i) a large massive form, probably of the type of long-horned humped cattle; and (ii) a small form with short horns as is found in India today.

16. *Arikamedu* (20—50 A.D.)

(Table 3)

The remains from Arikamedu (near Pondicherry, southern India) were studied by Chatterjee & Bose (1946, pp. 114-116) and 4 species were found as follows :—The humped cattle (*Bos indicus* L.), the pig (*Sus scrofa cristatus* Wag.), the turtle *Lissemys punctata* (Bonn.) and the fowl *Gallus* sp.

17. *Sarnath* (12th century A.D.)

(Table 3)

Nath (1958, pp. 165-185) has studied the remains from a drain in Monastery No. 4 at Sarnath (near Varanasi, Uttar Pradesh), and found the remains of the following 12 species :—Mollusca : *Monetaria moneta* (Linn.); *Cypraea pallida* Gray; *Parreyssia* sp.; Reptilia (turtles): *Lissemys punctata* (Bonn.) f. *typica*; *Chitra indica* (Gray); *Batagur baska* (Gray). Mammalia: *Bos indicus* L., *Bubalus bubalis* (L.), *Ovis vignei* Bly. race *domesticus*, *Capra hircus aegagrus* Erxl., *Elephas maximus* L. and *Lepus ruficaudatus* Geof. With the exception of the remains of mollusc shells and reptiles, all others are those of domestic animals. The single

find of the charred remains of the hare, *Lepus ruficaudatus*, is noteworthy as the species has not been found in Harappa, Mohenjodaro and Hastinapur.

III—SUMMARY

1. This paper reviews the prehistoric and ancient (*ca.* 2500 B.C. to 12th century A.D.) animal remains obtained from the various prehistoric and historic sites of India such as Mohenjodaro and Harappa (2500 B.C.—1500 B.C.), Rupar (2000—900 B.C.), Rangpur (2000—800 B.C.), Maski (1000 B.C.—1st century A.D.), Taxilla (mid-1st century B.C.—2nd century A.D.), Brahmagiri (1000 B.C.—200 A.D.), Nasik (1500 B.C.—500 B.C.), Arikamedu (20 A.D.—50 A.D.), Nagda (1500—200 B.C.) and Sarnath (12th century A.D.), and Nevasa (1500—1000 B.C.), and others.

2. Remains, mostly bones and shells of 92 different species (60 vertebrates and 32 invertebrates), have been found from the various sites, thus :—*Vertebrates* : Mammalia (41); Aves (2); Reptilia (12); Pisces (5). *Invertebrates* : Mollusca (31); Coelenterata (Corals, 1). The bulk of the mammal remains in all cases are those of the domesticated animals.

3. The significant role played by various species of animals in the cultural life of the people is discussed.

IV—REFERENCES

- CHATTERJEE, B. K. and BOSE, H. K. 1946. Animal remains from Arikamedu, Pondicherry, Madras.—*Ancient India*, Delhi, No. 2, pp. 114-116.
- EAPEN, J. 1960. A report on the animal remains of the Nevasa excavations. In : *From History to Prehistory at Nevasa, 1954-56* pp. 531-536.—Poona (Univ. of Poona Publ., No. 1).
- GEORGE, J. C. 1955. Identification of animal bones, In : *Report on the Excavation at Nasik and Jorwe, 1950-51*, pp. 142-143.—Poona (Univ. Poona Publ.).
- NATH, B. 1955. Animal remains from Hastinapura.—*Ancient India*, Delhi, Nos. 10 & 11, pp. 107-120, 4 pls.
- NATH, B. 1957. Animal remains from Maski.—*Ancient India*, Delhi, No. 13, pp. 111-120, 2 pls.
- NATH, B. 1958. Animal remains of 12th Century A.D. from Sarnath in Uttar Pradesh, India.—*J. zool. Soc. India*, Calcutta, 10 (2), pp. 165-175.
- NATH, B. 1959. Animal remains of the mid-first century B.C. to second century A.D. from Taxilla (Sirkap), Western Pakistan.—*J. zool. Soc. India*, Calcutta, 11 (1), pp. 76-84, 2 pls.

- NATH, B. 1962. Remains of horse and Indian elephant from prehistoric site of Harappa.—*Proc. 1st All-India Congr. Zool.* (Jabalpur, 1959), Calcutta, Pt. 2 (*Sci. Pap.*), pp. 1-14, 4 pls.
- NATH, B. Animal remains from Rupar (Ambala dist., E. Punjab).—*Mem. Archaeol. Surv. India.* (*In press.*)
- NATH, B. Animal remains from Nagda (Madhya Pradesh).—*Ancient India*, Delhi. (*In press.*)
- NATH, B. 1968. Animal remains from Brahmāgiri (India, Mysore State).—*Rec. Indian Mus.*, Delhi, 61 (1 & 2), pp. 65-88.
- NATH, B. Animal remains from Rangpur (Ahmadabad Dist., Gujarat). (*In press.*)
- NATH, B. Animal remains from Jaugada (Ganjam Dist., Orissa).—(Unpublished report).
- NATH, B. Animal remains from Harappa, with especial reference to the 1946 collections.—(Unpublished report).
- NATH, B. Animal remains from Lothal (Ahmadabad Dist., Gujarat).—(Unpublished report).
- NATH, B. Animal remains from Nagarjunakonda (Guntur Dist., Andhra Pradesh).—(Unpublished report).
- NATH, B. Animal remains from Ujjain (Madhya Pradesh).—(Unpublished report).
- PIGGOT, S. 1950. Prehistoric India. 293 pp., 8 pls.—Harmondsworth.
- PRASHAD, B. 1936. Animal remains from Harappa.—*Mem. Archaeol. Surv. India*, Delhi, No. 51, pp. 1-60, 7 pls.
- RAY, H. C. 1960. Shell remains from Nevasa Excavations (Mollusca : Gastropoda and Bivalvia). pp. 539-550, 2 pls. In : (Ed. by H.D. SANKALIA and S. B. DEO) : *From History to Prehistory at Nevasa 1954-56.*—Poona (Univ. Poona, Publ. No. 1).
- SEWELL, R. B. S. and GUHA, B. S. 1931. Zoological remains. In : (Ed. by J. MARSHALL) : *Mohenjodaro and the Indus Civilization.*—London (A. Probsthain), 2, pp. 649-673, 3 figs.
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PLATE 1

Skeletal remains of some animals from Harappa Excavation (ca. 2500 B.C.—1500 B.C.) in the collection of the Zoological Survey of India. (After B. Prasad 1936, *Mem. Archaeol. Surv. India*, No. 51.)

(Figs. 1-6).—*Bos indicus* Linn.

FIG. 1.—Left 3rd & 4th metacarpal of an animal of the short-horned race. No. H/C. Cemetery site, Harappa.

FIG. 2.—Right femur of an animal of the long-horned race. No. 10212. Harappa.

FIGS. 3 and 4.—Complete and distal fragment of 3rd-4th metatarsal of short and long-horned races. No. 10212 and from Mound F, Trench VI, respectively, Harappa.

FIGS. 5 and 6.—1st and 2nd phalanges of the short and long-horned races. No. 10212 and from Mound F, Trench VI, respectively, Harappa.

(Figs. 7-9).—*Bubalus bubalis* (Linn.)

FIG. 7.—Palatal part of a specimen No. G 11/27. Harappa.

FIG. 8.—Fragment of a right horn from Mound G; Trench II; square AM 40/21. Harappa.

FIG. 9.—Fragment of left ramus of lower jaw. No. 5440 a, b, c. Harappa.

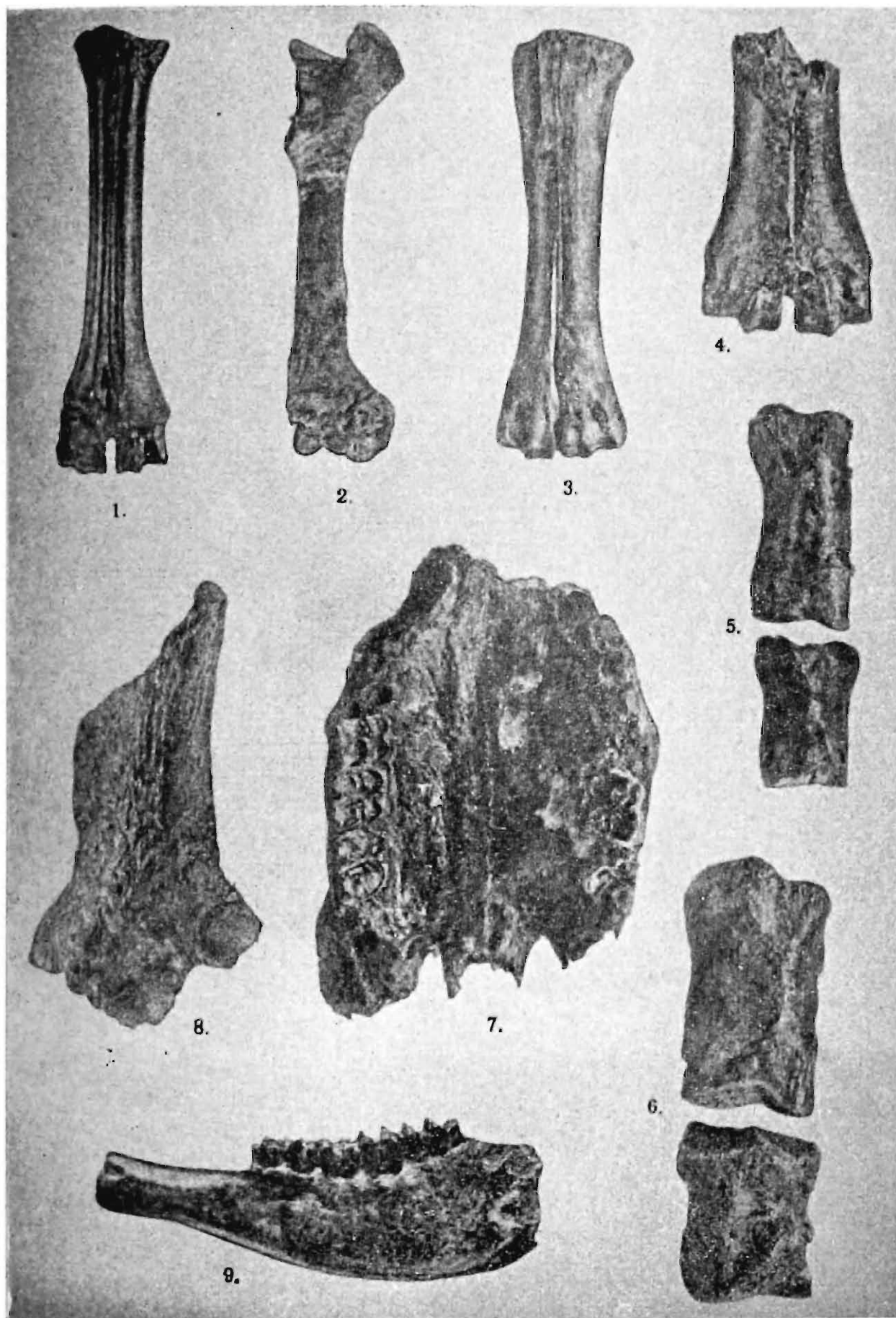


PLATE 2

Skeletal remains of some animals from Harappa excavation (ca. 2500 B.C.—1500 B.C.) together with skeletons of recent forms in the collection of the Zoological Survey of India. (After B. Prashad 1936, *Mem. Archaeol. Surv. India*, No. 51.)

(Figs. 1-4).—*Camelus dromedarius* Linn.

FIG. 1.—Left scapula. No. 954 fragmentary. Harappa.

FIG. 2.—Left scapula of a recent specimen in the Zoological Survey of India.

FIG. 3.—Left radio-ulnar shaft from Mound A B, excavated from a depth of 5'9" Harappa.

FIG. 4.—Left radio-ulna of a recent specimen in the Zoological Survey of India.

(Figs. 5-6).—*Rhinoceros unicornis* Linn.

FIG. 5.—Fragmentary right scapula from Mound F, excavated from a depth of 8'7"—11'10". Harappa.

FIG. 6.—Right scapula of a specimen in the Zoological Survey of India.

(Figs. 7-11).—*Equus asinus* Linn.

FIG. 7.—Maxillary portion of palate with 4th premolar and 1-3 molars; No. 954. Harappa.

FIGS. 8 and 9.—Two 3rd right metacarpals.

FIGS. 10 and 11.—Two specimens of 2nd phalanx of right hind-leg and right fore-leg of different sizes (D.R.S. coll.) No. D.S. 40 and 29.

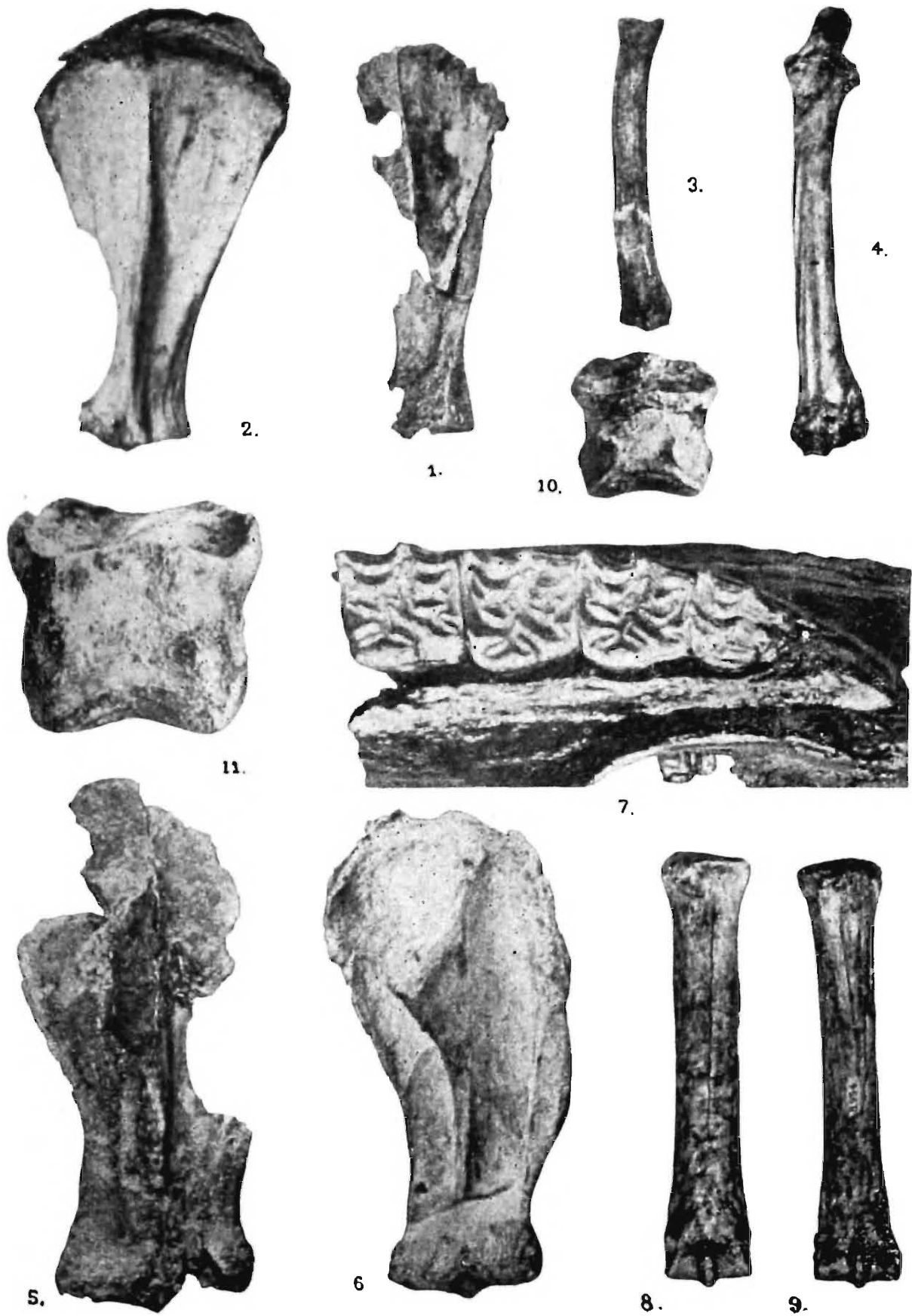


PLATE 3

Skeletal remains of horse from Harappa Excavation (ca. 1500 B.C.—1200 B.C.) together with skeletons of recent forms in the collection of the Zoological Survey of India. (After B. Nath, 1962, *Proc. 1st All India Congress of Zoology*, 1959, Part 2. Scientific Papers, Plate 1.)

(Figs. 1-7).—*Equus caballus* Linn.

FIG. 1.—Left ramus of mandible without body. No. G 289. Harappa.

FIG. 2.—Dorsal view of left proximal extremity of radius. No. G 11. Harappa.

FIG. 3.—Volar view of left proximal extremity of radius. No. G 11. Harappa.

FIG. 4.—Distal articular extremity of left radius. No. G 11. Harappa.

FIG. 5.—Distal articular extremity of left radius of a modern horse in the Zoological Survey of India.

FIG. 6.—Distal articular extremity of right tibia. No. G 11. Harappa.

FIG. 7.—Distal articular extremity of right tibia of a modern horse in the Zoological Survey of India.]

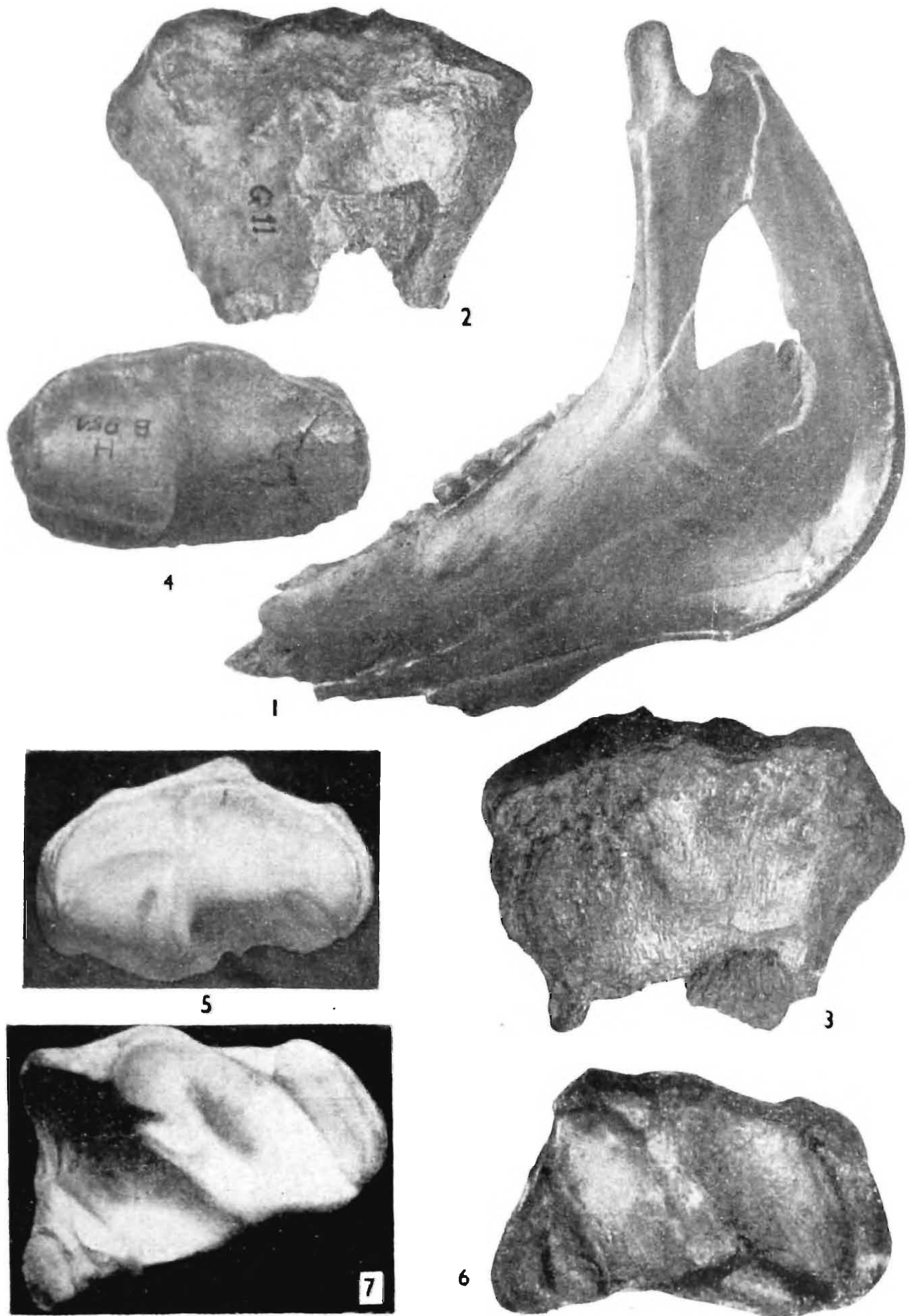


PLATE 4

Skeletal remains of some animals from ancient site of Sarnath excavation (1200 A.D) together with skeletons of recent forms in the collection of the Zoological Survey of India. (After B. Nath, 1958,) *J. zool. Soc. India*, Vol. 10 (No. 2.) pp. 165-175.

(Fig. 1).—*Monetaria monata* Linn.

(The Money Cowry)

FIG. 1.—One shell of cowry. No. 215. Excavated at Sarnath.

(Fig. 2).—*Cypraea ? pallida* Gray

FIG. 2.—One shell of a cowry. No. 215. Excavated at Sarnath.

(Figs. 3 and 4).—*Parreyssia* sp.

FIG. 3.—Fragment of a valve. No. 215. Excavated at Sarnath.

FIG. 4.—Right valve of *Parreyssia favidens* (Benson). No. 3689. Excavated at Harappa.

(Figs. 5 and 6).—*Lissemys punctata* (Bonn.) forma *typica*.

FIG. 5.—Fragment of a epiplastron. No. 11/1943. Excavated at Sarnath.

FIG. 6.—Left complete and intact epiplastron from Harappa. No. 5556.

(Fig. 7).—*Chitra indica* (Gray).

FIG. 7.—Fragment of hypoplastron. Area of antiquity No. 49. Excavated at Sarnath.

(Fig. 8).—*Batagur baska* (Gray).

FIG. 8.—Dorsal view of the fragment of a plastron *Batagur baska* Gray. Area of Antiquity No. 49. Excavated at Sarnath.

(Figs. 9 and 10).—*Bos indicus* Linn.

FIG. 9.—Fragment of the left distal humerus. No. 13/1943. Excavated at Sarnath.

FIG. 10.—Left astragalus of an young one. No. 116. Excavated at Sarnath.

(Figs. 11 and 14).—*Bubalus bubalis* (Linn.)

FIG. 11.—Fragment of the left scapula. No. 719/28. Excavated at Sarnath.

FIG. 12.—Left scapula of a modern specimen in the Zoological Survey of India.

FIG. 13.—Proximal fragment of the left radius. No. 166/28. Excavated at Sarnath.

FIG. 14.—Left radius of a modern specimen in the Zoological Survey of India.



TABLE 1.—List of prehistoric and ancient sites in India and West Pakistan from where animal remains have been studied up to the end of 1962.

Serial No.	Name of site	Location	Age	Excavated by	Studied by	Remarks
1	2	3	4	5	6	7
1.	Mohenjodaro . .	Dist. Larkana, Sind, (W. Pakistan).	2500—1500 B.C.	Archaeological Survey of India.	Sewell & Guha (1931)	Published.
2.	(a) Harappa . .	Dist. Montgomery, Punjab (W. Pakistan).	„	„	Prashad (1936) . .	Published.
	(b) Harappa . .	Dist. Montgomery, Punjab (W. Pakistan).	„	„	Nath (1962) . .	Published.
3.	Rupar . . .	Dist. Ambala, Punjab (India).	2500—900 B.C. .	„	Nath (in press) . .	Unpublished.
4.	Rangpur	Dist. Ahmadabad, Gujarat (India).	2000—800 B.C. .	„	Nath (in press) . .	Unpublished.
5.	Lothal	Dist. Ahmadabad, Gujarat (India).	2000 B.C.—1200 B.C.	„	Nath	Unpublished.
6.	Nevasa	Dist. Ahmadnagar, Maharashtra (India).	1500—1000 B.C.	Dept. of Archaeology & Ancient History, Deccan College, Poona.	Eapen (1960); Ray (1960) (Mollusca only).	Published.
7.	Nasik	Dist. Nasik, Maharashtra (India).	1500—500 B.C. .	„	George (1955) . .	Published.
8.	Nagda	Chambal Valley, Madhya Pradesh (India). .	1500—200 B.C. .	Archaeological Survey of India.	Nath (in press) . .	Unpublished.

9. Hastinapura	.	.	.	Dist. Meerut, Uttar Pradesh (India).	1100 B.C. to 3rd century A.D.	Archaeological Survey of India	Nath (1955).	.	Published
10. Brahmagiri	.	.	.	Dist. Chitradurga, Mysore (India).	1000 B.C.—200 A.D.	„	Nath (1968)	.	Published.
11. Maski	.	.	.	Dist. Raichur, Mysore (India).	1000 B.C. to 1st century A.D.	„	Nath (1959)	.	Published.
12. Nagarjunakonda	.	.	.	Dist. Guntur, Andhra Pradesh (India).	Neolithic to 1200 A.D.	„	Nath	.	Remains identified (report unpublished).
13. Ujjain	.	.	.	Chambal Valley, Madhya Pradesh (India).	750 B.C.—1400 A.D.	„	Nath	.	
14. Jaugada	.	.	.	Dist. Ganjam, Orissa (India).	400 B.C.—200 A.D.	„	Nath	.	Unpublished.
15. Taxilla	.	.	.	Dist. Rawalpindi, (W. Pakistan).	Mid-1st century B.C. to 2nd century A.D.	„	Nath (1959).	.	Published.
16. Arikamodu	.	.	.	Pondicherry, Madras State.	20—50 A.D.	„	Chatterjee & Bose (1946).	.	Published.
17. Sarnath	.	.	.	Dist. Banaras, Uttar Pradesh (India).	12th century A.D.	„	Nath (1958).	.	Published.

TABLE 2.—List of animal species whose remains have been found end of 1962. (For historic sites,

I.—Mammalia.
II.—Aves.
III.—Reptilia.

Sl. No.	Name of species		Order	Family	Excavation
	Scientific	Common			Name, State Country
1		3	4	5	6
I.—MAM-					
1.	<i>Equus caballus</i> Linn.	The Horse	Perissodactyla	Equida	1. Mohenjodaro, Dist. Larkana, (W. Pakistan)
		"	"	"	2. Harappa, Dist. Montgomery, (W. Pakistan)
	"	"	"	"	3. Rupar, Dist. Ambala, E. Punjab, (India)
	"	"	"	"	4. Lothal, Dist. Ahmadabad, Gujarat (India)
	"	"	"	"	5. Hastinapura, Dist. Meerut, U.P. (India)
	"	"	"	"	6. Ujjain, Chambal Valley, Madhya Pradesh (India)
	"	"	"	"	7. Taxilla, Dist. Rawalpindi, (W. Pakistan)
2.	<i>Equus asinus</i> Linn.	The Domestic Ass	Perissodactyla	Equidae	1. Harappa, Dist. Montgomery, (W. Pakistan)
	"	"	"	"	2. Rupar, Dist. Ambala, E. Punjab (India)
	"	"	"	"	3. Rangpur, Gujarat (India)
	"	"	"	"	4. Maski, Dist. Raichur, Mysore (India)
	"	"	"	"	5. Ujjain, Chambal Valley, Madhya Pradesh (India)
	"	"	"	"	6. Jaugada, Dist. Ganjam, Orissa (India)
	"	"	"	"	7. Taxilla, Dist. Rawalpindi, (W. Pakistan)
3.	<i>Equus sp.</i>	The wild Ass	,	"	1. Brahmagiri, Dist. Chitradurga, Mysore State (India)

from prehistoric sites in India and West Pakistan up to the see Table 3.)

IV.—Pisces.

V.—Mollusca.

VI.—Coelenterata.

where found		Reference	Kind of remains found	Excavated by
Culture	Age			
7	8	9	10	11
MALIA				
Harappan . . .	2500 B.C. to 1500 B.C.	Sewell & Guha (1931).	Fragments of mandible with teeth	Archaeological Survey of India.
„	„	Prashad (1936); Nath (1962).	Fragmentary mandible with teeth; and limb bones	„
„	2500—900 B.C.	Nath (in press)	Fragmentary limb bones	„
„	2000 B.C. to 1200 B.C.	Nath (unpublished)	Teeth . . .	„
Northern Black Polished Ware; grey ware cultures.	1100 B.C. to 300 A.D.	Nath (1955) . . .	„	„
Chalcolithic . . .	750 B.C. . .	Nath (unpublished)	Limb bones and teeth	„
Sirkap (Taxilla)	Mid-1st century B.C. to 2nd century A.D.	Nath (1959)	An astragalus .	„
Harappan . . .	2500—1500 B.C.	Prashad (1936); Nath (1962).	Teeth, fragments of lower jaw; skull and limb bones	„
„	2500—900 B.C.	Nath (in press)	Teeth & limb bones	„
„	2000—800 B.C.	„	Fragments of vertebrae	„
Chalcolithic . . .	1000 B.C. to 1st century A.D.	Nath (1957) Ancient India No. 13	3rd & 4th metatarsals	„
„	750 B.C. . .	Nath (unpublished)	Limb bones and teeth	„
Iron Age . . .	400 B.C. to 200 A.D.	Nath (unpublished)	Calcaneum & metacarpal bones	„
Sirkap (Taxilla)	Mid-1st century B.C. to 2nd century A.D.	Nath (1959)	Premaxilla & teeth	„
Stone age; Megalithic (Andhra)	1000 B.C. to 200 A.D.	Nath (1967)	Fragmentary cervical vertebrae	„

TABLE 2.—List of animal species whose remains have been found end of 1962. (For historic sites,

I.—Mammalia
II.—Aves.
III.—Reptilia.

Sl. No.	Name of species		Order	Family	Excavation
	Scientific	Common			Name, State, Country
1	2	3	4	5	6
I.—MAM-					
4.	<i>Rhinoceros unicornis</i> Linn.	The Indian one-horned Rhinoceros	Perissodactyla	Rhinocerotidae	1. Harappa, Dist. Montgomery (W. Pakistan)
	"	"	"	"	2. Lothal, Dist. Ahmadabad, Gujarat (India)
5.	<i>Bos indicus</i> Linn.	The Zebu or Domestic humped cattle of India	Artiodactyla	Bovidae	1. Mohenjodaro, Dist. Larkana (W. Pakistan)
	"	"	"	"	2. Harappa Dist. Montgomery, (W. Pakistan)
	"	"	"	"	3. Rupar, Dist. Ambala, Punjab (India)
	"	"	"	"	4. Rangpur, Gujarat (India)
	"	"	"	"	5. Lothal, Dist. Ahmadabad, Gujarat (India).
	"	"	"	"	6. Nevasa, Dist. Ahmadnagar, Maharashtra (India)
	"	"	"	"	7. Nasik, Dist. Nasik, Maharashtra (India)
		"	"	"	8. Nagda, Chambal Valley, Madhya Pradesh (India)
			"	"	9. Hastinapura, Dist. Meerut, Uttar Pradesh (India)
			"	"	10. Brahmagiri, Dist. Chitradurga, Mysore State (India)
			"	"	11. Maski, Dist. Raichur, Mysore (India)

from prehistoric sites in India and West Pakistan up to the see Table 3)—contd.

IV.—Pisces.

V.—Mollusca.

VI.—Coelenterata.

where found		Reference	Kind of remains found	Excavated by
Culture	Age			
7	8	9	10	11
MALIA—contd.				
Harappan	2500 B.C.— 1500 B.C.	Prashad (1936) ; Nath (1962).	Fragments of right scapula	Archaeological Survey of India.
„	2000 B.C.— 1200 B.C.	Nath (unpublished)	Right ramus of mandible without body	„
„	2500 B.C. to 1500 B.C.	Sewell & Guha (1931);	Teeth & fragments of mandible	„
„	„	Prashad (1936) ; Nath (1962).	Teeth, fragments of mandible ; limb bones ; scapulae ; pelvic girdle & ribs	„
„	2500 B.C.—900 B.C.	Nath (in press)	Skull ; mandibles appendicular and axial skeleton	„
„	2000 B.C.—800 B.C.	Nath (in press)	Skull, mandibles appendicular and axial skeleton	„
„	2000 B.C. to 1200 B.C.	Nath (unpublished)	Axial and appendicular bones and skull parts	„
„	1500 B.C. to 1000 B.C.	Eapen (1960)	Limb and jaw bones	Dept. of Archaeology and Ancient History, Deccan College, Poona.
Chalcolithic	1500 B.C.—500 B.C.	George (1955)	Limb and jaw bones	„
„	1500 B.C.—200 B.C.	Nath (in press)	Pelvis, scapula, ribs, mandibles and teeth	Archaeological Survey of India.
Northern Black Polished ware ; and greyware cultures	1100 B.C. to 3rd Century A.D.	Nath (1955)	Ribs, vertebrae, limb bones, mandible and teeth	
Stone age, Megalithic (Andhra)	1000 B.C.—200 B.C.	Nath (1967)	Ribs, vertebrae, limb bones and teeth	
Chalcolithic	1000 B.C. to 1st century A.D.	Nath (1959)	Vertebrae teeth, scapula and limb bones	

TABLE 2.—List of animal species whose remains have been found end of 1962. (For historic sites,

I.—Mammalia.

II.—Aves.

III.—Reptilia.

Sl. No.	Name of species		Order	Family	Excavation
	Scientific	Common			Name, State, Country
1	2	3	4	5	6

5.—contd.

I.—MAM-

	<i>Bos indicus</i> Linn.	The zebu or Domestic humped cattle of India.	Artiodactyla	Bovidae	12. Nagarjunakonda, Dist. Guntur, Andhra Pradesh (India)
	"	"	"	"	"
	"	"	"	"	13. Ujjain, Chambal Valley, Madhya Pradesh (India)
	"	"	"	"	14. Jaugada, Dist. Ganjam, Orissa (India)
	"	"	"	"	15. Taxilla, Dist. Rawalpindi, (W. Pakistan)
6.	<i>Bubalus bubalis</i> (Linn.)	Indian Domestic Buffalo	"	"	1. Mohenjodaro, Dist. Larkana, (W. Pakistan)
	"	"	"	"	2. Harappa, Dist. Montgomery (W. Pakistan)
	"	"	"	"	3. Rupar, Dist. Ambala, E. Punjab (India)
	"	"	"	"	4. Rangpur, Gujarat (India)
	"	"	"	"	5. Lothal, Ahmadabad, Gujarat (India)
	"	"	"	"	6. Nasik, Dist. Nasik, Maharashtra (India)
	"	"	"	"	7. Nagda, Chambal Valley, Madhya Pradesh (India)
	"	"	"	"	8. Hastinapura, Dist. Meerut, Uttar Pradesh (India)

from prehistoric sites in India and West Pakistan up to the see Table 3)—*contd.*

IV.—Pisces.

V.—Mollusca.

VI.—Coelenterata.

where found		Reference	Kind of remains found	Excavated by
Culture	Age			
7	8	9	10	11
MALIA—<i>contd.</i>				
Neolithic	1200 B.C. to 600 B.C.	Nath (unpublished)	Axial area appendicular bones and skull parts	Archaeological Survey of India.
Megalithic	200 B.C. to Mid 1st century A.D.	"	"	"
Chalcolithic	750 B.C.	"	"	"
Iron age	400 B.C. to 200 A.D.	Nath (unpublished)	Ribs, limb bones, skull, teeth and mandible	"
Sirkap (Taxilla)	Mid-1st century B.C. to 2nd century A.D.	Nath (1959)	Limb bones, teeth and vertebrae	"
Harappan	2500 B.C.—1500 B.C.	Sewell & Guha (1931)	Teeth, remains of mandibles and humerus	"
"	"	Prashad (1936) Nath (1962).	Teeth, lower jaw, vertebrae and limb bones	"
"	2500 B.C.—900 B.C.	Nath (in press)	"	"
"	2000 B.C.—800 B.C.	Nath (in press)	Teeth, vertebrae and limb bones	"
"	2000 B.C. to 1200 B.C.	Nath (unpublished)	Appendicular and axial bones and skull	"
Chalcolithic	1500 B.C. to 500 B.C.	George (1955)	Limb bones and jaw bones	Dept. of Archaeology and Ancient History, Deccan College, Poona.
"	1500 B.C. to 200 B.C.	Nath (in press)	Lower jaw and limb bones	Archaeological Survey of India.
Northern Black Polished Ware culture : and grey ; alt. re. ware culture.	1100 B.C. to 3rd century A.D.	Nath (1955)	Teeth and limb bones	"

TABLE 2.—List of animal species whose remains have been found
end of 1962. (For historic sites,

I.—Mammalia.

II.—Aves.

III.—Reptilia.

Sl. No.	Name of species		Order	Family	Excavation
	Scientific	Common			Name, State, Country
1	2	3	4	5	6

6 -contd.

I.—MAM-

	<i>Bubulus bubalis</i> Linn.	Indian Domes- tic Buffalo	Artiodactyla	Bovidae	9. Brahmagiri, Dist. Chitradurga, Mysore State (India)
	"	"	"	"	10. Maski, Dist. Raichur, Mysore (India)
	"	"	"	"	11. Nagarjunakonda, Dist. Guntur, Andhra Pradesh (India)
	"	"	"	"	"
	"	"	"	"	12. Ujjain, Chambal Valley, Madhya Pradesh (India)
	"	"	"	"	13. Taxilla, Dist. Rawalpindi (W. Pakistan)
	"	"	"	"	14. Jaugada, Dist. Ganjam, Orissa (India)
7.	<i>Eos gaurus</i> H. Smith.	The 'Gaur' or Indian' Bison.	"	"	1. Nagarjunakonda, Dist. Guntur, Andhra Pradesh (India)
8.	<i>Baselaphus trago- camelus</i> Pall.	Nilgai or Blue Bx	"	"	1. Lothal Dist. Ahmadabad, Gujarat (India)
	"	"	"	"	2. Nasik, Dist. Nasik, Maharashtra (India)
	"	"	"	"	3. Nagarjunakonda Dist. Guntur Andhra Pradesh (India)
9	<i>Ovis orientalis</i> <i>vignei</i> Blyth race <i>domesticus</i>	The Domestic sheep	"	"	1. Harappa Dist. Montgo- mery (W. Pakistan)

from prehistoric sites in India and West Pakistan up to the see Table 3)—*contd.*

IV.—Pisces.

V.—Mollusca.

VI.—Coelenterata.

where found		Reference	Kind of remains found	Excavated by
Culture	Age			
7	8	9	10	11
MALIA—<i>contd.</i>				
Stone age and megalithic (Andhra)	1000 B.C. to 200 A.D.	Nath (1967)	Mandible, limb bones and scapulae	Archaeological Survey of India.
Chalcolithic	1000 B.C. to 1st century A.D.	Nath (1959)	Vertebrae, teeth, scapula and limb bones	"
Neolithic	1200 B.C. to 600 B.C.	Nath (unpublished)	"	"
Megalithic	200 B.C. to Mid 1st century A.D.		"	"
Chalcolithic	750 B.C.		Appendicular and axial bones and skull	"
Sirkap (Taxilla)	Mid-1st century B. C. to 2nd century A.D.	Nath (1959)	Scapula, tibia and vertebrae	"
Iron age	400 B.C. to 200 A.D.	Nath (unpublished)	Cheek teeth and cannon bone	"
Neolithic	1200 B. C. to 600 B.C.	Nath (unpublished)	Jawe bones and teeth	"
Harappan	2000 B. C. to 1200 B. C.	"	"	"
Chalcolithic	1500-500 B.C.	George (1955)	Horn remains	Dept. of Archaeology and Ancient History, Deccan College, Poona.
Neolithic	1200 B. C. to 600 B.C	Nath (unpublished)	"	Archaeological Survey of India.
Harappan	2500-1500 B.C.	Prashad (1936) ; Nath (1962).	Skull, limb bones and horn-core	

TABLE 2.—List of animal species whose remains have been found end of 1962. (For historic sites,

I.—Mammalia.

II.—Aves.

III.—Reptilia.

Sl. No.	Name of species		Order	Family	Excavation	
	Scientific	Common			Name, State,	Country
1	2	3	4	5	6	

9.—contd.

I.—MAM.

<i>Ovis vignei</i>	<i>orientalis</i>	The Domestic	Artiodactyla	Bovidae	2. Rupar,	
race	Blyth	sheep			Dist. Ambala	
<i>domesticus</i>					Punjab (India)	
"	"	"	"	"	3. Rangpur,	
					Gujarat State,	
"	"	"	"	"	(India)	
"	"	"	"	"	4. Lothal, Dist.	
					Ahmadabad,	
"	"	"	"	"	Gujarat (India)	
"	"	"	"	"	5. Nagda	
					Chambal Valley,	
"	"	"	"	"	Madhya Pradesh	
					(India)	
"	"	"	"	"	6. Hastinapura,	
					Dist. Meerut,	
"	"	"	"	"	Uttar Pradesh	
					(India)	
"	"	"	"	"	7. Brahmagiri, Dist.	
					Chitraldurga	
"	"	"	"	"	Mysore State,	
					(India)	
"	"	"	"	"	8. Maski,	
					Dist. Raichur	
"	"	"	"	"	Mysore (India)	
"	"	"	"	"	9. Nagarjunakonda,	
					Dist. Guntur,	
"	"	"	"	"	Andhra Pradesh	
					(India)	
"	"	"	"	"		
"	"	"	"	"	10. Ujjain	
					Chambal Valley,	
"	"	"	"	"	Madhya Pradesh	
					(India)	
"	"	"	"	"	11. Jaugada	
					Dist. Ganjam	
"	"	"	"	"	Orissa (India)	

from prehistoric sites in India and West Pakistan up to the see Table 3.)—*contd.*

IV.—Pisces.

V.—Mollusca.

VI.—Coelenterata.

where found		Reference	Kind of remains found	Excavated by
Culture	Age			
7	8	9	10	11

MALIA—*contd.*

Harappan	2500,900 B. C.	Nath (in press)	Ribs, scapulae and limb bones	Archaeological Survey of India
„	2000,800 B. C.	„	Mandible limb bone, scapulae and teeth	„
„	2000 B. C. to 1200 B.C.	Nath (unpublished)	Axial appendicular and skull bones	„
Chalcolithic	1500,200 B. C.	Nath (in press)	Remains of pelvis, scapulae, mandibles and limb bones	„
Northern Polished ware culture and grey-ware cultures	1100 B. C. to 3rd century A. D.	Nath (1955)	Limb bones vertebrae and pelvis	„
Stone age and megalithic (Andhra)	1000,200 A. D.	Nath (1967)	Ribs, vertebrae mandibles and limb bones	„
Chalcolithic	1000 B. C. to 1st century A. D.	Nath (1959)	Vertebrae, limb bones and ribs	„
Neolithic	1200 B. C. to 600 B. C.	Nath (unpublished)	Axial and appendicular bones	„
Megalithic	200 B. C. to Mid 1st century A.D.	„	„	„
Chalcolithic	750 B. C.	„	Limb bones	„
Iron age	400 B. C. to 200 A. D.	„	Limb bones and pelvis	„

TABLE 2.—List of animal species whose remains have been found
end of 1962. (For historic sites,

I.—Mammalia.

II.—Aves.

III.—Reptilia.

Sl. No	Name of species		Order	Family	Excavation
	Scientific	Common			Name, State, Country
1	2	3	4	5	6
I.—MAM-					
10.	<i>Ovis</i> sp.		Artiodactylā	Bovidae	1. Mohenjodaro, Dist. Larkana (W. Pakistan)
			"	"	2. Nasik, Dist. Nasik, Maharashtra (India)
11.	<i>Tetracerus quadri- cornus</i> Blain- ville	4 horned Ante- lope	"	"	1. Ditto
12.	<i>Capra hircus aegue- grus</i> Brxleben	The Indian Do- mestic Goat	"	"	1. Harappa, Dist. Montgomery (W. Pakistan)
	"	"	"	"	2. Rupar, Dist. Ambala, E. Punjab (India)
	"	"	"	"	3. Rangpur, Gujarat (India)
	"	"	"	"	4. Lothal, Dist. Ahmadabad, Gujarat (India)
	"	"	"	"	5. Nevasa, Dist. Ahmadnagar Maharashtra (India)
	"	"	"	"	6. Nagda, Chambal valley, Madhya Pradesh (India)
	"	"	"	"	7. Hastinapura, Dist. Meerut, Uttar Pradesh (India)
	"	"	"	"	8. Brahmagiri, Dist. Chitradurga, Mysore State (India)
	"	"	"	"	9. Maski, Dist. Raichur, Mysore (India)

from prehistoric sites in India and West Pakistan up to the see Table 3.)—contd.

IV.—Pisces.

V.—Mollusca.

VI.—Coelenterata.

where found		Reference	Kind of remains found	Excavated by
Culture	Age			
7	8	9	10	11
MALIA—contd.				
Harappan	2200-1200 B.C.	Sewell & Guha (1931)	Mandible and teeth	Archaeological Survey of India
Chalcolithic	1500-200 B.C.	George (1952)	Limb bones	Dept. of Archaeology and Ancient History, Deccan College, Poona
"	"	"	Portion of lower jaw	"
Harappan	2500-1500 B.C.	Prashad (1936) ; Nath (1962)	Mandibles and limb bones	Archaeological Survey of India
"	2500-900 B.C.	Nath (in press)	Fragments of lower and upper jaws, and limb bones	"
"	2000-800 B.C.	"	Limb bones, teeth, ribs and horn cores	"
"	2000 B.C. to 1200 B.C.	Nath (unpublished)	Axial and appendicular bones and teeth	"
Chalcolithic	1500-1000 B.C.	Eapen (1960)	Lower jaw fragments	Dept. of Archaeology and Ancient History, Deccan College, Poona
"	1500-200 B.C.	Nath (in press)	Mandibles, teeth and limb bones	Archaeological Survey of India
Northern Black Polished ware and grey ware cultures	1100 B.C. to 3rd century A.D.	Nath (1955)	Lower jaw and horn	"
Stone Age and megalithic (Andhra)	1000-200 B.C.	Nath (1967)	Fragments of mandibles and humerus	Archaeological Survey of India
Chalcolithic	000 B.C. to 1st century A.D.	Nath (1959)	Fragments of lower jaw, upper jaw, teeth and vertebrae	"

TABLE 2.—List of animal species whose remains have been found end of 1962. (For historic sites.

I.—Mammalia .

II.—Aves.

III.—Reptilia.

Sl. No.	Name of species		Order	Family	Excavation	
	Scientific	Common			Name, State, Country	
1	2	3	4	5	6	
12	<i>contd.</i>				I.—MAM	
	<i>Capra hircus</i> <i>megagrus</i> Erxleben	The Indian Domes- tic Goat	Artiodactyla	Bovidae	10. Nagarjunakonda, Dist. Guntur, Andhra Pradesh (India)	
	"	"	"	"	11. Ditto	
	"	"	"	"	12. Ujjain, Chambal Valley, Madhya Pradesh (India)	
	"	"	"	"	13. Jaugada, Dist. Ganjam, Orissa (India)	
13.	<i>Capra</i> sp.	"	"	"	1. Nasik, Dist. Nasik, Maharashtra, (India)	
14.	<i>Anstulope cervicapra</i> Lins	The Black buck	"	"	1. Nagarjunakonda, Dist. Guntur, Andhra Pradesh (India)	
	"	"	"	"	2. Ujjain, Chambal Valley, Madhya Pradesh (India)	
15.	<i>Axis axis</i> Erxleben	The Spotted Deer	"	Cervidae	1. Mohenjodaro, Dist. Larkana (W. Pakistan)	
	"	"	"	"	2. Rupar, Dist. Ambala, E. Punjab, (India)	
	"	"	"	"	3. Lothal, Dist. Ahmadabad, Gujarat (India)	
	"	"	"	"	4. Nevasa, Dist. Ahmadnagar Maharashtra (India)	
	"	"	"	"	5. Nasik, Dist. Nasik, Maharashtra (India)	

from prehistoric sites in India and West Pakistan up to the see Table 3.)—contd.

IV. Pisces.

V. Mollusca.

VI.—Coelenterata.

where found		Reference	Kind of remains found	Excavated by
Culture	Age			
7	8	9	10	11
MALIA—concl'd.				
Neolithic	1200 B.C. to 600 B.C.	Nath (unpublished)	Axial and appendicular bones and teeth	Archaeological Survey of India,
Megalithic	200 B.C. to Mid-1st century A.D.	„	Limb bones and teeth	„
Chalcolithic	750 B.C.	„	Limb bones and teeth	„
Iron age	400 B.C. to 200 A.D.	„	Scapula, ribs and limb bones	„
Chalcolithic	1500-500 B.C.	George (1955)	Limb bones	Dept. of Archaeology and Ancient History, Deccan College, Poona
Neolithic	1200-600 B.C.	Nath (unpublished)	Teeth and jaw fragments	Archaeological Survey of India
Chalcolithic	750 B.C.	„	Fragments of antlers & jaws	„
Harappan	2500-1500 B.C.	Sewell & Guha (1931)	Base of antler shed	„
„	2500—900 B.C.	Nath (in press)	Antler fragments	„
„	2000-1200 B.C.	Nath (unpublished)	Antler fragments and cannon bones	„
Chalcolithic	1500 1000 B.C.	Eapen (1960)	Antler fragments	Dept. of Archaeology & Ancient History, Deccan College, Poona
„	1500-500 B.C.	George (1955)		„

TABLE 2.—List of animal species whose remains have been found
end of 1962. (For historic sites

I.—Mammalia.

II.—Aves.

III.—Reptilia.

Sl. No.	Name of species		Order	Family	Excavation	
	Scientific	Common			Name, State, Country	
1	2	3	4	5	6	
15.—contd.						
	<i>Axis axis</i> Bralehen	The spotted Deer	Artiodactyla	Cervidae	6. Brahmagiri, Dist. Chitradurga, Mysore State (India)	
	"	"	"	"	7. Nagarjunakonda, Dist. Guntur, Andhra Pradesh (India)	
	"	"	"	"	8. Ujjain, Chambal Valley, Madhya Pradesh (India)	
	"	"	"	"	9. Jaugada, Dist. Ganjam, Orissa (India)	
16.	<i>Cervus elaphus</i> <i>hanglu</i> , Wagner (= <i>cervus cash-</i> <i>merianus</i>)	The Kashmir Stag or Han- gul or Red Deer	"	"	1. Mohenjodaro, Dist. Larkana, (W. Pakistan)	
17.	<i>Cervus unicolor</i> Kerr.	The Sambar	"	"	1. Mohenjodaro, Dist. Larkana, (W. Pakistan)	
	"	"	"	"	2. Lothal, Dist. Ahmadabad, Gujarat (India)	
	"	"	"	"	3. Nasik, Dist. Nasik, Maharashtra (India)	
	"	"	"	"	4. Nagda, Chambal Valley, Madhya Pradesh (India)	
	"	"	"	"	5. Nagarjunakonda, Dist. Guntur, Andhra Pradesh (India)	
18.	<i>Cervus porcinus</i> Zimmermann	The Hog Deer	"	"	1. Mohenjodaro, Dist. Larkana, (W. Pakistan)	

from prehistoric sites in India and West Pakistan up to the see Table 3.)—contd.

IV.—Pisces.

V.—Mollusca.

VI.—Coelenterata.

where found		Reference	Kind of remains found	Excavate by	
Culture	Age				
7	8	9	10	11	
Stone Age, and megalithic (Andhra)	1000-200 A.D	Nath (in press)	Antler fragments	Archaeological Survey of India	Sur-
Neolithic	1200-600 B.C.	Nath (unpublished)	Antler fragments and cannon bone	"	
Chalcolithic	750 B.C.	"	"	"	
Iron Age	400 B.C. to 200 A.D.	Nath (unpublished)	Antler fragments	"	
Harappan	2500-1500 B.C.	Sewell & Guha (1931)	Parts of antlers	"	
"	2500-1500 B.C.	"	"	"	
"	2000-1200 B.C.	Nath (unpublished)	Antler fragments	"	
Chalcolithic	1500-500 B.C.	George (1955)	Molar teeth and incisor teeth of lower jaw	Dept. of Archaeology and Ancient History, Deccan College, Poona	
"	1500-200 B.C.	Nath (in press)	Parts of patella, antlers and phalanx	Archaeological Survey of India	Sur-
Neolithic	1200-600 B.C.	Nath (unpublished)	Antler fragments	"	
Harappan	2500-1500 B.C.	Sewell & Guha (1931)	"	"	

TABLE 2.—List of animal species whose remains have been found
end of 1962. (For historic sites,

I.—Mammalia.

II.—Aves.

III.—Reptilia.

Sl. No.	Name of species		Order	Family	Excavations	
	Scientific	Common			Name, State, Country	
1	2	3	4	5	6	
19.	<i>Cervus</i>					
	<i>duvauceli</i>	The Barasingha	Artiodactyla	Cervidae	1. Harappa, Dist. Montgomery, (W. Pakistan)	
	"	"	"	"	2. Rangpur, Gujarat (India)	
	"	"	"	"	3. Nevasa, Dist. Ahmadnagar, Maharashtra (India)	
	"	"	"	"	4. Nagda, Chambal Valley, Madhya Pradesh (India)	
	"	"	"	"	5. Hastinapura, Dist. Meerut, Uttar Pradesh (India)	
	"	"	"	"	6. Nagarjunakonda, Dist. Guntur, Andhra Pradesh (India)	
20.	<i>Sus scrofa</i>	The Indian Boar	"	Suidae	1. Mohenjodaro Dist. Larkana, (W. Pakistan)	
	<i>cristatus</i>		"	"	2. Harappa, Dist. Montgomery, (W. Pakistan)	
	Wagner		"	"	3. Rupar, Dist. Ambala, E. Pun- jab (India)	
	"	"	"	"	4. Rangpur, Guja- rat (India)	
	"	"	"	"	5. Lothal, Dist. Ahmad abad, Gujarat (India)	
	"	"	"	"	6. Nasik, Dist. Nasik, Maharastra (India)	
	"	"	"	"	7. Nagda, Chambal Valley, Madhya Pradesh (India)	

from prehistoric sites in India and West Pakistan up to the see Table 3.)—contd.

IV.—Pisces.

V.—Mollusca.

VI.—Coelenterata.

where found		Reference	Kind of remains found	Excavated by
Culture	Age			
7	8	9	10	11
Harappan	2500-1500 B.C.	Prashad (1936) ; Nath (1962)	Antler fragments	Archaeological Survey of India
"	2000-800 B.C.	Nath (in press)	"	"
Chalcolithic	1500-1000 B.C.	Eapen (1960)	"	Dept. of Archaeo- logy and Ancient History, Deccan College, Poona
"	1500-200 B.C.	Nath (in press)	"	Archaeological Sur- vey of India
Northern Black Polished ware and grey ware culture	1100 B.C. to 3rd century A.D.	Nath (1955)	"	"
Neolithic	1200—600 B.C.	Nath (unpublished)	"	"
Harappan	2500-1500 B.C.	Sewell & Guha (1931)	Tusk, mandible and teeth	"
"	"	Prashad (1936) ; Nath (1962)	Teeth, mandible and limb bones	"
"	2500-900 B.C.	Nath (in press)	"	"
"	2000-800 B.C.	"	Mandibles, teeth, upper jaw and limb bones	"
"	2000-1200 B.C.	Nath (unpublished)	Limb bones jaw and teeth	"
Chalcolithic	1500-500 B.C.	George (1955)	Upper jaw and teeth	Dept. of Archaeo- logy and Ancient History, Deccan College, Poona
"	1500-200 B.C.	Nath (in press)	Scapula	Archaeological Survey of India

TABLE 2.—List of animal species whose remains have been found
end of 1962. (For historic sites,

I.—Mammalia.

II.—Aves.

III.—Reptilia.

Sl. No.	Name of species		Order	Family	Excavation	
	Scientific	Common			Name, State, Country	
1	2	3	4	5	6	
20.—contd.						
	<i>Sus scrofa cristatus</i> Wagner	The Indian Boar	Artiodactyla	Suidae	8. Hastinapura, Dist. Meerut, Uttar Pradesh (India)	
	"	"	"	"	9. Brahmagari Dist. Chitradurga, Mysore State (India)	
	"	"	"	"	10. Nagarjunakonda, Dist. Guntur, Andhra Pradesh (India)	
	"	"	"	"	11. Ujjain, Chambal Valley, Madhya Pradesh (India)	
	"	"	"	"	12. Jaugada, Dist. Ganjam, Orissa (India)	
	"	"	"	"	13. Taxilla, Dist. Rawalpindi (W. Pakistan)	
21.	<i>Camelus ? dromedarius ?</i> Linn.	The one humped camel	"	Camelidae	1. Mohenjodaro, Dist. Larkana, (W. Pakistan)	
	"	"	"	"	2. Harappa, Dist. Montgomery, (W. Pakistan)	
22.	<i>Elephas maximus</i> Linn.	The Indian Elephant	Proboscidea	Elephantidae	1. Mohenjodaro, Dist. Larkana, (W. Pakistan)	
	"	"	"	"	2. Harappa, Dist. Montgomery, (W. Pakistan)	
	"	"	"	"	3. Rupar, Dist. Ambala, E. Punjab (India)	
	"	"	"	"	4. Lothal, Dist. Ahmadabad, Gujarat (India)	
	"	"	"	"	5. Nagda, Chambal Valley, Madhya Pradesh (India)	

from prehistoric sites in India and West Pakistan up to the see Table 3.)—contd.

IV.—Pisces.

V.—Mollusca.

VI.—Coelenterata.

where found		Reference	Kind of remains found	Excavated by
Culture	Age			
7	8	9	10	11
Northern Black Polished Ware ; and greyware cultures	1100 B.C. to 3rd century A.D.	Nath (1955)	Upper jaw, teeth, scapulae and limb bones	Archaeological Survey of Ind
Stone Age, and megalithic (Andhra)	1000-200 A.D.	Nath (1967)	Upper jaw and 3rd metatarsal	„
Megalithic	200 B.C. to Mid 1st century A.D.	Nath (unpublished)	Limb bones and teeth	„
Chalcolithic	750 B.C.	„	Limb bones	„
Iron Age	400 B.C. to 200 A.D.	„	Limb bones and teeth	„
Sirkap (Taxilla)	Mid-1st century B.C. to 2nd century A.D.	Nath (1959)	Lower jaw and teeth	„
Harappan	2500-1500 B.C.	Sewell & Guha (1931)	Scapula	„
„	„	Prashad (1936) ; Nath (1962)	Scapula radioulna Cannon bone	„
„	„	Sewell & Guha (1931)	Caput of femur and tips of small tusks	„
„	„	Prashad (1936) ; Nath (1962)	Radius, femur and tibia	„
„	2500-900 B.C.	Nath (in press)	Pelvis and teeth	„
„	2000-1200 B.C.	Nath (unpublished)	Limb bones	„
Chalcolithic	1500-200 B.C.	Nath (in press)	Fragments of tusks	„

TABLE 2.—List of animal species whose remains have been found
end of 1962. (For historic sites,

I.—Mammalia.

II.—Aves.

III.—Reptilia.

Sl. No.	Name of species		Order	Family	Excavation	
	Scientific	Common			Name, State, Country	
1	2	3	4	5	6	
22.—contd.						
	<i>Elephas maximus</i> Linn.	The Indian Elephant	Proboscidea	Elephantidae	6. Hastinapura, Dist. Meerut, Uttar Pradesh (India)	
	"	"	"	"	7. Ujiain, Chambal Valley, Madhya Pradesh (India)	
23.	<i>Semnopithecus</i> sp.	The common Langur	Primates	Colobidae	1. Nasik, Dist. Nasik, Maharash- tra (India)	
24.	<i>Canis familiaris</i> Linn.	The Domestic Dog	Carnivora	Canidae	1. Mohenjodaro, Dist. Larkana, Sind (W. Pakistan)	
	"	"	"	"	2. Rupa, Dist. Ambala, E. Punjab (India)	
	"	"	"	"	3. Rangpur, Gujarat (India)	
	"	"	"	"	4. Lothal, Dist. Ahmadabad, Gujarat (India)	
	"	"	"	"	5. Brahmagiri, Dist. Chitradurga, Mysore State (India)	
	"	"	"	"	6. Jaugada, Dist. Ganjam, Orissa (India)	
25.	<i>Canis aureus</i> <i>indicus</i> Hodgson	The Indian Jackal	"	"	1. Harappa, Dist. Montgomery, (W. Pakistan)	
26s	<i>Canis tenggeranus</i> Kohlbrugge race. <i>harappensis</i> Prasad	The Harappa Dog	"	"	1. "	
27.	<i>Canis lupus</i> <i>pallipes</i> Sykes	The Indian Wolf	"	"	1. "	

from prehistoric sites in India and West Pakistan up to the see Table 3.)—contd.

IV.—Pisces.

V.—Mollusca.

VI.—Coelenterata.

where found		Reference	Kind of remains found	Excavated by
Culture	Age			
7	8	9	10	11
Northern Black Polished ware, and Grey-ware cultures	1100 B.C. to 3rd century A.D.	Nath (1955)	Tips of tusks and pisiform bone	Archaeological Survey of India
Chalcolithic	750 B.C.	Nath (unpublished)	Limb bones & teeth	„
„	1500-500 B.C.	George (1955)	Left upper jaw	Dept. of Archaeology and Ancient History, Deccan College, Poona
Harappan	2500-1500 B.C.	Sewell & Guha (1931)	Parts of skull and mandible	Archaeological Survey of India
„	2500-900 B.C.	Nath (in press)	Parts of mandibles, limb bones, pelvis, scapula and vertebrae	„
„	2000-800 B.C.	„	Parts of mandibles	„
„	2000-1200 B.C.	„	Limb bones	„
Stone Age, and megalithic (Andhra)	1000-200 B.C.	Nath (1967)	Mandible with teeth	„
Iron Age	400 B.C. to 200 A.D.	„	Parts of mandibles, teeth and metacarpals	„
Harappan	2500-1500 B.C.	Prashad (1936) ; Nath (1962)	Parts of mandible and humerus	„
„	„	„	Skull and mandible	„
„	„	„	Skull, mandible, vertebrae teeth and limb bones	„

TABLE 2.—List of animal species whose remains have been found
end of 1962. (For historic sites,

I.—Mammalia.

II.—Aves.

III.—Reptilia.

Sl. No.	Name of species		Order	Family	Excavation
	Scientific	Common			Name, State, Country
1	2	3	4	5	6
28.	<i>Canis aureus</i> Linn.	The Asiatic Jackal	Carniyora	Canidae	1. Harappa, Dist. Montgomery, (W. Pakistan)
	"	"			2. Lothal, Dist. Ahmadabad, Gujarat (India)
29.	<i>Felis ochreata</i> Gmelin race.	The Domestic Cat	"	Felidae	1. Harappa, Dist. Montgomery (W. Pakistan)
	<i>domestica</i> Brisson	"			2. Nagda, Chambal Valley, Madhya Pradesh (India)
30.	<i>Herpestes auro-punctatus</i> , Hodgson	The Small Indian Mon-goose	"	Viverridae	1. Mohenjodaro, Dist. Larkana (W. Pakistan)
	"	"			2. Harappa, Dist. Montgomery, (W. Pakistan)
	"	"			3. Lothal, Dist. Ahmadabad, Gujarat (India)
	"	"			4. Ujjain, Chambal Valley, Madhya Pradesh (India)
31.	<i>Rattus</i> Linn.	The common Indian Rat	Rodentia	Muridae	1. Mohenjodaro, Dist. Larkana, (W. Pakistan)
	"	"			2. Harappa, Dist. Montgomery, (W. Pakistan)
	"	"			3. Lothal, Dist. Ahmadabad, Gujarat (India)
	"	"			4. Nasik, Dist. Maharashtra (India)
	"	"			5. Nevasa, Dist. Ahmadnagar, Maharashtra (India)

from prehistoric sites in India and West Pakistan up to the see Table 3.)—*contd.*

IV.—Pisces.

V.—Mollusca.

VI.—Coelenterata.

where found		Referencee	Kind of remains found	Excavated by
Culture	Age			
7	8	9	10	11
Harappan	2500-1500 B.C.	Prashad (1936); Nath (1932)	Limb bones, teeth mandible and pelvis	Archaeological Sur- vey of India
"	2000 B.C. to 1200 B.C.	Nath (unpublished)	Limb bones	"
Harappan	2500-1500 B.C.	Prashad (1936); Nath (1962)	Parts of skull	"
Chalcolithic	1500-200 B.C.	Nath (in press)	Right complete hu- merus	"
Harappan	2500-1500 B.C.	Sewell and Guha (1931)	Almost complete skull (complete- ly burnt)	"
"	"	Prashad (1936); Nath (1962)	Skull, mandibles, pelvic and pecto- ral girdles verte- brae, tibia and humerus	"
"	2000—1,200 B.C.	Nath (unpublished)	Lower jaw	"
Chalcolithic	750 B.C.	"	Skull and mandible	"
Harappan	2000- 1500 B.C.	Sewell and Guha (1931)	Mandible with teeth	"
"	"	Prashad (1936); Nath (1962)	Femur, tibia, man- dible and verte- brae	"
"	2000-1200 B.C.	Nath (unpublished)	Limb bones	"
Chalcolithic	1500-500 B.C.	George (1955)	Limb bones	Dept. of Archaeolo- gy and Ancient History, Deccan College, Poon
"	1500-1000 B.C.	Eapen (1960)	Left lower jaw and limb bones	"

TABLE 2.—List of animal species whose remains have been found
end of 1962. (For historic sites,

I.—Mammalia.

II.—Aves.

III.—Reptilia.

Sl. No.	Name of species		Order	Family	Excavation	
	Scientific	Common			Name, State, Country	
1	2	3	4	5	6	
31.—contd.						
	<i>Rattus</i> Linn.	<i>rattus</i> The common Indian Rat	Rodentia	Muridae	6. Maski, Raichur, Andhra Pradesh (India)	Dist.
32.	<i>Tatera indica</i> , Hardwicke	The Indian Ger- bille or Ante- lope Rat	"	"	1. Harappa, Dist. Montgomery, (W. Pakistan)	
33.	<i>Bandicota bengalensis</i> , Gray and Hardwicke	Lesser Bandi- coot Rat (Indian Mole rat)	"	"	1. Rupar, Dist. Ambala, E. Pun- jab (India)	Dist.
34.	<i>Crocidura bidiana</i> Anderson = <i>Suncus stoliczkanus</i> , An- derson	The shrew	Insectivora	Soricidae	1. Mohenjodaro, Dist. Larkana (W. Pakistan)	
35.	<i>Lepus nigricollis</i> <i>dayanus</i> Blanford	The Indian Hare	Lagomorpha	Leporidae	1. Mohenjodaro, Dist. Larkana (W. Pakistan)	
36.	<i>Lepus nigricollis</i> <i>ruficaudatus</i> F. Cuv.	The Rabbit	"	"	1. Brahmagiri, Dist. - Chitradurga, Mys- ore State (India)	
	"	"	"		2. Lothal, Dist.] Ahmadabad, Gujarat (India)	Dist.]

from prehistoric sites in India and West Pakistan up to the see Table 3).—contd.

IV.—Pisces.

V.—Mollusca.

VI.—Coelenterata.

where found		Reference	Kind of remains found	Excavated by
Culture	Age			
7	8	9	10	11
Chalcolithic	1000 B.C. to 1st century A.D.	Nath (1959)	Pelvis and femur	Archaeological Survey of India
Harappan	2500—1500 B.C.	Prashad (1936) ; Nath (1962)	A complete skull and remains of mandible and femur	"
"	2500—900 B.C.	Nath (in press)	Upper jaw, lower jaw teeth and femur	"
"	2500—1500 B.C.	Sewell and Guha (1931)	A complete skull (except tympanic bullae)	"
"	"	"	Skull, mandible limb bones vertebrae, pelvis and pectoral girdles	"
Stone Age and megalithic (Andhra)	1000—200 A.D.	Nath (1967)	Tibia, humerus and mandible with teeth	"
Harappan	2000 B.C. to 1200 B.C.	Nath (unpublished)	Limb bones	"

TABLE 2.—List of animal species whose remains have been found end of 1962. (For historic sites,

I.—Mammalia.

II.—Aves.

III.—Reptilia.

Sl. No.	Name of species		Order	Family	Excavation	
	Scientific	Common			Name, State, Country	
1	2	3	4	5	6	
II—						
1.	<i>Gallus</i> sp.	The Domestic fowl	Galliformes	Phasianidae	1. Mohenjodaro, Dist. Larkana (W. Pakistan)	
	<i>Gallus</i> sp.	"	"	"	2. Harappa, Dist. Montgomery (W. Pakistan)	
	"	"	"	"	3. Rupar, Dist. Ambala, E. Punjab (India)	
	"	"	"	"	4. Lothal, Ahmadabad, Gujarat (India)	
	"	"	"	"	5. Brahmagiri, Dist. Chitradurga, Mysore State (India)	
	"	"	"	"	6. Jaugada, Dist. Ganjam, Orissa (India)	
2.	<i>Francolinus fran-</i> <i>colinus</i> (Linn.)	The Black Part- ridge	"	"	1. Rupar, Dist. Ambala, E. Punjab (India)	
III.—REP—						
1.	<i>Varanus</i> sp.	Monitor Lizard	Squamata	Varanidae	1. Mohenjodaro, Dist. Larkana, (W. Pakistan)	
2.	<i>Varanus griseus</i> (Daudin)	The Desert Monitor	"	"	1. Rupar, Dist. Ambala, E. Punjab (India)	
3.	<i>Gavialis gangeticus</i> (Gmelin)	" The Gharial" Fish eating crocodile	Loricata	Crocodylidae	1. Mohenjodaro, Dist. Larkana (W. Pakistan)	
			"	"	2. Harappa, Dist. Montgomery (W. Pakistan)	
4.	<i>Crocodylus palustris</i> Lesson	The Muggar or Great Indian Crocodile	Crocodylia	"	1. Nagda, Chambal Valley, Madhya Pradesh (India)	
5.	<i>Geoclemys hamiltoni</i>	The fresh water	Chelonia	Emydidae	1. Harappa, Dist. Montgomery (W. Pakistan)	

from prehistoric sites in India and West Pakistan up to the see Table 3)—contd.

IV.—Pisces.

V.—Mollusca.

VI.—Coelenterata.

where found		Reference	Kind of remains found	Excavated by
Culture	Age			
7	8	9	10	11

AVES

Harappan	2500—1500 B.C.	Sewell and Guha (1931)	Humerus, femur, skull and tarsometatarsus	Archaeological Survey of India
"	"	Prashad (1936); Nath (1962)	Humerus and femur	"
"	2500—900 B.C.	Nath (in press)	Right humerus complete left ulna and incomplete left radius	"
"	2000—1200 B.C.	Nath (unpublished)	Limb bones	"
Stone Age, and megalithic (Andhra)	1000—200 A.D.	Nath (1967)	Tarsometatarsus fragments	"
Iron Age	400 B.C. to 200 A.D.	Nath (unpublished)	Right metatarsus	"
Harappan	2500—900 B.C.	Nath (in press)	Left tarsometatarsus	"

TILIA

Harappan	2500—1500 B.C.	Sewell and Guha (1931)	A caudal vertebra	Archaeological Survey of India
"	2500—900 B.C.	Nath (in press)	Skull fragments, mandible fragments and vertebrae	"
"	2500—1500 B.C.	Sewell and Guha (1931)	Skull vertebrae and tooth	"
"	"	Prashad (1936); Nath (1962)	Scute	"
Chalcolithic	1500—200 B.C.	Nath (in press)	A fragmentary piece of lower jaw	"
Harappan	500—1500 B.C.	Prashad (1936); Nath (1962)	Parts of plastron	"

TABLE 2.—List of animal species whose remains have been found end of 1962. (For historic sites,

1.—Mammalia.

II.—Aves.

III.—Reptilia.

Sl. No.	Name of Species		Order	Family	Excavation	
	Scientific	Common			Name, State, Country	
1	2	3	4	5	6	
6.	<i>Kachuga Gray tectum</i> forma typica.	The fresh water Tortoise	Chelonia	Emydidae	1. Harappa, Dist. Montgomery (W. Pakistan)	
	<i>Trionyx gangetis</i> Cuv.	The fresh water Turtle	"	Trionychidae	1. "	
	"	"	"	"	2. "	
	"	"	"	"	3. Rupa, Dist. Ambala, E. Punjab (India)	
	"	"	"	"	4. Nagda, Chambal Valley, Madhya Pradesh (India)	
	"	"	"	"	5. Hastinapura, Dist. Meerut, Uttar Pradesh (India)	
	"	"	"	"	6. Jaugada, Dist. Ganjam, Orissa (India)	
6.	<i>Trionyx</i> sp.	"	"	"	1. Nasik, Dist. Maharashtra (India)	
9.	<i>Chitra indica</i> (Gray).	The Soft shelled River Turtle	Chelonia	Trionychidae	1. Mohenjodaro, Dist. Larkana, (W. Pakistan)	
	"	"	"	"	2. Harappa, Dist. Montgomery (W. Pakistan)	
	"	"	"	"	3. Rupa, Dist. Ambala, E. Punjab (India)	
	"	"	"	"	4. Rangpur, Gujarat (India)	
	"	"	"	"	5. Lothal, Dist. Ahmadabad, Gujarat (India)	
	"	"	"	"	6. Hastinapura, Dist. Meerut, Uttar Pradesh (India)	

from prehistoric sites in India and West Pakistan up to the see Table 3).—contd.

IV.—Pisces.

V.—Mollusca.

VI.—Coelenterata.

where found		Reference	Kind of remains found	Excavated by
Culture	Age			
7	8	9	10	11
Harappan	2500—1500 B.C.	Prashad (1936); Nath (1962)	Fragments of car- pace and plastron	Archaeological Survey of India
"	"	"	Remains of femur and Hypo and xiphiplastron	"
"	"	"	Remains of Xiph and hypoplastron	"
"	2500—900 B.C.	Nath (in press)	Fragments of plas- tron	"
Chalcolithic	1500—200 B.C.	"	"	"
Northern Black Polished ware; and greyware cultures	1100 B.C. to 3rd century A.D.	Nath (1955)	Fragments of hypo- plastron	"
Iron Age	400 B.C. to 200 A.D.	Nath (Unpublished)	Fragments of plas- tron	"
Chalcolithic	1500—500 B.C.	George (1955)	"	Dept. of Archaeo- logy and Ancien History, Decca College, Poona
Harappan	2500—1500 B.C.	Sewell and Guha (1931)	Ribs and parts of hypoplastron	Archaeological Sur- vey of India.
"	"	Prashad (1936); Nath (1962)	"	"
"	2500—900 B.C.	Nath (in press)	Fragments of carapace	"
"	2000—800 B.C.	"	Fragments of Epi- plastron	"
"	2000—1200 B.C.	Nath (Unpublished)	"	"
Northern Black Polished ware; and greyware cultures	1100 B.C. to 3rd century A.D.	Nath (1955)	Fragments of hypo- plastron and car pace	"

TABLE 2.—List of animal species whose remains have been found
end of 1962. (For historic sites,

I.—Mammalia.

II.—Aves.

III.—Reptilia.

Sl. No.	[Name of species		Order	Family	Excavation
	Scientific	Common			Name, State, Country
1	2	3	4	5	6
9.—Contd.					
	<i>Chitra indica</i> (Gray)	The Soft shelled River Turtle	Chelonia	Trionychidae	7. Nagda, Chambal Valley, Madhya Pradesh (India)
	"	"	"	"	8. Nevasa, Dist. Ahmadnagar, Maharashtra (India)
10.	<i>Elsemyis punctata</i> (Bonnaterre)	Pond Turtle	Chelonia	Trionychidae	1. Mohenjodaro, Dist. Larkana, (W. Pakistan)
	"	"	"	"	2. Harappa, Dist. Montgomery (W. Pakistan)
	"	"	"	"	3. Nagda, Chambal Valley, Madhya Pradesh (India)
	"	"	"	"	4. Hastinapura, Dist. Meerut, Uttar Pradesh (India)
	"	"	"	"	5. Jaugada, Dist. Ganjam, Orissa (India)
11.	<i>Testudo elegans</i> Schreppf	The common Land tortoise	"	Testudinidae	1. Mohenjodaro, Dist. Larkana, (W. Pakistan)
	"	"	"	"	2. Harappa, Dist. Montgomery (W. Pakistan)
12.	<i>Batagur</i> (Gray)	<i>buska</i> A River turtle	Chelonia	Testudinidae	1. Mohenjodaro, Dist. Larkana, (W. Pakistan)
	"	"	"	"	2. Harappa, Dist. Montgomery, (W. Pakistan)

IV.—PI-

1. Teleostean fish	A bony River fish	Teleostei	1. Harappa, Dist. Montgomery (W. Pakistan)

from prehistoric sites in India and West Pakistan up to the see Table 3).—*contd.*

IV.—Pisces.

V.—Mollusca.

VI.—Coelenterata.

where found		Reference	Kind of remains found	Excavated by
Culture	Age			
7	8	9	10	11
Chalcolithic	1500—200 B.C.	Nath (in press)	A fragment of hypoplastron	Archaeological Survey of India
"	1500—1000 B.C.	Eapen (1960)	Fragments of hypoplastron	Dept. of Archaeology and Ancient History, Deccan College, Poona
Harappan	2500—1500 B.C.	Sewell and Guha (1931)	Fragments of Xiphi and epiplastron	Archaeological Survey of India
"	"	Prashad (1936); Nath (1962)	Left epiplastron	"
Chalcolithic	1500—200 B.C.	"	Fragments of epiplastron	"
Northern Black Polished ware : and greywares.	1100 B.C. to 3rd century A.D.	Nath (1955)	Fragments of epiplastron	"
Iron Age	400 B.C. to 200 A.D.	Nath (unpublished)	Fragments of left epiplastron and carapace	"
Harappan	2500—1500 B.C.	Sewell and Guha (1931)	Plastron and part of carapace	"
"	"	Prashad (1936); Nath (1962)	Fragments of carapace and plastron	"
Harappan	2500—1500 B.C.	Sewell and Guha (1931)	Part of plastron	"
"	"	Prashad (1936); Nath (1962)	Fragment of plastron	"
SCES				
Harappan	"	"	Vertebral and dorsal spine	"

TABLE 2.—List of animal species whose remains have been found
end of 1962. (For historic sites,

I.—Mammalia.

II.—Aves.

III.—Reptilia.

Sl. No.	Name of species		Order	Family	Excavation
	Scientific	Common			Name, State, Country
1	2	3	4	5	6
1.—contd.					
	Teleostean fish	A bony River fish	Teleostei	—	2. Hastinapura, Dist. Meerut, Uttar Pradesh (India)
2.	<i>Rita ? rita</i> (Ham.- Buch.)	River fish	"	Bagridae	1. Mohenjodaro, Dist. Larkana (W. Pakistan)
	<i>Rita rita</i> (Ham.- Buch.)	"	"	"	2. Harappa, Dist. Montgomery (W. Pakistan)
3.	<i>Waliago</i> sp.	"	"	Siluridae	1. Mohenjodaro, Dist. Larkana (W. Pakistan)
4.	<i>Arius</i> sp.	Estuarine fish	"	Ariidae	1. "
5.	Carp fish	"	"	"	1. "

V—MOL-

1.	<i>Lamellidens marginalis</i> Lamarck	The Fresh water mussel	Bivalvia	Unionidae	1. Mohenjodaro, Dist. Larkana (W. Pakistan)
	"	"	"	"	2. Harappa Dist. Montgo- mery (W. Pakistan)
	<i>Indostata</i>	"	"	"	3. Nevasa, Dist. Ahmad- nagar, Maharashtra (India)
	"	"	"	"	4. Nagda, Chambal Valley, Madhya Pradesh (India)
2.	<i>Indonania caerulea</i> Lea	"	"	"	1. Nevasa, Dist. Ahmad- nagar, Maharashtra (India)
3.	<i>Potomd corrugata</i> Mullet	"	"	"	"

from prehistoric sites in India and West Pakistan up to the see Table 3).—contd.

IV.—Pisces.

V.—Mollusca.

VI.—Coelenterata.

where found		Reference	Kind of remains found	Excavated by
Culture	Age			
7	8	9	10	11
Northern Black Polished ware ; and greyware cultures	1100 B.C. to 3rd century A.D.	Nath (1955)	One vertebra	Archaeological Survey of India
Harappan	2500—1500 B.C.	Sewell and Guha (1931)	Portions of pectoral spine and cubito humeral process	"
"	"	Prashad (1936) ; Nath (1962)	Dorsal spine and pectoral spine	"
"	"	Sewell and Guha (1931)	Portions of supra clavicle	"
"	2500—1500 B. C.	Sewell and Guha (1931)	Pectoral spine	"
"	"	"	Basioccipital bone	"
LUSCA				
Harappan	"	"	Several shells (including a pair)	"
"	"	Prashad (1936) ; Nath (1962)	Fragment of right and left valve and shells	"
Chalcolithic	1500 — 1000 B. C.	Ray (1960)	Shell fragments	Dept. of Archaeology and Ancient History, Deccan College, Poona
"	1500 — 200 B. C.	Nath (in press)	A shell fragment	Archaeological Survey of India
Chalcolithic	1500 — 1000 B. C.	Ray (1960)	Shell fragments	Dept. of Archaeology and Ancient History, Deccan College, Poona.
"	"	"	"	"

TABLE 2.—List of animal species whose remains have been found
end of 1962. (For historic sites;

I.—Mammalia.

II.—Aves.

III.—Reptilia.

Sl. N o.	Name of Species		Order	Family	Excavation
	Scientific	Common			Name, State, Country
1	2	3	4	5	6
4.	<i>Parreyssia favidens</i> (Benson)	—	Bivalvia	Viviparidae	1. Mohenjodaro, Dist. Larkana (W. Pakistan)
	"	—	"	"	2. Harappa, Dist. Mont- gomery (W. Pakistan)
	"	—	"	"	3. Nagda, Chambal Valley, Madhya Pradesh (India)
5.	<i>Zooteus insularis</i> (Ehrenberg)	—	Pulmonata	Achantinidae	1. Harappa, Dist. Mont- gomery (W. Pakistan)
6.	<i>Viviparus bengalensis</i> (Lamarck)	The banded pond snail	Gastropoda	Viviparidae	1. Mohenjodaro, Dist. Larkana (W. Pakistan)
	"	"	"	"	2. Harappa, Dist. Mont- gomery (W. Pakistan)
	"	"	"	"	3. Lothal, Dist. Ahmadabad Gujarat (India)
	"	"	"	"	4. Nevasa, Dist. Ahmad- nagar, Maharashtra (India)
	"	"	"	"	5. Maski, Dist. Raichur, Mysore (India)
7.	<i>Cypraea arabica</i> Linn.	Marine gastropod	Gastropoda	Cypraeidae	1. Mohenjodaro, Dist. Larkana (W. Pakistan)
	— <i>Arabica arabica</i> (Linn.)				
8.	<i>Cypraea ocellata</i> Linn.	"	"	"	1. "
	— <i>Erosaria ocillata</i> (Linn.)				

from prehistoric sites in India and West Pakistan up to the see Table 3).—contd.

IV.—Pisces.

V.—Mollusca.

VI.—Coelenterata.

where found		Reference	Kind of remains found	Excavated by
Culture	Age			
7	8	9	10	11
Harappan	2500 —1500 B. C.	Sewell & Guha (1931)	Valves	Archaeological Survey of India
"	"	Prashad (1936) ; Nath (1962)	Right valve	"
Chalcolithic	1500 —200 B. C.	Nath (in press)	One valve (eroded)	"
Harappan	2500 —1500 B. C.	Prashad (1936) ; Nath (1962)	Fragment of a shell	"
"	"	Sewell & Guha (1931)	"	"
"	"	Prashad (1936) ; Nath (1962)	Shells	"
"	2000 —1200 B.C.	Nath (unpublished)	"	"
Chalcolithic	1500 —1000 B. C.	Ray (1960)	"	Dept. of Archaeo- logy and Ancient History, Deccan College, Poona
"	1000 B. C. to 1st century A. D.	Nath (1959)	"	Archaeological Survey of India
Harappan	2500 —1500 B. C.	Sewell & Guha (1931)	A shell (bored presumably for ornamentation)	Archaeological Survey of India
"	"	"	A single shell	"

TABLE 2.—List of animal species whose remains have been found
end of 1962. (For historic sites,

I.—Mammalia.

II.—Aves.

III.—Reptilia.

Sl. No.	Name of species		Order	Family	Excavation	
	Scientific	Common			Name, State, Country	
1	2	3	4	5	6	
9.	<i>Monetaria monata</i> (Linn.)	—	Gastropoda	Cypræidae	1. Nevasa, Dist. Ahmad- nagar, Maharashtra (India)	
10.	<i>Monetaria (ornamentaria) annulus</i> Schilder and Schilder	—	"	"	1. "	
11.	<i>Gratiodusta pallida</i> (Gray)	—	"	"	1. "	
12.	<i>Engina mendicaria</i> Linn.	—	"	Buccinidae	1. "	
13.	<i>Cantharus spiralis</i> Gray	—	"	"	1. "	
14.	<i>Eburna spirata</i> Lamarck — <i>Babylonia spirata</i> (Linn.)	—	"	"	1. Mohenjodaro, Dist. Larkana (W. Pakistan)	
15.	<i>Nerita (Theliostyla) chamaeleon</i> Linn.	—	"	Neritidae	1. Nevasa, Dist. Ahmad- nagar, Maharashtra, (India)	
16.	<i>Nerita (Dostia) crepidularia</i> Lamarck	—	"	"	1. "	
17.	<i>Olivancillaria (Agaronia) nebulosa</i> Lamarck	—	"	Olividae	1. "	
18.	<i>Olivancillaria subulata</i> (Lamk.)	—	"	"	1. Lothal, Dist. Ahmadabad, Gujarat, (India)	
19.	<i>Xesto semiruga</i> Beck	—	"	Arioph- antidae	1. Nevasa, Dist. Ahmad- nagar, Maharashtra (India)	

from prehistoric sites in India and West Pakistan up to the see Table 3).— contd.

IV.—Pisces.

V.—Mollusca.

VI.—Coelenterata.

where found		Reference	Kind of remains found	Excavated by
Culture	Age			
7	8	9	10	11
Chalcolithic	1500 — 1000 B. C.	Ray (1960)	Shell remains	Dept. of Archaeo- logy and Ancient History, Deccan College, Poona
"	"	"	"	"
"	"	"	"	"
"	"	"	"	"
"	"	"	"	"
Harappan	2500 — 1500 B. C.	Sewell & Guha (1931)	A single shell	Archaeological Survey of India
Chalcolithic	1500 — 1000 B. C.	Ray (1960)	Shells	Dept. of Archaeo- logy and Ancient History, Deccan College, Poona
"	"	"	"	"
"	"	"	"	"
Harappan	2000 B. C. to 1200 B. C.	Nath (unpublished)	A shell	Archaeological Survey of India
Chalcolithic	1500 — 1000 B. C.	Ray (1960)	Shells	Dept. of Archaeo- logy and Ancient History, Deccan College, Poona

TABLE 2.—List of animal species whose remains have been found end of 1962. (For historic sites,

I.—Mammalia.

II.—Aves.

III.—Reptilia.

Sl. No.	Name of species		Order	Family	Excavation
	Scientific	Common			Name, State, Country
1	2	3	4	5	6
20.	<i>Xancus pyram Linn.</i>	The chank shell	Gastropoda	Xancidae	1. Mohenjodaro, Dist. Larkana (W. Pakistan)
	"	"	"	"	2. Lothal, Dist. Ahmadabad, Gujarat (India)
	"	"	"	"	3. Nevasa, Dist. Ahmadabad, Maharashtra (India)
	"	"	"	"	4. Ujjain, Chambal Valley, Madhya Pradesh (India)
21.	<i>Fasciolaria (Pleuroploca) trapezium (Linn.)</i>	Marine gastropod	"	Fasciolariidae	1. Mohenjodaro, Dist. Larkana (W. Pakistan)
22.	<i>Indoplanorbis exustus (Deshayes)</i>	—	"	Planorbidae	1. "
23.	<i>Pila globosa (Swainson)</i>	The Land snail	"	Pilidae	1. Brahmagiri, Dist. Chitradurga, Mysore State (India)
24.	<i>Telescopium telescopium (Linn.)</i>	Marine gastropod shell	"	Potamididae	1. Lothal, Dist. Ahmadabad, Gujarat (India)
25.	<i>Conus (Rhizconus) rattus Brug.</i>	" "	"	Conidae	1. "
26.	<i>Arca granosa Linn.</i>	Marine mollusc	Pelecypoda	Arcidae	1. Mohenjodaro, Dist. Larkana (W. Pakistan)
					VI—COELEN-
	<i>Favos fabus (Forsk.)</i>	Coral	Madreporaria	Astraliidae	"

from prehistoric sites in India and West Pakistan up to the see Table 3).—contd.

IV.—Pisces.

V.—Mollusca.

VI.—Coelenterata.

Culture	where found		Reference	Kind of remains found	Excavated by
	Age				
7	8	9	10	11	
Harappan	2500 — 1500 B. C.	Sewell & Guha (1931)	A single shell	Archaeological Survey of India	
"	2000 — 1200 B. C.	Nath (unpublished)	Shell fragments	"	
Chalcolithic	1500 — 1000 B. C.	Ray (1960)	Shells	Dept. of Archaeo- logy and Ancient History, De can College, Poona.	
"	750 B. C.	Nath (unpublished)	"	Archaeological Survey of India	
Harappan	2500—1500 B.C.	Sewell & Guha (1931)	Two shells	"	
"	"	"	A single shell	"	
Stone Age and megalthic (Andhra)	1000—200 A. D.	Nath (1967)	Shell remains	"	
Harappan	2000—1200 B.C.	Nath (unpublished)	Shell fragments	"	
"	"	"	"	"	
"	2500—1500 B.C.	Sewell & Guha (1931)	A single shell	"	
TERATA					
"	"	"	A single rounded colony	"	

TABLE 3.—List of animal species whose remains have been

						I.—Mammalia.
						II.—Aves.
						III.—Reptilia.
Sl. No.	Name of species		Order	Family	Excavation	
	Scientific	Common			Name, State, Country	
1	2	3	4	5	6	
						I—MAM.
1.	<i>Equus caballus</i> Linn.	The Horse	Perissodactyla	Equidae	1. Nagarjunakonda, Dist. Guntur, Andhra Pradesh	
2.	<i>Equus asinus</i> Linn.	The Domestic Ass	"	"	1. "	
3.	<i>Bos indicus</i> Linn.	The Zebu or Domestic humped cattle of India	Artiodactyla	Bovidae	1. Arikamedu, Pondicherry, Madras	
	"	"	"	"	2. Nagarjunakonda, Dist. Guntur, Andhra Pradesh	
	"	"	"	"	3. Sarnath, Varanasi, Dist. Uttar Pradesh	
4.	<i>Bubalus bubalis</i> (Linn.)	Indian Domestic Buffalo	Artiodactyla	Bovidae	1. Nagarjunakonda, Dist. Guntur, Andhra Pradesh	
	"	"	"	"	2. Sarnath, Varanasi, Dist. Uttar Pradesh	
5.	<i>Boselaphus tragocamelus</i> Pall.	The Nilgai	"	"	1. Nagarjunakonda, Dist. Guntur, Andhra Pradesh	
6.	<i>Bos gaurus</i> Smith	The Indian Bison	Artiodactyla	"	1. "	
7.	<i>Ovis vignei</i> Blyth	The Domestic sheep	"	"	1. "	
	"	"	"	"	2. Sarnath, Varanasi, Dist. Uttar Pradesh	
8.	<i>Capra hircus</i> Linn.	The Indian Domestic goat	"	"	1. Nagarjunakonda, Dist. Guntur, Andhra Pradesh	
	"	"	"	"	2. Sarnath, Varanasi, Dist. Uttar Pradesh	

found from historic sites in India. (For prehistoric sites, see Table 2.)

IV.—Pisces.

V.—Mollusca.

where found		Reference	Kind of remains found	Excavated by
Culture	Age			
7	8	9	10	11
MALIA				
Historic	a. 200 A. D. to 1200 A. D.	Nath (unpublished)	Appendicular, axial bones and skull	Archaeological Survey of India
"	"	"	Limb bones and teeth	"
"	20 A.D.—50 A.D.	Chatterji, B. K. and Bose, H. K. (1946)	Limb bones	"
"	Ca. 200 A. D. —1200 A. D.	Nath (unpublished)	Axial, appendicular] bones and skull parts	"
"	—1200 A. D.	Nath (1958)	Limb bones and teeth	"
"	Ca. 200 A. D. —1200 A. D.	Nath (unpublished)	Axial and appendicular bones teeth and skull parts	"
"	1200 A. D.	Nath (1958)	Limb bones & scapula	"
"	Ca. 200 A. D. —1200 A.D.	Nath (unpublished)	Teeth and jaw bones	"
"	Ca. 200—1200 A. D.	"	Limb bones	"
"	"	"	Limb bones & jaw lower jaw & teeth	"
"	1200 A. D.	Nath (1958)	Limb bones and lower jaw	"
"	Ca. 200—1200 A. D.	Nath (unpublished)	Limb bones teeth and mandible	"
"	1200 A.D.	Nath (1958)	Teeth and Lower Jaw	"

TABLE 3.—List of animal species whose remains have been

						I.—Mammalia
						II.—Aves.
						III.—Reptilia.
Sl. No.	Name of species		Order	Family	Excavation	
	Scientific	Common			Name, State, Country	
1	2	3	4	5	6	
9.	<i>Axis axis</i> (Exrl.)	The Spotted Deer	Artiodactyla	Cervidae	1. Nagarjunakonda, Dist. Guntur, Andhra Pradesh	
10.	<i>Cervus unicolor</i> Kerr.	The Sambhar	"	"	1. Nagarjunakonda, Dist. Guntur, Andhra Pradesh	
11.	<i>Muntiacus muntjak</i> Zimm.	The Muntjak or The Barking Deer,	"	"	1. "	
12.	<i>Sus scrofa cristatus</i> Wagner	The Indian Boar	"	Suidae	1. Arikamedu, Pondicherry, Madras State	
	"	"	"	"	2. Nagarjunakonda, Dist. Guntur, Andhra Pradesh	
13.	<i>Elephas maximus</i> Linn.	The Indian Elephant	Proboscidea	Elephantidae	1. "	
	"	"	"	"	2. Sarnath, Varanasi, Dist. Uttar Pradesh	
14.	<i>Canis familiaris</i> Linn.	The Domestic Dog	Carnivora	Canidae	1. Nagarjunakonda, Dist. Guntur, Andhra Pradesh	
15.	<i>Felis ochreata</i> Gmelin race <i>domestica</i> Brisson	The Domestic cat	"	Felidae	1. "	
16.	<i>Rattus rattus</i> Linn.	The Common Indian Rat	Rodentia	Muridae	1. "	
17.	<i>Bandicota bengalensis</i> Gray & Hardwicke	Lesser Bandicoot Rat ("Indian Mole Rat")	"	"	1. "	
18.	<i>Bandicota indica</i> Bechstein	The Large Bandicoot Rat	"	Muridae	1. Nagarjunakonda, Dist. Guntur, Andhra Pradesh	
19.	<i>Hystrix indica</i> Kerr	The Indian Crested Porcupine	"	Hystriidae	1. " "	

found from historic sites in India. (For prehistoric sites, see Table 2.)—contd.

IV.—Pisces.

V.—Mollusca.

where found

where found		Reference	Kind of remains found	Excavated by
Culture	Age			
7	8	9	10	11
Historic	Ca. 200—1200 A. D.	Nath (unpublished)	Molar tooth	Archaeological Survey of India
"	Ca. 200—1200 A. D.	Nath (unpublished)	Limb bones	"
"	"	"	Molar tooth	"
"	20 A. D.—50 A. D.	Chatterji, B. K. & Bose, H. K. (1946)	Limb bones	"
"	Ca. 200—1200 A. D.	Nath (unpublished)	Limb bones, jaw and teeth	"
"	"	"	Limb bones, jaw and teeth	"
"	1200 A. D.	Nath (1958)	Upper molar tooth	"
"	Ca. 200—1200 A. D.	Nath (unpublished)	Limb bones	"
"	"	"	Fragment of humerus	"
"	"	"	Limb bones, vertebrae and ribs	"
"	"	"	Fragment of humerus	"
"	Ca. 200—1200 A. D.	Nath (unpublished)	Fragments of femur	"
"	"	"	Lower jaw	"

TABLE 3.—List of animal species whose remains have been

I.—Mammalia.					
II.—Aves.					
III.—Reptilia.					
Sl. No.	Name of species		Order	Family	Excavation
	Scientific	Common			Name, State, Country
1	2	3	4	5	6
20.	<i>Lepus nigricollis</i> Cuv.	The Indian Hare	Lagomorpha	Leporidae	1. Nagarjunakonda, Dist. Guntur, Andhra Pradesh
21.	<i>Lepus sylvaticus</i> Geoffroy	The Common Indian Hare	"	"	1. Sarnath, Varanasi, Pradesh Dist. Uttar
II.—					
1.	<i>Gallus</i> sp.	The Domestic fowl	Galliformes	Phasianidae	1. Arikamedu, Pondicherry, Madras State
	"	"	"	"	2. Nagarjunakonda, Dist. Guntur, Andhra Pradesh
III.—RE-					
1	<i>Varanus griseus</i> Daudin	The Desert Monitor	Squamata	Varanidae	1. Nagarjunakonda, Dist. Guntur, Andhra Pradesh
2.	<i>Trionyx</i> sp.	"	Chelonia	Trionychidae	1. "
3.	<i>Chitra indica</i> (Gray)	The Soft shelled River Turtle	"	"	"
	"	"	"	"	2. Sarnath, Varanasi, Pradesh Dist. Uttar
4.	<i>Lisemys punctata</i> (Bonn.)	Pond Turtle	"	"	1. Arikamedu, Pondicherry, Madras State
	"	"	"	"	2. Sarnath, Varanasi, Pradesh Dist. Uttar
5.	<i>Batagur baska</i> (Gray.)	River Turtle	"	Testudinidae	1. "

found from historic sites in India (For prehistoric sites, see Table 2.)—*contd.*

IV.—Pisces.

V.—Mollusca.

where found		Reference	Kind of remains found	Excavated by
Culture	Age			
7	8	9	10	11
Historic	Ca. 200—1200 A. D.	Nath (unpublished)	Limb, bones, pelvic and pectoral bones	Archaeological Survey of India
"	1200 A. D.	Nath (1958)	Lower jaw with tooth	"
AVES				
Historic	20 A. D.—50 A. D.	Chatterji, B. K. & Bose, H. K. (1946)	Limb bones	"
"	Ca. 200—1200 A. D.	Nath (unpublished)	"	"
PTILIA				
Historic	Ca. 200—1200 A. D.	Nath (unpublished)	Abdominal vertebra	"
"	"	"	Epiplastron	"
"	Ca. 200—1200 A. D.	"	Epiplastron & hypoplastron	"
"	1200 A. D.	Nath (1958)	Fragment of hypoplastron	"
"	20 A. D.—50 A. D.	Chatterji, B. K. & Bose, H. K. (1946)		"
"	1200 A. D.	Nath (1958)	Fragment of epiplastron	"
"	"	"	Fragment of plastron	"

TABLE 3.—List of animal species whose remains have been

						I.—Mammalia.
						II.—Aves.
						III.—Reptilia.
Sl. No.	Name of species		Order	Family	Excavation	
	Scientific	Common			Name, State, Country	
1	2	3	4	5	6	
						IV.—PI.
1.	<i>Teleostean fish</i>	River fish	Teleostei		1. Nagarjunakonda, Dist. Guntur, Andhra Pradesh	
2.	<i>Rita rita</i> (Ham. & Buch.)	"		Bagridae	1.	"
						V.—MOL.
1.	<i>Parreyssia favidens</i> (Benson)	A. Fresh-water Mussel	Bivalvia	Unionidae	1. Nagarjunakonda, Dist. Guntur, Andhra Pradesh	
2.	<i>Parreyssia</i> sp.	"	"	"	1. Sarnath, Varanasi, Pradesh	Dist. Uttar
3.	<i>Viviparus bengalensis</i> Lamarck	The banded Pond Snail	Gastropoda	Viviparidae	1. Nagarjunakonda, Dist. Guntur, Andhra Pradesh	
4.	<i>Cypraea pallida</i> Gray	The Cowry	"	Cypraeidae	1. Sarnath, Varanasi, Pradesh	Dist. Uttar
5.	<i>Monetaria monata</i> (Linn.)	The Money Cowry	"	"	1. Nagarjunakonda, Dist. Guntur, Andhra Pradesh	
	"	"	"	"	2. Sarnath, Varanasi, Pradesh	Dist. Uttar
6.	<i>Xancus pyrum</i> Linn.	The Chank Shell	"	Xancidae	1. Nagarjunakonda, Dist. Guntur, Andhra Pradesh	
7.	<i>Fasciolaria (Pleuroploca) trapezium</i> Linn	Marine gastropod	"	"	1.	"
8.	<i>Xancus vasa</i> (Lamk.)	Chank Shell	"	"	1.	"
9.	<i>Tonna maculata</i> (Lamk.)	Marine Shell	"	Tonnidae	1.	"
10.	<i>Arca granosa</i> Linn.	"	Bivalvia	Arcidae	1.	"
11.	<i>Meretrix meretrix</i> (Linn.)	"	"	Veneridae	1.	"

found from historic sites in India. (For prehistoric sites, see Table 2.)—*concl'd.*

IV.—Pisces.

V.—Mollusca.

where found		Reference	Kind of remains found	Excavated by
Culture	Age			
7	8	9	10	11
SCES				
Historic	Ca. 200—1200 A.D.	Nath (unpublish	Abdominal vertebra	Archaeological Survey of India
"	"	"	Spine fragment	"
LUSCA				
"	Ca. 200—1200 A.D.	Nath (unpublished)	Fragments of valves	"
"	1200 A.D.	Nath (1958)	Fragment of a valve	"
"	Ca. 200—1200 A.D.	Nath (unpublished)	Shells	"
"	1200 A.D.	Nath (1958)	One Shell	"
"	Ca. 200—1200 A.D.	Nath (unpublished)	Shells	"
"	1200 A.D.	Nath (1958)	"	"
"	Ca. 200—1200 A.D.	Nath (unpublished)	"	"
"	"	"	"	"
"	Ca. 200—1200 A.D.	"	A Shell	"
"	"	"	"	"
"	"	"	"	"
"	"	"	"	"

ANIMAL REMAINS FROM BRAHMAGIRI (MYSORE STATE, INDIA)

By

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(With 4 Plates)

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I—INTRODUCTION

This report deals with the collection of animal remains from Brahmagiri (Chitradurga district, Mysore State) made by the Archaeological Department of the Government of India during the field season of 1947. The remains belong to three different cultural phases as follows:—

I. *Brahmagiri Stone Axe Culture* : Early first millennium B. C. to the beginning of 2nd century B.C., which has been sub-divided into two subcultures, e.g., 1A (Early Stone Axe Culture) and 1B (Late Stone Axe Culture).

II. *Megalithic Culture* : After ca. 200 B.C. to the middle of the first century A.D., overlapping the Andhra Culture.

III. *Andhra Culture* : About the middle of the first century to the third century A.D.

The animal remains are mostly fragmentary and fragile. The organic materials of the bones have disappeared to a large extent, and are impregnated with inorganic materials ; the remains are thus heavily mineralized as in the case of Mohenjodaro, Harappa, Hastinapura,

Maski, Nagda and Rupar. Most of the bones, including the long bones such as humerus, radius, femur, tibia and the cannon bones, are fragmentary and hence unsuitable for measurement, etc. In many cases harred bones have been found as at Harappa, Mohenjodaro and Hastinapura and Rupar.

The following species are represented :—

In subphase 1A (Earlier) of Brahmagiri Stone Axe Culture : *Equus* sp., *Lepus nigricollis* Cuvier, *Bos indicus* Linn. and *Ovis vignei* Blyth, race *domesticus*.

In Subphase 1B (Later) of Brahmagiri Stone Axe Culture : *Canis familiaris* Linn., *Bos bubalis* Linn., *Bos indicus* Linn., *Ovis vignei* Blyth race *domesticus*, *Capra hircus aegagrus* Erxl., *Axis axis* Erxl., and *Sus scrofa cristatus* Wagner.

In Brahmagiri Megalithic Culture : *Bos indicus* Linn., *Bos (Bubalus) bubalis* Linn., *Ovis vignei* Blyth, *Capra hircus aegagrus* Erxl., *Axis axis* Erxl., and *Gallus* sp.

In Brahmagiri Andhra Culture : *Bos indicus* Linn., *Bos (Bubalus) bubalis* Linn., *Ovis vignei* Blyth, *Capra hircus aegagrus* Erxl., *Lepus nigricollis* Cuvier, *Pila globosa* (Swainson).

The majority of remains are of domestic animals, those of *Bos indicus* Linn. being by far the most predominant. The remains of *Bos (Bubalus) bubalis* Linn., are much fewer in as compared to *Bos indicus*, which shows that the inhabitants probably did not maintain large herds of this animal. The remains of sheep (*Ovis vignei* Blyth race *domesticus*) and the goat (*Capra hircus aegagrus* Erxl.) are also fairly common, which indicates that the people were practising pastoral economy. The pig (*Sus scrofa cristatus* Wagner) is very scantily represented in the late Stone Axe Culture, but is surprisingly absent in the Brahmagiri Megalith and the Andhra Cultures. The presence of the wild equid (*Equus* sp.) in the earlier Stone Axe Culture is rather noteworthy. The find of the hare, *Lepus nigricollis* Cuvier in the Earlier Stone Axe Culture, and again its occurrence in the Brahmagiri Andhra Culture, is also interesting, as there is no record of any remains of this animal from Harappa, Mohenjodaro, Hastinapura and Rupar so far.

Among the wild animals, only one member of the deer family *Axis axis* Erxl. is represented.

The Brahmagiri remains of the prehistoric sites resemble, in their species, those of Harappa (Prashad, 1930), Mohenjodaro (Sewell & Guha, 1931), Hastinapura (Nath, 1955), Maski (Nath, 1957), Nevasa (Eapen, 1960), Nasik (George, 1955), Taxilla (Nath, 1959), Sarnath (Nath, 1958) and Nagda and Rupar (Nath, unpublished reports), and wherever necessary, comparison with their remains has been made under each species.

As in case of Anau (Duerst, 1908), Mohenjodaro, Harappa, Hastinapura, Maski, Rupar and Rangpur, there is a large number of bones which belong to young animals indicating thereby that the people practised a full fledged domestication of these animals. In this report each

individual bone is marked "Br.", followed by a number which denotes the Brahmagiri site number from which the bone was excavated, along with the particulars of "find spot", *i.e.*, the locus which denotes the fixed landmark of the excavated surface; the stratum denotes the layer of soil from which the find was obtained at a particular depth from the surface.

Abbreviation used.—Z.S.I., Zoological Survey of India, Calcutta.

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II—SYSTEMATIC ACCOUNT OF BRAHMAGIRI ANIMAL REMAINS

(a) *The Stone Axe Culture*

The description of the animal remains of the different species which lived in this cultural period is given below.

CLASS MAMMALIA

ORDER CARNIVORA

FAMILY CANIDAE

1. *Canis familiaris* Linn. (The Domestic Dog)

(Pl. 5, Figs. 1-3)

Br. 17; Locus B 1; Stratum 10; Sub-phase 1B (Stone Axe Culture). Fragment of the left ramus of mandible with 1st & 2nd molar teeth.

The single find of the domestic dog, *C. familiaris* Linn., resembles in shape and size those from Mohenjodaro as well as with the recent pariah dog such as is now met with at present in India. Below is given its measurements (Table 1) so far as can be taken, along with those from Mohenjodaro, Harappa and the recent pariah dog for comparison.

TABLE 1.—*Measurements (in mm.) of the lower jaw of Canis familiaris Linn.*

Item	Brahmagiri Dog	Mohenjo- daro Dog (Sewell & Guha, 1931)	Harappa Dog (Prashad, 1936)	Indian Pariah Dog (Sewell & Guha, 1931)	Modern Pariah Dog (in Dept. of Anthro- pology)
Height of horizontal ramus opposite molar 1 .	23	23	22	21	19
Length of molar 1 .	20	18.5	19	21.5	18.5
Breadth of molar 1 .	8	8	8	9	8
Length of molar 2 .	9.5	9.5	—	10	8

From Table 1 it is abundantly clear that the single find of the left ramus of mandible of a domestic dog, *C. familiaris* Linn., obtained from Brahmagiri comes extremely close to Mohenjodaro dog (Sewell & Guha, 1931, p. 652), as well as to the recent pariah dog. In measurements though the mandible of dog from Brahmagiri resembles with the Harappa dog (Prashad, 1936, p. 24), yet it differs from the latter in having a marked curvature of the inferior border of the horizontal ramus from the 4th premolar outwardly and forwardly, as in the Mohenjodaro and the recent pariah dogs. The mandible of the Harappa dog, *C. tenggeranus* Kohl., race *harappenis* Prashad, on the other hand, shows incipient curvature in the inferior border from the 4th premolar tooth outwardly and forwardly, as is found in case of the wolf, and as such, Harappa dog (Prashad, 1936, p. 24) shows distinct affinity with the wolf *C. lupus*. It is thus clear that the solitary find of the left ramus of mandible of a canid from Brahmagiri belongs to domestic dog—closely akin to pariah dog now met with in India, and not the wolf. Also the size and structure of the teeth of the Brahmagiri dog shows closer resemblance with *C. familiaris* Linn. than with the wolf.

Order PERISSODACTYLA

Family EQUIDAE

2. *Equus* sp. (The Wild Ass)

(Pl. 5, Figs. 4-6)

Br. 22; Locus I-IV ; Stratum 15 ; Sub-phase 1 A (Stone Axe Culture). One 5th cervical vertebra without transverse process.

The solitary remains of a young equid from Brahmagiri is incomplete and broken, and is, therefore, difficult to place specifically, but it shows close resemblance with the corresponding part of a wild ass (*E. kiang* Moorcroft) in the collection of the Z.S.I. The maximum length of the body of the vertebra is 80.1 mm. and the maximum breadth of posterior articular processes is 50.3 mm.

Order LAGOMORPHA

Family LEPORIDAE

4. *Lepus nigricollis* Cuvier (The Indian Hare)

(Pl. 5, Figs. 7-10)

Br. 22 ; Locus I-IV ; Stratum 15 ; Sub-phase 1 A (Stone Axe Culture). One proximal fragment and one distal fragment of the right tibia ; one distal fragment of the right humerus with medial and lateral condyles.

The remains of the Indian hare, resemble very closely, both in structure and configuration, the bones of a recent specimen of *Lepus nigricollis* Cuvier present in the collection of the Z.S.I. These limb-bones are very fragmentary. The maximum breadth of distal end fragment of humerus is 10 mm. ; maximum lengths of the proximal and distal

fragments of right tibia are 50 mm. and 45 mm., respectively. The find of this hare is rather interesting as it had not so far been recorded from any prehistoric site of India.

Nath (1958, p. 172) recently recorded the remains of another race of the Indian hare, viz., *Lepus ruficaudatus* Geoffroy, from the Sarnath site (near Varanasi, Uttar Pradesh).

Order ARTIODACTYLA

Family BOVIDAE

Subfamily (i) BOVINAE

Bos indicus Linn. (The Domestic Humped Cattle of India) (Pl. 6, Figs. 3, 5, 6 and 9)

- Br. 17 ; locus C₄ ; stratum (5). Subphase 1B (Stone Axe Culture). Proximal fragment of a right femur with head and without tuberosity
- Br. 17 ; locus A₁ ; stratum (5). Subphase 1B (Stone Axe Culture). Fragment of the shaft of left 3rd & 4th metatarsal ; two fragments of ribs.
- Br. 17 ; locus A₁ ; stratum (6). Subphase 1B (Stone Axe Culture). Left calcaneum without distal facet for cuboid ; distal fragment of left 3rd & 4th metatarsal ; 1st phalanx of left fore-foot of an young individual ; 1st left lower premolar.
- Br. 17 ; locus A₁ ; stratum (7). Subphase 1B (Stone Axe Culture). 1st upper left molar ; fragment of the shaft of rib.
- Br. 17 ; locus A₁ ; stratum (8). Subphase 1B (Stone Axe Culture). Proximal fragment of the left tibia of an young one ; fragment of the anterior horizontal left ramus of mandible without teeth of an young one ; coronoid process of the mandible of an young one ; one incisor tooth.
- Br. 17 ; locus B₁ ; stratum (10). Subphase 1B (Stone Axe Culture). Left astragalus ; left calcaneum with tuber calcis & sub-stentacular facet and without distal facet for cuboid ; fragment of ilium of left pelvis ; distal fragment of the right tibia ; right fused navicular & cuboid fragment of a scapula ; fragment of upper right jaw with 2nd molar of an young specimen ; fragment of the ilium of right pelvis ; distal fragment of the left humerus with medial and lateral condyles ; proximal fragment of right femur with head and without greater trochanter and with trochanteric fossa ; 6th cervical vertebra with body, transverse process ; with ant. & post. articular surfaces and with a portion of spinous process ; fragment of the acetabulum with a portion of ilium of the left pelvis ; body of a cervical vertebra.
- Br. 17 ; locus B₁ ; stratum (11). Subphase 1B (Stone Axe Culture). Right astragalus of an young one ; two proximal fragments of right metatarsals ; fragment of the rib ; one fragment of the left lower jaw with 1st molar tooth ; fragment of left upper 3rd molar tooth ; left upper 1st molar of an young one.
- Br. 19 ; locus A₁ ; stratum (4). Subphase 1B (Stone Axe Culture). Fragment of rib ; transverse process of the lumbar vertebra of an young one.
- Br. 19 ; locus A₁ ; stratum (4b). Subphase 1B (Stone Axe Culture). Fragment of the right upper jaw with 3rd premolar tooth ; several fragments of the shaft of thoracic ribs ; 3rd left phalanx ; fragment of the acetabulum of left pelvis ; right upper 1st molar ; fragment of a pelvis.
- Br. 19 ; locus A₁ ; stratum (5). Subphase 1B (Stone Axe Culture). Fragment of the proximal end of the right radius ; fragment of ulna with olecranon process and semilunar notch.

- Br. 20 ; locus B₂ ; stratum (4). Subphase 1B (Stone Axe Culture). Two distal fragments of the 3rd & 4th metacarpals ; shaft of the right 3rd & 4th metacarpal without distal end ; one distal fragment of the 3rd & 4th metatarsal ; left 3rd & 4th metatarsal without distal portion ; distal fragment of left humerus with lateral and medial condyles ; fragment of the shaft of femur ; proximal shaft of right tibia of a young one ; 2nd phalanx of left fore-foot ; fragment of the shaft of femur with supracondyloid fossa ; fragment of the frontal bone ; 8th cervical vertebra ; several fragments of the shaft of thoracic ribs ; fragment of 1st phalanx of hind-foot ; two fragments of the body of thoracic vertebrae ; lateral condyle of the left tibia ; fragment of a thoracic vertebra with transverse process and anterior articular process ; fragment of ilium with a part of acetabulum of right pelvis of a young one ; fragment of the right molar bone with zygomatic and temporal processes of the skull ; distal fragment of metacarpal of an young one.
- Br. 20 ; locus B₂ ; stratum (5). Subphase 1B (Stone Axe Culture). Two distal fragments of the left humeri ; proximal fragment of the right radius ; proximal fragment of the left tibia ; fragment of the shaft of left femur ; distal fragment of the shaft of 3rd & 4th metacarpal without distal condyles ; left calcaneum ; fragment of the distal condyle of 3rd & 4th metacarpal ; right astragalus.
- Br. 20 ; locus B₂ ; stratum (5a). Subphase 1B (Stone Axe Culture). 1st phalanx of the left hind-foot ; fragments of thoracic ribs ; distal fragment of the 1st phalanx of left hind-foot ; fragment of the left scaphoid of proximal carpus.
- Br. 20 ; locus B₂ ; stratum (6). Subphase 1B (Stone Axe Culture). Five fragments of the shaft of thoracic ribs ; left astragalus ; fragment of the cervical vertebra without spine ; transverse process ; anterior and posterior articular processes ; fragment of the shaft of left radius with a portion of the shaft of ulna ; shaft of right calcaneum ; 3rd phalanx of hind-limb ; right fused 2nd & 3rd tarsal *i.e.*, middle & external cuneiform ; two distal end fragments of left radius.
- Br. 20 ; locus B₂ ; stratum (7). Subphase 1B (Stone Axe Culture). Right fused navicular and cuboid of the proximal tarsal ; proximal fragment of right radius ; fragments of the ribs.
- Br. 2 ; locus B₂ ; stratum (8). Subphase 1B (Stone Axe Culture). Distal fragment of the right femur without lateral condyle ; three fragments of the rami of mandible ; one fragment of the shaft of thoracic rib ; proximal fragment of the right femur with trochanteric fossa ; fragment of the ischium with ischiatic spine of right pelvis ; left lower 2nd premolar of a young one ; right lower 2nd premolar ; right lower 3rd premolar of a young one ; left lower 1st molar of a young one ; left lower 2nd molar of a young one ; fragment of a molar tooth.
- Br. 20 ; locus B₂ ; stratum (8a). Subphase 1B (Stone Axe Culture). Proximal fragment of the right ulna with semilunar notch and without olecranon process ; proximal fragment of the 3rd & 4th right metacarpal.
- Br. 20 ; locus B₂ ; stratum (7c). Subphase 1B (Stone Axe Culture). Distal fragment of the shaft of left 3rd & 4th metatarsal of an young one ; left lower proximal fragment of the left 3rd & 4th metacarpal (charred) ; fragment of the left ramus of the mandible with mental foramina and without body (corpus mandibulae) ; distal fragment of the 3rd & 4th metacarpal.
- 21 ; stratum 19. Subphase 1A (Stone Axe Culture). Proximal fragment of right metatarsus with fused scaphoid and cuboid of proximal tarsal and fused 2nd & 3rd cuneiform ; proximal fragment of the right 3rd & 4th metatarsal ; distal fragment of the 3rd & 4th metacarpal ; neural arch of the thoracic vertebra without spine ; right upper 3rd premolar ; body of a thoracic vertebra ; five fragments of the ribs ; body of a thoracic vertebra with a portion of transverse process ; fragment of the shaft of ulna with fragmentary ploc of radius.

- Br. 21 ; locus IV—V ; depth 13' 3½" Subphase 1 A (Stone Axe Culture).
Stratum 18a. Proximal fragment of the right ulna with olecranon process and semi-lunar notch ; distal fragment of the shaft of left femur with supra-condyloid fossa ; left proximal fragment of 3rd & 4th metatarsal ; proximal fragment of right radius ; distal end of the 3rd & 4th metatarsal ; 2nd left upper 3rd molar of a young one ; right upper 3rd molar of a young one ; right lower 1st molar of a young one ; fragment of the shaft of a thoracic rib.
- Br. 21 ; locus O—III ; stratum (11). Subphase 1B (Stone Axe Culture).
Fragment of the distal end of left radius ; right & left upper 2nd molar of a young one ; 1st phalanx of hind-foot ; proximal fragment of 1st phalanx of fore-foot ; 2nd phalanx of fore-foot ; 2nd phalanx of hind-foot of a young one ; two fragments of the frontal bone of skull (one charred) ; left cuneiform bone of the proximal carpus of a young one ; fragments of ribs.
- Br. 21 ; locus VI—IX ; stratum 12. Subphase 1B (Stone Axe Culture).
Fragment of the distal end of right humerus with medial and lateral condyles ; distal fragment of right tibia with styloid process ; two proximal fragments of right 3rd & 4th metatarsal ; one left & one right fused navicular and cuboid bone ; left calcaneum with tuber calcis & without distal facet for cuboid ; proximal fragment of the shaft of left tibia ; two lumbar vertebrae almost complete except without transverse processes and spinous processes ; two bodies of lumbar vertebrae ; one vertebra with odontoid process, ant. and post. articular processes, intervertebral foramina and with incomplete spinous process ; one cervical vertebra without transverse process and spinous process ; body of a cervical vertebra with a bit of transverse process on one side ; posterior articular process with a portion of neural arch of lumbar vertebra ; fragment of cervical vertebra with a portion of transverse process, and ant. articular process ; left upper 1st molar ; fragment of right upper jaw with 3rd premolar and 1st molar of a young one ; left upper 2nd molar of a young one ; left lower 3rd molar of a young one ; lower left and right 1st molars of young ones ; fragment of lower jaw with 2nd premolar tooth ; fragment of left 3rd & 4th metacarpal ; proximal fragment of left ulna with semi-lunar notch and processus anconaceus and a part of olecranon process ; two left calcanei with tuber calcis and without distal facet for cuboid ; distal extremity of left tibia ; body of the thoracic vertebra ; fragment of the medial condyle of humerus ; fragment of the proximal extremity of left radius ; fragment of a patella bone ; two 1st phalanges of fore-foot of young ones ; 2nd phalanx of fore-foot ; left upper 1st molar ; lunate bone of proximal carpus.
- Br. 21 ; stratum—Pit "DD" Sealed by (10). Subphase 1B (Stone Axe Culture).
Distal fragment of the right humerus with medial and lateral condyle ; fragment of the distal extremity of the left femur ; one of fragment the left humerus with deltoid tuberosity ; one cervical vertebra without transverse process and spinous process ; two bodies of thoracic vertebrae ; distal fragment of the 3rd & 4th metacarpal with condyles ; fragment of a horn-core ; orbital part of the frontal bone with orbital opening ; fragment of a lumbar vertebra with posterior articular process & spinous process ; two fragments of the lower jaws (charred) ; left lower 3rd premolar of a young one ; 1st phalanx of hind-foot ; left upper 1st premolar ; right and left fused navicular and cuboid of proximal tarsal ; distal fragment of the 3rd & 4th metacarpal with condyles ; fragment of the superior horizontal ramus of right mandible ; fragment of the vertical ramus of mandible with a portion of coronoid process and condyle ; right upper 3rd premolar ; left upper 3rd premolar ; right 2nd

molar of a young one ; left lower 3rd molar ; right lower 2nd molar of a young one (charred) ; right lower 1st molar of a young one (charred) ; left lower 2nd premolar broken ; fragment of a thoracic vertebra with body ; transverse process of the cervical vertebra (charred) ; fragment of an axis vertebra with aodontoid process and anterior articular process (charred) ; proximal fragment of left ulna with semilunar notch and processus anconaeus ; one fragment of rib ; fragment of cervical vertebra with posterior articular process (charred) ; two 1st phalanges of fore-foot of a young one ; three 2nd phalanges of hind-foot and one 2nd phalanx of fore-foot ; distal fragment of the shaft of right radius without distal extremity of a young one ; proximal fragment of the left femur without head and tuberosity of a young one ; 5th cervical vertebra without transverse processes ; lumbar vertebra without transverse process, spinous process and ant. articular processes ; proximal fragment of the left 3rd & 4th metacarpal (charred) ; 42 fragment of the left ramus of the mandible with mental foramina and without body (corpus mandibulae) ; distal fragment of the 3rd & 4th metacarpal.

Br. 22 ; locus IV—VI ; stratum (11). Subphase 1B (Stone Axe Culture). Fragment of the shaft of radius ; fragment of a rib.

Br. 22 ; locus V—VIII ; stratum (12). Subphase 1 B (Stone Axe Culture). 1st phalanx of the hind-foot of a young one ; proximal fragment of the 3rd and 4th metacarpal of a young one ; 1st phalanx of fore-foot ; left upper 1st molar of a young one ; two incisor teeth of the lower jaw ; fragment of the shaft of 3rd and 4th metacarpal of a young one.

Br. 22 ; locus II—V ; stratum (13) ; Subphase 1 B (Stone Axe Culture). Proximal fragment of the right metacarpal ; 2nd phalanx of the left fore-foot ; one left incisor tooth of a young one ; fragment of an upper molar tooth.

Br. 22 ; locus IV—VI ; stratum (14). Subphase 1 B (Stone Axe Culture). Right upper 3rd molar of a young one ; fragment of the anterior portion of the right ramus of the mandible with mental foramina and without body ; proximal fragment of the medial condyle of the femur ; fragment of an upper molar of a young one ; left lower 1st molar of a young individual.

Br. 22 ; locus I—IV ; stratum (15). Subphase 1 A (Stone Axe Culture). Distal fragment of the shaft of 3rd and 4th metacarpal ; left lower 3rd molar of a young one ; fragments of ribs ; 1st phalanx of the fore-foot ; two 2nd phalanges of the fore-foot of young ones ; patella bone of a young one ; 3rd phalanx of hind-foot ; right lower 2nd premolars ; left lower 2nd incisor tooth ; proximal fragments of the right and left 3rd & 4th metacarpals ; two bodies of thoracic vertebrae ; right calcaneum with tuber calcis and without distal facet for cuboid ; fragment of the right ramus of the lower jaw with 2nd and 3rd molar teeth ; fragment of the right ramus of mandible with 1st molar of a young one ; proximal fragments of the thoracic ribs ; 3rd phalanx of the hind-limb ; distal fragments of femur with supra-condyloid fossa ; right astragalus of a young one ; fragment of the cervical vertebra with anterior and posterior articular processes ; fragment of lower jaw ; fragment of lateral condyle of femur ; 2nd phalanx of the fore-limb of a young one ; right and left 1st premolar of young ones ; left 1st upper premolar of a young one.

Br. 23 ; locus IV—VI ; stratum (12). Subphase 1 B (Stone Axe Culture). Left astragalus slightly broken ; fragment of the left calcaneum ; fragment of ribs ; one fragment of the shaft of humerus ; distal fragment of the radius fused with cuneiform bone of the proximal carpus.

The remains of the humped cattle are mainly fragmentary. Not a single complete bone or a skull is available, and it is difficult, to be certain about the sizes or to take particular measurements for comparison. The teeth available do not show any special peculiarities and generally resemble those from Mohenjodaro, Harappa, Hastinapura, Rupar, Maski and Nagda and as well as recent domesticated Humped Cattle of India present in the collection of the Z.S.I.

The lower jaw (pl. 6, Fig. 3) is incomplete and resembles in all respects that of a recent specimen. Its maximum length is 79.6 mm. ; and the length of the tooth row 63.8 mm.

The vertebrae are mostly incomplete and fragmentary. But some are intact, such as some cervical vertebrae and lumbar vertebrae (Pl. 6, Figs. 5 and 6). The maximum length of the body of a cervical vertebra is 24.4 mm.; maximum distance between two posterior articular processes is 78.5 mm. The maximum length of the body of the lumbar vertebra is 30 mm. ; maximum distance between two anterior articular process is 21 mm.

The limb-bones are all fragmentary. In Pl. 6, Fig. 9 is shown a well preserved and intact specimen of a scapho-cuboid bone of the distal tarsal. The maximum breadth of the scapho-cuboid bone is 55 mm.

The humped cattle from the Stone Axe Culture resembles the smaller humped, short-horned variety from Harappa, Mohenjodaro, Hastinapura, Maski, Sarnath, Taxilla, Rupar and Nagda (Nath, unpublished).

From the close resemblance between the skeletal remains from Brahmagiri and those of the modern domestic humped cattle of India, it is clear that the two are identical.

The remains of small humped cattle have also been reported from Nasik (George, 1955, pp. 142-43), and Nevasa (Eapen, 1960, pp. 532-536).

The great frequency with which the remains of *Bos indicus* Linn. are met with as compared with the finds of other animals from the Stone Axe Culture, indicates that the inhabitants probably maintained large herds of this animal. Amongst the remains, two bones bear definite marks of cuts by sharp instruments, which shows that the inhabitants probably slaughtered this animal.

***Bos (Bubalus) bubalis* Linn. (The Indian Domestic Buffalo)**

(Pl. 7, Fig. 2)

Br. 17 ; locus A₁ ; stratum (5). Subphase 1 B. Distal fragment of the left humerus with lateral and medial condyle ; 2nd phalanx of the left fore-foot ; 3 fragments of the left ramus of the mandible.

Br. 21 ; pit "DD" sealed by (10). Subphase 1 B. Distal fragment of the right humerus with medial and lateral condyles ; 2 proximal fragments of the left humerus with head and without tuberosity ; 4 complete axis vertebrae ; 5 fragments of rib ; 6 fragments of the shaft of humerus with deltoid tuberosity ; 7 fragments of the ilium near tuber coxae of the pelvic girdle ; 8 fragments of the scapula ; 9 neural arches of a thoracic vertebra without spine ; 10 fragmen

of the blade of scapula ; 10 left fused navicular and cuboid of the proximal tarsal ; 12 proximal fragments of the left humerus with head ; 12 left tibiae without distal portion ; 14 proximal fragments of the left 3rd & 4th metacarpal ; 15 fragments of the left horizontal ramus of the mandible with 2nd & 3rd premolars ; 16 fragments of the ilium of right pelvis (charred) ; 17 fragments of the right pelvis with a part of acetabulum and a portion of ischium ; 18 fragments of the left upper jaw with 1st & 2nd premolars ; 53 fragments of the right upper jaw with 2nd premolar ; 20 right upper 1st premolar.

All the remains of the domestic buffalo are fragmentary. The few teeth available do not show any special peculiarities and generally resemble those of the recent domestic buffalo.

The limb-bones too are very fragmentary. A well preserved distal fragment of humerus is shown in Pl. 7, Fig. 2. In Table 2 are given some comparative measurements.

TABLE 2.—*Measurements (in mm.) of the distal fragment of humerus of Bos (Bubalus) bubalis Linn.*

Humerus	Maximum distal epiphyseal breadth	Maximum depth of condyles
Brahmagiri (Br. 17 ; 10)	81	80
Rupar (RPR 7—109)	79	81
Modern specimen (in Z.S.I.)	80	80

The find of a limited number of fragments of bones of this species shows that the inhabitants probably did not maintain large herds of it (*cf. Bos indicus* Linn. above).

These remains show very close resemblance with those of the modern domestic buffalo in India. They are also similar to those of Mohenjodaro, Harappa, Hastinapura, Sarnath, Taxilla and Rupar (Nath, unpublished report).

Subfamily (ii) *CAPRINAE*

Ovis vignei Blyth race *domesticus* (The Domestic Sheep)

Br. 21 ; stratum (19) ; Subphase 1A (Stone Axe Culture Earlier). Fragment of the left horizontal ramus of the mandible with 1st, 2nd & 3rd molar teeth.

Br. 22 ; locus I—IV ; stratum (15) ; Subphase 1 A (Stone Axe Culture). A complete thoracic vertebra ; fragment of a lumbar vertebra with neural arch and neural spine and post-articular process ; distal fragment of the shaft of humerus ; 61 fragments of the shaft of radius ; 62 fragments of the shaft of femur.

Br. 21 ; stratum—pit "DD" sealed by 10 ; Subphase 1 B (Stone Axe Culture). 31 fragments of the shaft of radius ; 32 right scapula with glenoid cavity, coracoid process and a portion of spine and blade ; 133

distal fragments of the right humerus with medial and lateral condyles ; 34 left lower 3rd molar and 1st molar of a young one ; shaft of 3rd & 4th metatarsal without proximal and distal epiphysis of a young one.

Br. 21 ; locus O—III ; stratum (11) ; Subphase 1B (Stone Axe Culture). Fragment of the shaft of femur ; distal fragment of the shaft of humerus.

Br. 22 ; locus V—VII ; stratum (12) ; Subphase 1B (Stone Axe Culture). Distal fragment of the left humerus with head and greater tuberosity ; 58 right lower 1st molars of a young one.

The remains of domestic sheep are very fragmentary. The few available teeth do not show any specialized peculiarities and generally resemble those of the recent domestic sheep. No horn-core is available. The limb-bones too are very fragmentary and unsuitable for measurements, etc.

These fragments of bones of domestic sheep show close resemblance with those of the sheep from Harappa, Hastinapura, Maski, Sarnath and Rupar and Nagda (Nath, unpublished reports), and are also closely akin to the modern domesticated goat.

Capra hircus aegagrus Erxleben (The Domestic Goat)

Br. 17 ; locus B 1 ; stratum (10) ; subphase 1 B (Stone Axe Culture). Fragment of the vertical ramus of left mandible with condyle and a part of coronoid process ; 2 fragments of the shaft of left humerus without distal and proximal extremities ; 3 distal extremities of right radius ; 4 fragments of the shaft of femur ; fragment of the shaft of radius ; 6 fragments of the lower left 3rd molar of a young one.

These remains are very fragmentary. The few teeth available do not show any peculiarities and generally resemble those of the recent domestic goat. The limb-bones too are very fragmentary.

These fragments of bones resemble those of the remains of goat from Harappa, Hastinapura, Maski, Sarnath and Rupar, Rangpur and Nagda (Nath, unpublished reports), and also the modern domesticated race of sheep.

Family CERVIDAE

Axis axis Erxleben (The Chital or Spotted Deer)

Br. 19 ; locus A₁ ; stratum (5) ; Subphase 1 B (Stone Axe Culture). Two fragments of the antlers.

Br. 21 ; pit "DD" ; Subphase 1 B (Stone Axe Culture). Two fragments, of the antlers.

These fragments resemble those from Mohenjodaro and Rupar (Nath, unpublished), as well modern specimens.

Family SUIDAE

Sus scrofa cristatus Wagner (The Indian domestic pig)

(Pl. 8, Figs. 4 and 5 ; and Table 3)

Br. 17 ; locus B₁ ; stratum (11) ; Subphase 1 B (Stone Axe Culture). Fragment of right upper jaw without teeth.

Br. 21 ; locus VI—IX ; stratum (12) ; Subphase 1 B (Stone Axe Culture). Third metatarsal of the right hind-foot. Only two finds were met with.

The find of an intact and well preserved specimen of the 3rd right metatarsal of the hind-foot of an adult pigs, resembles that of a modern specimen of *Sus scrofa cristatus* Wagner in the collection of the Z.S.I.

TABLE 3.—*Measurements (in millimetre) of 3rd metatarsal Sus scrofa cristatus. wag.*

Metacarpal (3rd toe)	Maximum length	Proximal width	Distal width
Brahmagiri . .	97.5	28.5	18.5
Modern specimen (in the Z.S.I) .	83	23	16.5

It is evident that the 3rd metatarsal of the Brahmagiri pig is larger than that of the modern pig, and the former may be regarded as an old adult pig.

These remains resemble those from Mohenjodaro, Harappa, Hastinapura, Taxilla ; and Rupar and Nagda (Nath, unpublished reports).

(b) *The Megalithic Culture*

An account of the remains of animals which lived in this culture is given below :

Class AVES

Family PHASIANIDAE

Gallus sp. (The Domestic Fowl)

Br. 22 ; locus IV—VIII ; stratum 6d ; Megalithic Culture. One distal fragment of the left tarsometatarsus.

The solitary find of the domestic fowl belongs to a young chick and agrees closely in general form with the corresponding bone of the domestic fowl.

Domestic fowl has also been recorded from Mohenjodaro, Harappa and from Rupar.

Class MAMMALIA

Order ARTIODACTYLA

Family BOVIDAE

Subfamily (i) *BOVINAE***Bos indicus** Linn. (The Domestic Humped Cattle of India)
(Pl. 6, Figs. 4, 7 and 8)

- Br. 17; locus A₁; stratum 2A. Megalithic Culture. Two left astragali of young ones; left calcaneum; proximal fragment of right radius; distal fragment of the metacarpal of a young one (charred); body of a thoracic vertebra; distal fragment of left tibia; rib fragment; thoracic vertebra of a young one; distal fragment of the left tibia; 1st phalanx of the left fore-foot; 2nd phalanx of fore-foot of a young one; posterior articular process of a lumbar vertebra; fragment of the distal extremity of left femur having medial condyle; fragment of a thoracic rib.
- Br. 17; locus C₁; stratum 3. Megalithic Culture. Three distal fragments of the left humeri and one distal fragment of the right humerus; two proximal fragments of left radius; four left and four right astragali; one left calcaneum with tuber calcis, peroneal and subtentacular facet for astragalus and without distal facet for cuboid; one proximal fragment of left radius of a young one; fragment of the proximal end of left radius; fragment of the proximal shaft of left femur with trochanter minor; proximal fragment of right ulna with semilunar notch and a portion of olecranon process; one proximal and one left distal fragment each of the right 3rd and 4th metatarsal; two proximal fragments of scapula, with glenoid cavity, tuber scapulae, and a part of blade with spine; one fragment of a thoracic rib with neck and tubercle; one fragment of a cervical vertebra with ant- and post-articular and transverse processes; three 2nd phalanx of fore-foot of young ones; three 1st phalanx of the fore-foot and one 1st phalanx of hind-foot; two fragments of a molar teeth; right scaphoid; proximal fragment of a metacarpal.
- Br. 17; locus A₁; stratum (4). Megalithic Culture. Proximal fragment of left tibia of a young one; distal fragment of the shaft of left radius of a young one; fragment of the rib; fragment of the vertical ramus of left lower jaw with condyle and coronoid process; epiphysis of a vertebra; fragment of a cervical vertebra with body, transverse process and foramen transversarium; 2nd upper right premolar. Locus C₁—Left latero-ventral arch of the atlas vertebra with intervertebral and alar foramen; proximal fragment of the right 3rd and 4th metacarpal; 1st phalanx of fore-foot of a young one; several fragments of the shaft of thoracic ribs, head of right femur of a young one; left calcaneum; 2nd phalanx of fore-foot; fragmentary piece of a horn core; coronoid process of right mandible; fragment of the cervical vertebra with ant- & post-articular process and transverse process of the left side only; fragment of a lumbar vertebra with neural arch, and post articular process and without spinous process; right upper 1st molar.
- Br. 17; locus A₁; stratum—Pit A. Megalithic Culture. Proximal fragment of the right humerus with head, lateral and medial tuberosity; two proximal fragments of the right tibia without proximal epiphysis; fragment of the left scapula with glenoid cavity and tuber scapulae; 3rd phalanx of the fore-foot; one fragment of the horizontal ramus of the mandible of a young one; 1st lower left premolar; fragment of the 1st left lower molar tooth; fragment of a rib; 2nd phalanx of the fore-foot.

- Br. 21; locus V—VII; stratum (7). Megalithic Culture. Right astragalus, 2nd phalanx of right fore-foot; proximal fragment of the left tibia; proximal fragment of a thoracic rib; fragment of 2nd phalanx of fore-foot; 2nd phalanx of fore-foot of a young one; locus VII—VIII; right fused navicular and cuboid of proximal tarsal; distal fragment of the shaft of right humerus without distal extremity; distal fragment of left tibia; with a portion of shaft and lateral condyle; three proximal shafts of the left tibia without distal extremity; distal fragment of the right radius with a portion of shaft and lateral condyle; proximal fragment of the shaft of 3rd & 4th metatarsal; fragment of medial condyle of humerus; 1st phalanx of hind-foot; 2nd phalanx of hind-foot; left upper 1st molar; right upper 3rd premolar; right upper 1st premolar; proximal fragment of rib with tubercle and neck, no head.
- Br. 22; locus IV—VIII; stratum (6). Megalithic Culture. Fragment of the shaft of left tibia; body (corpus mandibulae) of the mandible with incisor teeth; fragment of the left ramus of the mandible with 1st & 2nd premolars; fragment of a rib; proximal fragment of the right ulna with semilunar notch and without olecranon process of a young one; 1st left phalanx of the fore-foot of a young one; fragment of a molar tooth; left upper 1st molar; fragment of the coronoid process of the left and right ramus of the mandible; fragment of the shaft of femur.
- Br. 22; locus IV—VIII; stratum (6d). Megalithic Culture. Distal fragment of the right humerus without medial condyle; fragment of the left radius with a portion of ulna having semilunar notch and processus anconaeus and without olecranon process; distal fragment of the left humerus with a part of medial condyle fragments of ribs; proximal fragment of the left 3rd & 4th metatarsal; fragment of the shaft of femur; fragment of a cervical vertebra with post.-articular process.
- Br. 22; locus 0—IV; stratum (9b). Megalithic Culture. Distal fragment of the left radius; left upper 2nd molar of a young one; left upper 2nd premolar of a young one; fragment of an ulna.
- Br. 22; locus VI—VII; stratum—pit (25). Sealed by (6). Megalithic Culture. Fragment of the occipital bone with a portion of supra-occipital condyles and paramastoid process with a portion of basioccipital of the skull; fragment of the hind frontal bone with parietal bone; proximal fragment of the left femur without head, trochanter and trochanteric fossa of a young one; distal fragment of the 3rd & 4th metacarpal; shaft of the 3rd & 4th metatarsal; right calcaneum with a portion of tuber calcis; fragments of ribs; fragment of the anterior horizontal left ramus of the lower jaw; two fragments of the vertical ramii with coronoid process and condyle; three 2nd phalanges of the fore-foot of the young one; fragment of the inferior border of the horizontal ramus of the lower jaw without teeth; fragment of a scapula; right fused 2nd & 3rd cuneiform of the distal tarsal; fragment of the head of femur of a young one; proximal fragment of the right ulna of a young individual; fragment of the left upper jaw with 2nd and 3rd molar; two proximal fragments of the 3rd & 4th metacarpals; 3rd left upper premolar of a young one; left incomplete astragalus (charred).

The remains of the Humped Cattle are similar to those of the Brahmagiri Stone Axe Culture. Not a single complete bone is available, and it is difficult to take measurements for comparison. Some better preserved fragments of skull are shown on Pl. 6, Figs. 1 and 2. The maximum length of the fragment of occipital bone is 81.3 mm.; and its breadth 90.4 mm.; the maximum length of the frontal bone is 85.8 mm.

The teeth available do not show any specialized peculiarities and generally resemble those of the recent domestic Humped Cattle of India present in the Z.S.I. collection. The limb-bones are fragmentary. The carpal bones are, however, well preserved and intact. The scaphoid and lunate bones of the proximal carpus are shown in Pl. 6, Figs. 10 and 11. Maximum breadth of the scaphoid bone 40.4 mm.; anteroposterior length 30 mm. Maximum width anteriorly of the lunate bone 24 mm., maximum antero-posterior length 39 mm.

These remains resemble those of the Brahmagiri Stone Axe Culture, and also resemble the smaller humped short-horned variety from Mohenjodaro, Harappa, Hastinapura, Maski, Taxilla and Rupar and Nagda (Nath, unpublished). They also show close resemblance with modern domestic Humped Cattle of India.

***Bos (Bubalus) bubalis* Linn. (The Indian Domestic Buffalo)**

- Br. 17; locus A1; stratum (4). Megalithic Culture. Proximal fragment of the left ulna with semilunar notch and processus anconaeus and without olecranon process; Megalithic Culture. Fragment of the superior surface of the horizontal ramus of the right mandible without teeth; 3 fragments of the shaft of metatarsal of a young one; 4 fragments of the vertical ramus of the mandible with a part of coronoid process and condyle; 5 1st phalanx of the left hind-foot; 6 fragments of the ilium of the left pelvis (charred); 7 right zygomatic process of the molar bone of the skull; 8 fragments of a thoracic rib; 9 2nd phalanxes of the fore-foot of a young individual.
- Br. 21; locus VII—VIII; stratum (7). Megalithic Culture. Right upper 1st premolar.
- Br. 22; locus IV—VIII; stratum (6d). Megalithic Culture. Distal fragment of the left humerus with medial and lateral condyles; 1st phalanx of the fore-foot.

As compared with the skeletal remains of domestic humped cattle the skeletal remains of domestic buffalo from the Brahmagiri Megalithic Culture are few and fragmentary. No long bone or skull is available, and it is difficult to compare with other forms. These fragments resemble those of the remains from the Bhramagiri Late Stone Axe Culture, *vide* above, Harappa, Hastinapura, Maski and Rupar, and also the modern domesticated buffalo.

Subfamily (ii) *CAPRINAE*

***Ovis vignei* Blyth race *domesticus* (The Domestic Sheep)**

(Pl. 7, Figs. 6-10; Pl. 8, Figs. 2, 3)

- Br. 17; stratum (3); Megalithic Culture. Left astragalus of a young one.

- Br. 17; locus A₁; stratum (4); Megalithic Culture. Distal fragment of the shaft of tibia of a young one; distal fragment of the shaft of humerus of a young one.

- Br. 17; locus A₁; stratum—pit A. Sealed by (4); Megalithic Culture. Fragment of the vertical ramus of the lower jaw with coronoid process and condyle; 5 fragments of the left pelvis with a portion of the shaft of ilium and acetabulum; 6 fragments of the horizontal ramus of the left mandible with the 1st & 2nd molar; 7 distal epiphysis of the left tibia of a young one.
- Br. 21; locus V—VII; stratum (7); Megalithic Culture. Fragment of the shaft of right tibia; 24 fragments of the proximal extremity of the right femur with head and without greater trochanter; 25 distal fragments of the shaft of right tibia; 26 left astragali of a young one; body of a thoracic vertebra; 27 fragments of the shaft of radius; 28 fragments of the right vertical ramus of the mandible with coronoid process and without condyle.
- Br. 21; locus VII—VIII; stratum (7); Megalithic Culture. Thoracic vertebra with spinous process and transverse process; proximal fragment of the right radius; 30 fragments of the shaft of femur.
- Br. 22; locus IV—VIII; stratum (6d); Megalithic Culture. Fragment of the left horizontal ramus of the mandible; several fragments of the lower molar teeth; 41 fragments of the shaft of radius; 42 proximal fragments of the shaft of left femur without proximal extremity.
- Br. 22; locus IV—VIII; stratum (6); Megalithic Culture. Two shafts of the 3rd & 4th metatarsal; one shaft of the left 3rd & 4th metacarpal without distal extremity of a young one; distal fragment of the right humerus with medial and lateral condyles; proximal fragment of the shaft of right humerus without proximal extremity; fragment of the left pelvis with acetabulum and a part of pubis and ilium; left lower 1st molar of a young one; body of a thoracic vertebra; fragments of ribs; fragment of the shaft of tibia (charred); fragment of right upper jaw with 1st, 2nd & 3rd premolars and 1st molar of a young one; fragment of right horizontal ramus of mandible with 2nd and 3rd premolars; right and left 1st lower molar of a young one; distal fragment of left femur with medial and lateral condyles and intercondyloid fossa.
- Br. 22; locus VI—VII; stratum—pit 25. Sealed by (6). Megalithic Culture. Fragment of the left frontal bone with the horn-core; fragment of the horizontal ramus of the left mandible with 2nd & 3rd molars; spinous process of a thoracic vertebra; fragment of a rib.

These remains are mainly fragmentary, and not a single long bone or skull is available for measurements.

The few teeth do not show any specialized peculiarities and generally resemble those of the recent domestic sheep in the collection of the Z.S.I. (Maximum length of upper jaw 59 mm.; length of the tooth-row of same 47.3 mm. Maximum length of lower jaw 79 mm.; length of tooth-row 51.4 mm.)

A single horn-core (maximum length 73.3 mm). with a fragment of frontal bone is available. (Pl. 7, Fig. 6).

A better preserved and intact thoracic vertebra (maximum length of body 18 mm.; maximum height 49 mm.), is shown on Pl. 7, Figs 7 and 8. (Maximum distance between two anterior articular processes 17 mm.; and between two posterior processes 18 mm.)

The limb-bones too are fragmentary (Pl. 7, Figs. 9, 10). (Maximum length of astragalus 27 mm., and of the shaft of 3rd and 4th metacarpal 95 mm.)

These fragments closely resemble those from Harappa, Hastinapura, Maski, Sarnath, and Rupar and Nagda (Nath, unpublished), and also modern Indian domesticated sheep.

***Capra hircus aegagrus* Erxl. (The Domestic Goat)**

Br. 17; locus A₁; stratum (2a). Megalithic Culture. One thoracic vertebra.

A single find is present. It closely resembles with the modern sheep in the collection of the Z.S.I.

Family CERVIDAE

***Axis axis* Erxleben (The Chittal or Spotted Deer) (Pl. 8, Figs. 6, 7)**

Br. 17; locus A₁; stratum (2a); Megalithic Culture. Two fragments of antlers.

Br. 22; locus VI—VII; stratum pit (25). Sealed by (6). Megalithic Culture Fragment of an antler.

Well preserved specimens of antler are shown in Pl. 8, Figs. 6 and 7. Maximum lengths 135 and 165 mm.

The occurrence of *Axis axis* Erxl., has also been reported from Mohenjodaro and Rupar (Nath, unpublished).

(c) *The Andhra Culture*

Below is given the account of the animal remains of the different species which lived in this cultural period.

(a) INVERTEBRATA

Phylum MOLLUSCA

Family PILIDAE

***Pila globosa* (Swainson) (The Land Snail)**

Br. 18; locus A₁; Stratum (4); Andhra Culture. One shell.

This single shell of the land-snail resembles in shape and configuration recent specimens of *Pila globosa* in the collection of the Z.S.I. The species is widely distributed in India, in ponds, lakes and rivers, etc.

(b) VERTEBRATA

Class MAMMALIA

Order LAGOMORPHA

Family LEPORIDAE

***Lepus nigricollis* Cuvier (The Indian Hare)**

(Pl. 5, Fig. 10)

Br. 20; locus B₂; Stratum (2); Andhra Culture. Fragment of the right horizontal ramus of mandible with molar teeth.

This solitary piece closely resembles the mandible of the recent Indian Hare, *Lepus nigricollis*, present in the collection of the Z.S.I. (Maximum length of the fragment 25 mm.; length of tooth row 13 mm).

There is no record of any remains of this hare from Harappa and Mohenjodaro. Nath (1958, p. 172) has recently recorded the remains of another hare, *Lepus ruficaudatus*, from Sarnath.

Order ARTIODACTYLA

Family BOVIDAE

Subfamily (i) BOVINAE

Bos indicus Linn. (The Domestic Humped Cattle of India)

(Pl. 6, Figs. 1, 2, 10, 11)

- Br. 18; locus A₁; stratum (1). Andhra Culture. Fragment of the right lower 3rd molar; two left astragali; fragment of the frontal bone; proximal fragment of right femur with head and trochanter minor and trochanteric fossa; two distal fragments of the left humerus with medial condyles; right astragalus; distal end of right tibia; fragment of the inferior border of the horizontal ramus of mandible; neural arch of a thoracic vertebra; proximal fragment of 1st phalanx of the hind-foot.
- Br. 18; locus A₁; stratum (1B). Andhra Culture. Proximal fragment of the right 3rd & 4th metatarsal of a young one; distal fragment of the shaft of left humerus.
- Br. 18; locus A₁; stratum (3a). Andhra Culture. Proximal fragment of the left radius; fragment of a thoracic rib; one fragment of the shaft of humerus; fragment of a thoracic vertebra with lamina, neural arch and without spinous process.
- Br. 18; locus A₁; stratum (3). Andhra Culture. One distal fragment of the left humerus with medial and lateral condyle; shaft of the 3rd & 4th metatarsal without proximal and distal ends; spinous process of the thoracic vertebra; fragment of shaft of ulna with semilunar notch and without olecranon process; fragment of the acetabulum of pelvic girdle; left astragalus; fragment of the distal end of left tibia; incomplete left fused navicular and cuboid of the proximal tarsal.
- Br. 18; locus A₁; stratum (3B). Andhra Culture. Two fragments of the scapula; two fragments of thoracic vertebrae with neural arch and a portion of spinous process.
- Br. 18; locus A₁; stratum (4). Andhra Culture. Two distal fragments of the 3rd & 4th metacarpals and one distal fragment of the 3rd & 4th metatarsal; distal fragment of the left tibia; left fused navicular & cuboid; 1st phalanx of hind-foot; several fragments of the shaft of the thoracic ribs; proximal fragment of left ulna without olecranon process; left upper 1st premolar; two fragments of molar teeth; two right lower 3rd molar teeth; fragment of an axis vertebra having anterior articular process; distal fragment of right femur with medial condyle; fragment of the acetabulum of the right pelvis; left lunate bone of proximal carpus.
- Br. 18; locus A₁; stratum (5). Andhra Culture. Fragment of the blade of scapula with broken spine; proximal fragment of the left 3rd & 4th metacarpal; three fragments of the thoracic ribs; fragment of left lower 3rd molar,

- Br. 19; locus A₁; stratum (2a). Andhra Culture. Distal fragment of the right humerus with medial condyle.
- Br. 20; locus B₂; stratum (1). Andhra Culture. Right calcaneum; two left astragalii one belonging to an young one; lumbar vertebra with transverse process & neural spine; fragment of right ventral arch of atlas vertebra with alar foramen; one distal fragment of the shaft of humerus; one distal end fragment of left humerus with medial condyle; Proximal fragment of 1st phalanx of hind-foot; fragmentary piece of a molar tooth; several fragments of ribs.
- Br. 20; locus B₂; stratum (2). Andhra Culture. Distal fragment of the left humerus with medial and lateral condyle.
- Br. 20; locus B₂; stratum (3). Andhra Culture. Proximal and distal fragments of the 3rd & 4th metacarpal; distal fragment of the shaft of humerus; fragment of a rib; one left astragalus.
- Br. 21; stratum (2b). Andhra Culture. One complete atlas vertebra; right horizontal ramus of lower jaw without teeth; fragment of rib; fragments of the frontal bone with frontal sinuses; fragment of bone with bony horn-core; left molar bone with zygomatic and temporal processes of the skull; right upper 1st molar; right upper 2nd molar; fragment of the 3rd upper premolar of a young one; fragments of molar teeth of young ones; right 3rd & 4th metacarpal bones. The bones were found in layers (2b) & (2a).
- Br. 21; Locus VII—VIII; Stratum (7); One right upper 1st premolar.

The remains of Humped Cattle are very fragmentary here as in the Stone Axe Culture and Megalithic Cultures, discussed above.

The teeth do not show any special peculiarities, and generally resemble those of the recent domestic humped cattle of India.

A better preserved and conspicuous atlas vertebra is shown on Pl. 6. Fig. 4; (maximum width 90 mm.)

The measurements of the limb-bones of well preserved and intact specimens such as those of the 3rd and 4th metacarpals and the astragalus are given in Table 4, along with those from Harappa, Rupar and the modern specimens (also see Pl. 6, Figs. 7 and 8).

TABLE 4.—*Measurements of limb-bones of Bos indicus Linn.*

Item	Greatest length	Proximal diameter	Median diameter	Distal diameter
3rd & 4th metacarpal- Brahmagiri (Br. 21; Str. 2b.)	213	56	26	51
Rupar (Bara 1-D.A. 501)	234	62	34	65
Harappa (Cemetery Site H/C).	235	52	32	65
Modern specimen (in the Z.S.I.)	218.5	54	29	50
Astragalus—Brahmagiri (Br. 17; Str. 3)	67	43	37	39
Rupar (RPR 7-1)	72	50	40	46
Harappa (Found F)	75	51	4.35	46

The measurements of the limb-bones resemble the smaller short-horned variety of Harappa (Prashad, 1930, pp. 38-39) which is also the form now met with in India. They also resemble closely the modern domestic Humped Cattle of India.

The other remains also resemble the smaller short-horned variety of the present day, and may be regarded as of the same species.

The skeletal remains also closely resemble those from Mohenjodaro, Harappa, Hastinapura, Maski and Rupar (Nath, unpublished).

As compared with the finds of other animals, the remains of *Bos indicus* have been found in large number. This indicates that the people of the Brahmagiri Andhra Culture used to maintain large herds of this species.

***Bos (Bubalus) bubalis* Linn. (The Indian Domestic Buffalo)**

(Pl. 7, Figs. 1, 3, 4 and 5)

Br. 18; locus A1; stratum (3). Andhra Culture. Head of the right femur of an young one; right astragalus; 3rd phalanx of the fore-limb; medial condyle of the right femur; fragment of the proximal shaft of left humerus with deltoid tuberosity; fragment of a cervical vertebra with ant. articular process and with broken transverse process of the left side; fragment of the trochlea of right femur.

Br. 19; locus A1; stratum (1a). Andhra Culture. Proximal fragment of the right 3rd and 4th metacarpal; proximal fragment of the scapula with glenoid cavity and coracoid process; proximal fragment of the left ulna without olecranon process; fragment of the head of humerus; fragment of the right pelvis with a portion of acetabulum & ischium; 1st phalanx of left fore-foot; coronoid process of the lower jaw.

Br. 20; locus B2; stratum (2). Andhra Culture. Right calcaneum without distal facet for cuboid and with sustentaculum; fragments of ribs; neural arch of the thoracic vertebra; fragment of jaw.

Br. 20; locus B2; stratum (3). Andhra Culture. Left astragalus.

The remains of the domestic buffalo are very fragmentary. Better preserved specimens of limb bones such as the distal fragment of 3rd and 4th metacarpals and the astragalus are shown in Pl. 7, Figs. 1, 3 and 4. Their measurements along with measurements of the Rupar and modern specimens of the domestic buffalo are given in Table 5.

TABLE 5.—Measurements (in mm.) of the distal fragment of the 3rd and 4th metacarpal of *Bos (Bubalus) bubalis* Linn.

3rd and 4th large metacarpal	Maximum distal epiphyseal breadth	Maximum depth of condyles
Brahmagiri (Br. 21)	70	39
Rupar (RPR-132)	70	33
Modern specimen (in the Z.S.I.)	68	34

TABLE 6.—*Measurements of astragalus of Bos (Bubalus) bubalis Linn.*

Astragalus	Lateral length	Median length	Proximal width	Median width	Distal width
Brahmagiri (Br. 20, 3)	82	76	48	46	52
Modern specimen (in the Z.S.I.)	76	76	50	45	47

These fragments show close structural resemblance with those of the modern domestic buffalo present in the collection of the Z.S.I., and also with those from the Brahmagiri Stone Axe Culture and Megalithic Culture discussed above.

A well preserved specimen of a broken calcaneum is shown in on Pl. 7, Fig. 5; maximum length 123 mm.

As compared with the skeletal remains of domestic Humped Cattle (*Bos indicus* Linn.), the remains of domestic buffalo are very few, which indicates that the people probably did not maintain large herds of this animal.

Subfamily (ii) *CAPRINAE*

Ovis vignei Blyth race *domesticus* (The Domestic Sheep)

Br. 18.; locus A₁; stratum (1); Andhra Culture. Distal fragment of the shaft of left tibia.

Br. 18; locus A₁; stratum (3); Andhra Culture. Distal fragment of the left tibia; shaft of the right femur without proximal and distal extremities, distal fragment of the right femur with lateral condyle.

Br. 18; locus A₁; stratum (4); Andhra Culture. Fragment of the distal extremity of the left femur with medial condyle; distal fragment of the left humerus; fragment of the left pelvis with a portion of ilium and acetabulum; fragment of the left calcaneum without peroneal facet for astragalus.

Br. 19; locus A₁; stratum (1A); Andhra Culture. Proximal fragment of the right femur of a young one.

Br. 20; locus B₂; stratum (2), depth 4 ft.; Andhra Culture. Proximal fragment of the left femur without the head and trochanter; distal fragment of the right humerus with medial and lateral condyle; fragment of the shaft of radius; fragment of the vertical ramus of right mandible with condyle and without coronoid process; cervical vertebra with neural arch, neural spine, ant. articular process and with a portion of body and transverse process of a young one.

Br. 21 stratum (2b); Andhra Culture. Proximal fragment of the right femur.

These fragments closely resemble those of the Brahmagiri Stone Axe and the Megalithic Cultures, also those from Harappa, Hastinapura, Maski, Saranath, and Rupar and Nagda (Nath, unpublished). They also resemble the modern Indian domesticated race of sheep.

Capra hircus aegagrus Erxleben (The Domestic Goat)

(Pl. 8, Fig. 3)

Br. 19; locus B₁; stratum (1); Andhra Culture. One 1st phalanx of the right fore-foot.

Br. 21; right upper 1st molar of an young one.

Br. 18; locus A₂; stratum 3a. Andhra Culture. One fragment of the left ramus of mandible with 2nd & 3rd molar teeth; one fragment of the left horizontal ramus of mandible with 2nd, 3rd and 4th pre-molars and without body (corpus mandibulae); one fragment of a thoracic vertebra with lamina, neural arch and without neural spine; one fragment of the vertical ramus of left ramus of mandible with the condyle.

As compared with the skeletal remains of domestic sheep the remains of the goat are much fewer. The teeth do not show any specialised peculiarities and generally resemble those of the recent domestic goat. The lower jaw is incomplete but resemble in all respects that of a recent specimen in the Z.S.I.; it is shown in Pl. 8, Fig. 3; maximum length 123.5 mm.; length of tooth-row 68 mm.

No complete bone or skull are available and it is difficult to compare sizes.

These fragments closely resemble the remains from Harappa, Hastinapura, Maski, Sarnath, and Rupar (Nath, unpublished). They also closely resemble the modern Indian domesticated race of goat.

III—SUMMARY

1. This report deals with the collection of animal remains (bones and shells) from the excavations of prehistoric sites at Brahmagiri (Chitradurga district, Mysore State, India), made by the Department of Archaeology of the Government of India, during the field season of the year 1947. The remains belong to three cultural periods, as follows:—

I. *Brahmagiri Stone Axe Culture* (early 1st millennium B.C. to the beginning of the 2nd century B.C., which is further been subdivided into two subcultures e.g., 1A (Early Stone Axe Culture), and 1B (Late Stone Axe Culture).

II. *Brahmagiri Megalithic Culture* (ca. 200 B.C. to the middle of the 1st century A.D.).

III. *Brahmagiri Andhra Culture* (ca. middle of the 1st century to 3rd Century A.D.).

2. The species represented in the various cultures are given below.

Brahmagiri Stone Axe Culture 1A (Earlier): *Equus* sp.; *Bos indicus* Linn.; *Ovis vignei* race *domesticus*; *Lepus nigricollis* Cuvier.

Brahmagiri Stone Axe Culture 1B (Later): *Canis familiaris* Linn.; *Equus asinus* Linn.; *Bos* (*Bubalus*) *bubalis*; *Bos indicus* Linn.; *Ovis vignei* race *domesticus*; *Capra hircus aegagrus* Erxl.; *Axis axis* Erxl.; *Sus scrofa cristatus* Wag.

Brahmagiri Megalithic Culture: *Bos indicus* Linn.; *Bos (Bubalus) bubalis* Linn.; *Ovis vignei* Blyth, race *domesticus*; *Capra hircus aegagrus* Erxl. ; and *Gallus* sp.

Brahmagiri Andhra Culture: *Bos indicus* Linn.; *Bos (Bubalus) bubalis* Linn.; *Ovis vignei* Blyth, race *domesticus*; *Capra hircus aegagrus* Erxl.; *Lepus nigricollis* Cuv.; *Pila globosa*.

3. There are two fragments of bones *Bos indicus* in the collection which have definite marks of impact of sharp instruments; this indicates that the inhabitants probably used this species for food. In many cases charred bones have also been found.

4. Except for the Cheetal deer, *Axis axis* Erxl., the remains of the other animals (birds and mammals) excavated at Brahmagiri are those of the domesticated animals maintained by the inhabitants of those periods.

IV—REFERENCES

- DUERST, J. U. 1908. Animal remains from the excavations at Anau. In: *Exploration in Turkestan. Prehistoric Civilization of Anau.*—2, pp. 341-442, pls. 71-91.—Washington (Carnegie Instn.).
- EAPEN, J. 1960. A report on the animal remains of the Nevasa excavations. In : *From History to Prehistory at Nevasa, 1954-56*, pp. 531-536.—Poona (Univ. of Poona Publ., No. 1).
- GEORGE, J. C. 1955. Identification of animal bones. In: *Report on the Excavation at Nasik and Jorwe, 1950-51*, pp.142-143.—Poona (Univ. of Poona Publ.).
- NATH, B. 1955. Animal remains from Hastinapura.—*Ancient India*, Delhi, Nos. 10 & 11, pp. 107-120, 4 pls.
- NATH, B. 1957. Animal remains from Maski.—*Ancient India*, Delhi, No. 13, pp. 111-120, 2 pls.
- NATH, B. 1958. Animal remains of the 12th Century A.D. from Sarnath in Uttar Pradesh, India—*J. zool. Soc. India*, Calcutta, 10 (2), pp. 165-175, 2 pls.
- NATH, B. 1959. Animal remains of the mid-first century B.C. to second century A.D. from Taxilla (Sirkap), West Pakistan.—*J. zool. Soc. India*, Calcutta, 11(1), pp. 76-84, 2 pls.
- NATH, B. Animal remains from Rupar.—*Mem. archaeol. Surv. India*, Delhi (*In Press*).
- NATH, B. Animal remains from Rangpur. (Unpublished.)
- PRASHAD, B. 1930. Animal remains from Harappa.—*Mem. archaeol. Surv. India*, Delhi, No. 51, 61 pp., 8 pls.
- SEWELL, R. B. S. AND GUHA, B. S. 1931. Zoological remains. 3 Ed. by. Marshall, J. In : *Mohenjodaro and the Indus Civilization.* 2, pp. 649-673.—London (Arthur Probsthain).

PLATE 5

(FIGS. 1-3).—*Canis familiaris* Linn.

FIG. 1.—Fragment of the right ramus of the mandible.

Br. 17; Locus B₁; Stratum (10); Stone Axe Culture (1B).

FIG. 2.—Fragment of the left ramus of mandible from Mound AB, Harappa

FIG. 3.—Right ramus of the mandible of a modern domestic dog in the Zoological Survey of India.

(FIGS 4-6).—*Equus* sp.

FIG. 4.—Lateral view of a 5th cervical vertebra. Br. 22; Locus I-IV Stratum (15) Stone Axe Culture (Earlier).

FIG. 5.—Dorsal view of the same.

FIG. 6.—Ventral view of the same.

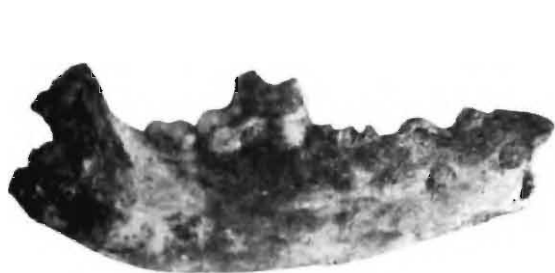
(FIGS. 7-10).—*Lepus nigricollis* Cuvier

FIG. 7.—Fragment of the right horizontal ramus of the mandible. Br. 20; Stratum (2); Andhra Culture. Enlarged.

FIG. 8.—Distal fragment of the right humerus. Br. 20; Stratum (2); Andhra Culture. Enlarged.

FIG. 9.—Proximal fragment of the right tibia. Br. 22; I-IV; Stratum (15). Stone Axe Culture (1A); slightly enlarged.

FIG. 10.—Distal fragment of the right tibia. Same as above.



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3



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10



6

PLATE 6

Bos indicus Linn.

- FIG. 1.—Fragment of the occipital bone of the skull. Br. 22 ; VI-VIII ; Stratum—Pit 25 Sealed by (6) ; Megalithic Culture.
- FIG. 2.—Fragment of the frontal bone of the skull. Br. 22 ; VI-VIII ; Stratum—Pit 25 Sealed by (6) ; Megalithic Culture.
- FIG. 3.—Fragment of a lower jaw. Br. 22 ; I-IV ; Stratum (15) ; Late Stone Axe Culture.
- FIG. 4.—An atlas vertebra. Br. 21 ; Stratum (2b) ; Andhra Culture.
- FIG. 5.—A cervical vertebra. Br. 21 ; Pit—"DD" Sealed by (10) ; Late Stone Axe Culture.
- FIG. 6.—A lumbar vertebra. Br. 21 ; VI-IX ; Stratum (12) ; Late Stone Axe Culture.
- FIG. 7.—Right 3rd & 4th metacarpal. Br. 21 ; Stratum (2b) ; Andhra Culture.
- FIG. 8.—Left astragalus. Br. 21 ; Andhra Culture.
- FIG. 9.—Combined navicular & cuboid bone of the proximal tarsal. Br. 21 ; Stratum (12), Late Stone Axe Culture.
- FIG. 10.—Scaphoid bone of the proximal carpus. Br. 17 ; Stratum (3) ; Megalithic Culture.
- FIG. 11.—Lunate bone of the proximal Carpus. Br. 21 ; Stratum (7) ; Megalithic Culture.



5



4



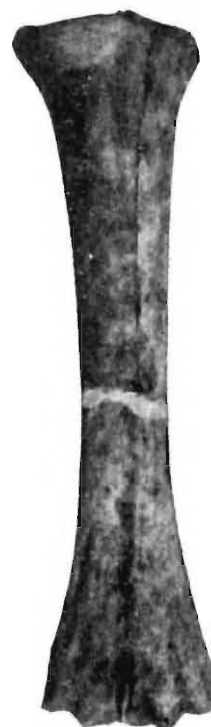
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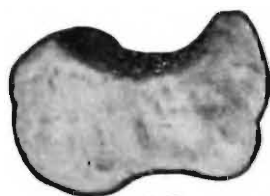
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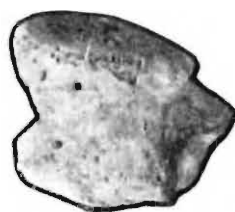
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PLATE 7

(FIGS. 1-5).—*Bos (Bubalus) bubalis* Linn.

- FIG. 1. —Proximal fragment of the 3rd & 4th metacarpal. Br. 19; A₁; Stratum (1a); Andhra Culture.
- FIG. 2.—Distal fragment of the humerus. Br. 17; B₁; Stratum (10); Late Stone Axe Culture.
- FIG. 3.—A left astragalus. Br. 20; B₂; Stratum (3); Andhra Culture.
- FIG. 4.—Left astragalus of a modern specimen of a buffalo in the Zoological Survey of India.
- FIG. 5.—An incomplete calcaneum. Br. 20; Stratum (2); Andhra Culture.

(FIGS. 6-10).—*Ovis vignei* Blyth

- FIG. 6.—Fragment of a horn-core with a portion of frontal bone. Br. 22; VI-VI: Pit—25 Sealed by (6); Megalithic Culture.
- FIG. 7.—Anterior view of a thoracic vertebra; Br. 17; A; Stratum (4A); Megalithic Culture.
- FIG. 8.—Posterior view of the same.
- FIG. 9.—A left astragalus. Br. 17; Stratum (3); Megalithic Culture.
- FIG. 10.—3rd and 4th metacarpal bone without distal epiphysis. Br. 22; IV-VIII; Stratum (7); Megalithic Culture.

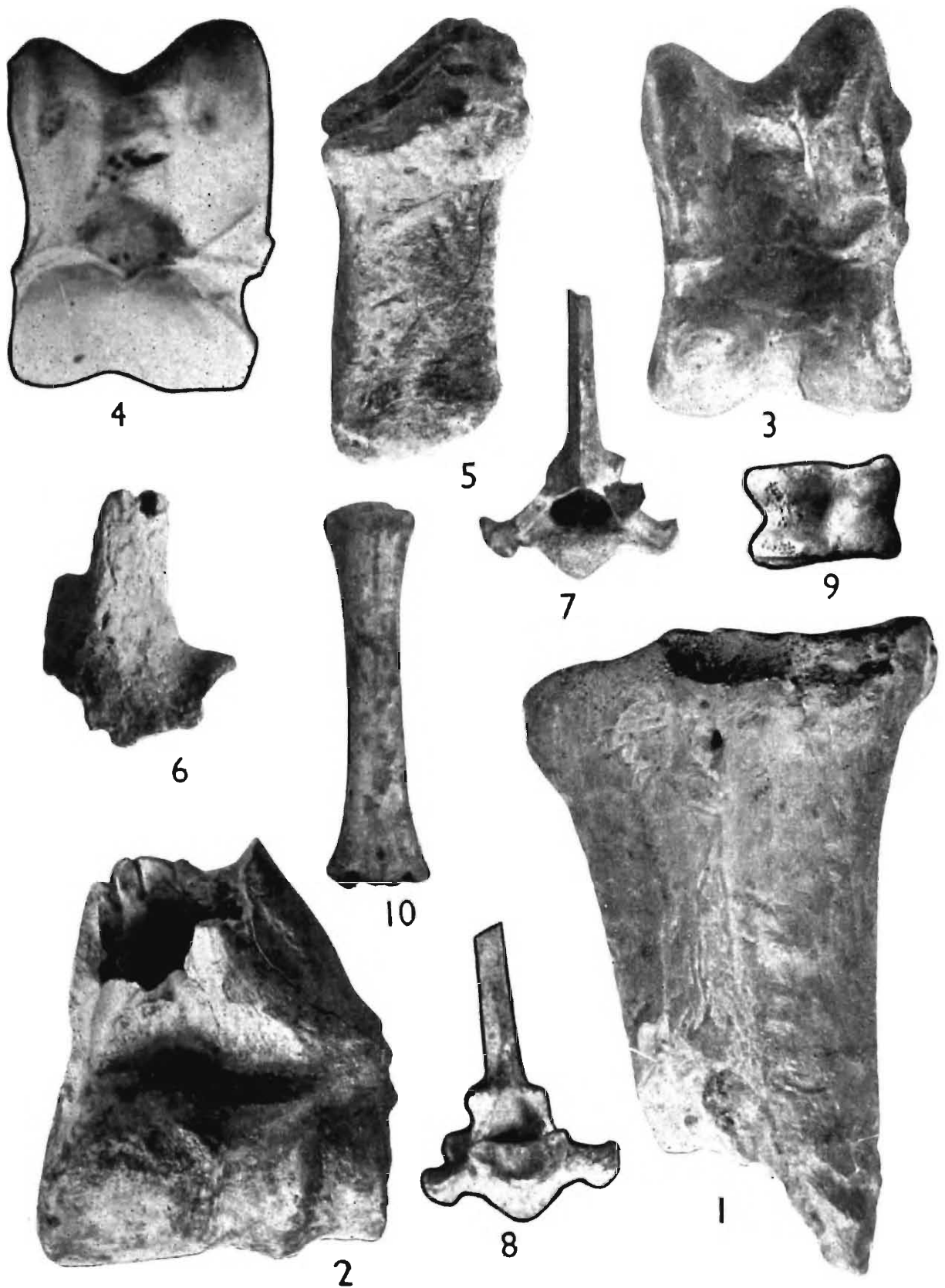


PLATE 8

(FIGS. 1-2).—*Ovis vignei* Blyth

FIG. 1.—Fragment of the left horizontal ramus of mandible. Br. 22; VI-VIII; Pit—25 Sealed by (6); Megalithic Culture.

FIG. 2.—A fragment of the right upper jaw, same source as above.

(FIG. 3.).—*Capra hircus aegagrus* Gmelin

FIG. 3.—Left ramus of the mandible. Br. 18; Stratum (3a); Andhra Culture.

(FIGS. 4-5).—*Sus scrofa cristatus* Wagner

FIG. 4.—3rd metatarsal of the right hind-foot. Br. 21; VI-IX; Stratum (12); Early Stone Axe Culture.

FIG. 5.—3rd metatarsal of right hind-foot of a modern specimen of pig in the Zoological Survey of India.

(FIGS. 6-7).—*Axis axis* Erxleben

FIG. 6.—Fragment of an antler. Br. 27, VI-VII; Stratum—Pit 25 Sealed by (6); Megalithic Culture.

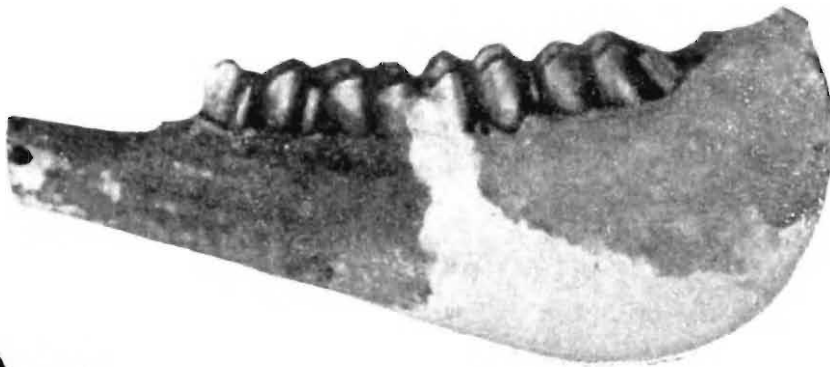
FIG. 7.—Fragment of an antler. Br. 21; Pit "DD" Sealed by (10); Late Stone Axe Culture.



1



2



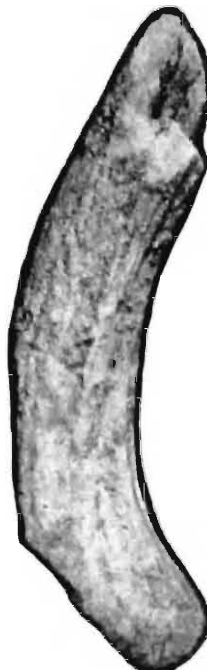
3



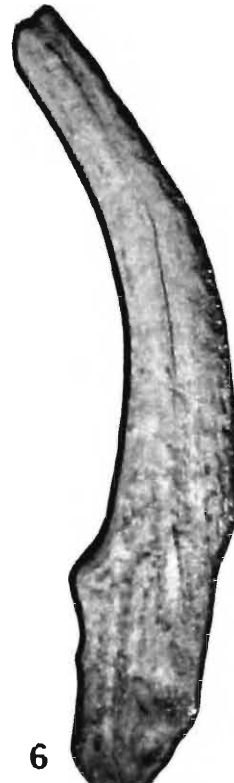
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6

CATALOGUE OF TYPE—SPECIMENS IN THE ZOOLOGICAL SURVEY OF INDIA

PART 1.—GENERAL INTRODUCTION

By

M. L. ROONWAL

Director, Zoological Survey of India, Calcutta

The extensive zoological collections of the Zoological Survey of India Calcutta, known as the Standard or National Zoological Collections, constitute by far the largest collection in India and cover all groups of animals from Protozoa to Mammals. They include the early collections made in the nineteenth century by the Asiatic Society of Bengal (now the Asiatic Society), Calcutta, then by the Natural History Section of the Indian Museum from its inception, in 1875 to 1916, and, finally, by the Zoological Survey of India itself from its inception in 1916. The collections are built up primarily by (i) the collections brought back by our Survey Parties from all over the country ; (ii) by exchange with, or donations received from, scientific institutions and individuals all over the world ; and (iii) by purchase either from recognised specialists or from reliable zoological collectors. Before being registered in our records, the collections are carefully identified either by the specialists of the Survey itself or, for groups where specialists are not available in the Survey, by experts from outside.

The collections mainly cover the Indian Region, namely, India, Pakistan, Nepal, Ceylon and Burma. But there are valuable collections from some of the neighbouring countries, such as Afghanistan, Iran, Thailand, Malaya, etc., and small collections from Ethiopia and certain regions of Central Asia are also present. A total of over 6,00,000 specimens, comprising over 42,000 different species, are present. Among these are nearly 13,000 "Type-Specimens" (such as holotypes, cotypes, syntypes and paratypes) belonging to several hundred species. These Types are of great importance to taxonomy since in the event of divergence of opinion about the identity of a species and the validity of names, the type-specimens constitute the final court of appeal. For this purpose type-specimens here, as well as in most of the museums of the world, are given special care and attention and are generally distinctively marked (by coloured labels, for example) from the general collections. For some years past, the Survey has been segregating these Types and also preparing card indexes and catalogues of them. It is proposed to publish these catalogues as and when they are completed for each group. Their preparation is a laborious task and takes time. The catalogue of fishes, which is now ready, has been prepared by Dr. A. G. K. Menon and Mr. G. M. Yazdani, and is being published as Part 2 of this series. It contains 441 species and 1,638 specimens belonging to 86 different families of fishes.

It is hoped that the Type Catalogues will be of use to taxonomist all over the world.

(89)

CATALOGUE OF TYPE-SPECIMENS IN THE ZOOLOGICAL SURVEY OF INDIA

PART 2.—FISHES

By

A. G. K. MENON AND G. M. YAZDANI

Zoological Survey of India, Calcutta

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I—INTRODUCTION

All the holotypes, paratypes, and syntypes of fishes in the reference collection of the Zoological Survey of India are listed in this Catalogue and are systematically arranged, the general classification followed being that of Berg¹. There are altogether 441 types comprising 1,638 specimens. They are tabulated below (Table 1) according to the number of species and specimens under the respective families with their type category.

TABLE I—*Type-specimens of fishes in the Zoological Survey of India.*

Serial No.	Family	Types present		
		Species	Specimens	Type Category
1.	Scyliorhinidae .	4	5	Holotypes & Paratypes
2.	Squalidae .	2	3	Holotype & Syntypes
3.	Rajidae . .	4	4	Holotypes
4.	Trygonidae .	3	3	Holotypes
5.	Myliobatidae .	3	6	Holotype & Paratypes syntypes

¹ Berg, L.S. Classification of fishes, both recent and fossil. — *Trav. Inst. Zool. Acad. Sci. USSR.*, 5(2), pp. 87-517, (1940).

Serial No.	Family	Types present		
		Species	Specimens	Type Category
6.	Torpedinidae . . .	3	5	Holotype & Syntypes
7.	Clupeidae . . .	3	5	Holotypes & Paratypes
8.	Engraulidae . . .	3	20	Holotypes & Paratypes
9.	Alepocephalidae . .	9	10	Holotypes & Syntypes
10.	Dolichopterygidae .	1	1	Holotype
11.	Gonostomidae . . .	2	7	Syntypes
12.	Stomiatidae . . .	2	3	Holotype & Syntypes
13.	Bathyclupeidae . . .	1	2	Syntypes
14.	Synodidae . . .	2	10	Syntypes
15.	Scopelarchidae . . .	1	1	Holotype
16.	Evermannellidae . .	1	1	Holotype
17.	Sudidae . . .	3	7	Holotype & Syntypes
18.	Scopelidae . . .	3	26	Holotype & Syntypes
19.	Cyprinidae . . .	92	533	Holotypes, Paratypes & Syntypes
20.	Homalopteridae . . .	7	21	Holotypes, Paratypes & Syntypes
21.	Cobitidae . . .	44	166	Holotypes, Paratypes & Syntypes
22.	Ariidae . . .	1	1	Holotype
23.	Siluridae . . .	1	1	Holotype
24.	Bagridae . . .	4	7	Holotypes & Syntypes
25.	Amblycepididae . . .	1	1	Holotype
26.	Akysidae . . .	1	1	Holotype
27.	Sisoridae . . .	30	58	Holotypes, Paratypes & Syntypes
28.	Schilbeidae . . .	2	4	Holotypes & Paratypes
29.	Claridae . . .	1	2	Holotype & Paratype
30.	Olyridae . . .	1	1	Syntype
31.	Trichomycteridae	1	6	Paratypes

Serial No.	Family	Types present		
		Species	Specimens	Type Category
32.	Muraenidae . . .	12	26	Holotypes, Paratypes & Syntypes
33.	Ophichthyidae . .	3	6	Holotype & Paratypes
34.	Dysominidae . . .	2	3	Holotype & Syntypes
35.	Synaphobranchidae . .	1	1	Holotype
36.	Serrivomeridae . .	1	1	Holotype
37.	Nemichthyidae . .	1	1	Holotype
38.	Halosauridae . . .	5	5	Holotypes & Syntypes
39.	Hemiramphidae . .	1	4	Paratypes
40.	Notacanthidae . .	1	1	Holotype
41.	Moridae . . .	2	4	Holotype & Syntypes
42.	Macruridae . . .	12	18	Holotypes & Syntypes
43.	Indostomidae . . .	1	59	Syntypes
44.	Syngnathidae . . .	11	18	Holotype & Syntypes
45.	Cyprinodontidae . .	5	115	Syntypes
46.	Sphyraenidae . . .	1	1	Holotype
47.	Mugilidae . . .	1	2	Holotype & Paratype
48.	Polynemidae . . .	1	4	Holotype & Paratypes
49.	Ophiocephalidae . .	1	4	Holotype & Paratypes
50.	Serranidae . . .	1	2	Syntypes
51.	Apogonidae . . .	2	4	Holotype & Syntypes
52.	Percidae . . .	1	1	Holotype
53.	Lactariidae . . .	1	1	Holotype
54.	Carangidae . . .	4	26	Syntypes
55.	Sciaenidae . . .	4	12	Holotypes & Syntypes
56.	Sparidae . . .	3	5	Holotypes & Paratype
57.	Chaetodontidae . .	1	1	Holotype
58.	Labridae . . .	1	1	Holotype
59.	Trachinidae . . .	1	1	Holotype
60.	Bembropidae . . .	1	1	Holotype

Serial No.	Family	Type present			
		Species	Specimens	Type Category	
61.	Trichonotidae . .	1	3	Syntypes	
62.	Uranoscopidae . .	2	2	Syntypes	
63.	Chiasmodontidae . .	2	2	Holotypes	
64.	Blenniidae . . .	3	16	Holotypes & Paratypes	
65.	Brotulidae . .	1	1	Holotype	
66.	Ophidiidae . . .	19	33	Holotypes & Syntypes	
67.	Callionymidae . .	2	3	Syntypes	
68.	Gempylidae . . .	1	4	Syntypes	
69.	Tetragonuridae	1	1	Holotype	
70.	Anabantidae . .	1	1	Holotype	
71.	Eleotridae . . .	1	7	Holotype & Paratypes	
72.	Gobiidae . . .	17	148	Holotypes, Paratypes & Syntypes	
73.	Scorpaenidae . . .	7	16	Holotype & Syntypes	
74.	Triglidae . . .	6	9	Holotypes & Syntypes	
75.	Bothidae . . .	12	18	Holotypes, Paratypes & Syntypes	
76.	Pleuronectidae . .	4	8	Holotypes & Syntypes	
77.	Soleidae	4	8	Holotypes & Syntypes	
78.	Cynoglossidae . .	12	26	Holotypes & Syntypes	
79.	Chaudhuridae . .	1	2	Syntypes	
80.	Mastocembefidae .	4	4	Holotypes	
81.	Triacanthidae . . .	3	10	Holotypes & Syntypes	
82.	Tetraodontidae	2	12	Holotype, Paratypes & Syntypes	
83.	Lophiidae . . .	6	9	Holotypes & Syntypes	
84.	Chaunacidae . .	1	1	Holotype	
85.	Oncocephalidae . .	9	23	Holotypes & Syntypes	
86.	Oneirodidae	1	1	Holotype	

The species are listed in alphabetical order. The current name of the species is given first, and the name of the species as given in the original

description with its first reference following it. The type category with the number contained in the collection is then given followed by the registered number, locality and the name of the collector or donor.

Our thanks are due to Dr. M. L. Roonwal, Director, Zoological Survey of India, without whose encouragement this catalogue would never have been published, and to Drs. Leonard P. Schultz of the U.S. National Museum, Washington, and P. H. Greenwood of the British Museum who have supplied information on certain specimens.

II—LIST OF TYPE SPECIMENS

Class I. ELASMOBRANCHII

Order 1. LAMNIFORMES

Family 1. SCYLORHINIDAE

1. *Pentachus (Parapristis) investigatoris* Misra

1962. *Pentachus (Parapristis) investigatoris* Misra, *Proc. 1st All India Congr.-Zool.*, Calcutta, Pt. 1 (1959), p. 636.

Holotype : F 1627/2 ; Andaman sea, 11°46'30" N., 93°16' E., 569 fms., 26. iii. 1904, R.I.M.S. "Investigator" Coll.

2. *Proscyllium alcocki* Misra

1950. *Proscyllium alcocki* Misra, *J. zool. Soc. India*, Calcutta, 2(2), p. 87, pl. 1, figs. 1-5.

Holotype : F 229/1 ; Andaman sea, 13°17'15" N., 93°10'25" E., 185 fms., 6.xii.1897, R.I.M.S. "Investigator" Coll.

Paratype (1) : F 382/1 ; Andaman sea, 14°13' N., 93°40' E., 370-419 fms., 18. iv. 1898, R.I.M.S. "Investigator" Coll.

3. *Scyliorhinus (Halaelurus) hispidum* (Alcock)

1891. *Scyllium hispidum* Alcock, *Ann. Mag. nat. Hist.*, London, (6) 8, p. 21^{ext}

1899. *Scyllium hispidum* Alcock, *Cat. Ind. Deep Sea Fish.*, Calcutta, p. (Ill. Zool. Investig. Fish., pl. 8, figs. 3, 3a).

Holotype : F 13120 (♂) ; Andaman Sea, lat. 11° 31' 40" N., 92° 46' 40" E. ; 188-220 fms., 9. xii. 1890, R.I.M.S. "Investigator" Coll.

4. *Scyliorhinus (Halaelurus) quagga* (Alcock)^{elhi}, p. 361, pl. 1.

1899. *Scyllium quagga* Alcock, *Cat. Ind. Deep Sea Fish.*, Arabian Sea (Ill. Zool. Investig. Fish., pl. 27, figs. 1, 1a).

Holotype : F 751/1 ; Off Malabar Coast, 102 fms., R.I.M.S. "Investigator" Coll.

Order 2. SQUALIFORMES

Family 2. SQUALIDAE

5. *Centrophorus rossi* (Alcock)

1898. *Centrophorus rossi* Alcock, *Ann. Mag. nat. Hist.*, London, (7) 2, p. 143.

1899. *Centrophorus rossi* Alcock, *Cat. Ind. Deep Sea Fish.*, Calcutta, p. 13 (*Ill. Zool. Investig. Fish.*, pl. 26, figs. 3, 3a, 3b, 3c).

Holotype : F 225/1 ; Laccadive Sea, 430 fms., 9.x.1897, *R.I.M.S. "Investigator"* Coll.

6. *Centroscyllium ornatum* (Alcock)

1889. *Paracentroscyllium ornatum* Alcock, *Ann. Mag. nat. Hist.*, London (6) 4, p. 379.

1899. *Paracentroscyllium ornatum* Alcock, *Cat. Ind. Deep Sea Fish.*, Calcutta, p. 14 (*Ill. Zool. Investig. Fish.*, pl. 8, fig. 2).

Syntypes (2) : F 11664 & F 11666 ; Bay of Bengal, 285 to 405 fms., 23.iii.1885, *R.I.M.S. "Investigator"* Coll.

Order 3. RAJIFORMES

Family 3. RAJIDAE

7. *Raja andamanica* (Lloyd)

1909. *Raja andamanica* Lloyd, *Mem. Indian Mus.*, Calcutta, 2, p. 140.

Holotype : F 1129/1 ; Andaman Sea, 279 fms., *R.I.M.S. "Investigator"* Coll.

8. *Raja johannis-davisi* (Alcock)

1899. *Raja johannis-davisi* Alcock, *Cat. Ind. Deep Sea Fish.*, Calcutta, p. 21 (*Ill. Zool. Investig. Fish.*, pl. 27, figs. 2, 2a).

Holotype : F 477/1 ; Laccadive Sea, Off the Travancore Coast, 224-284 fms., 17.x.1898, *R.I.M.S. "Investigator"* Coll.

9. *Raja powelli* (Alcock)

1898. *Raja powelli* Alcock, *Ann. Mag. nat. Hist.*, London, (7) 2, p. 145.

1899. *Raja powelli* Alcock, *Cat. Ind. Deep Sea Fish.*, Calcutta, p. 20 (*Ill. Zool. Investig. Fish.*, pl. 26, fig. 4).

: F 235/1 ; Gulf of Martaban, Burma, 67 fms., 1897-98 ; *"Investigator"* Coll.

10. *Raja reversa* (Lloyd)

Raja reversa Lloyd, *Ann. Mag. nat. Hist.*, London, (7) 18, p. 310.

: F 321/1 ; Arabian Sea, Off Baluchistan Coast, 820 fms., *"Investigator"* Coll.

Family 4. TRYGONIDAE

11. *Dasyatis (Himantura) alcocki* (Annandale)

1909. *Trygon alcocki* Annandale, *Mem. Indian Mus.*, Calcutta, 2, p. 27, fig. 3.

Holotype : F 2474/1 ; Puri, Orissa Coast ; iii. 1909 ; N. Annandale Coll.

12. *Dasyatis (Himantura) favus* (Annandale)

1909. *Trygon favus* Annandale, *Mem. Indian Mus.*, Calcutta, 2, p. 25, pl. 1, fig. 3, pl. 3, fig. 10.

Holotype : F 2411/1 ; Bay of Bengal, Off Orissa Coast, *Bengal Fisheries*, "Golden Crown" Coll.

Remarks : Mouth and skin of a specimen from the type.

13. *Dasyatis (Amphotistius) microps* (Annandale)

1908. *Trygon microps* Annandale, *Rec. Indian Mus.*, Calcutta, 2, p. 393, pl. 27.

Holotype : F 2410/1 ; Bay of Bengal, Off Chittagong Coast, 17 fms., *Bengal Fisheries*, "Golden Crown" Coll.

Family 5. MYLIOBATIDAE

14. *Aetomylaeus nieuhofii cornifera* (Annandale)

1909. *Myliobatis nieuhofii cornifera* Annandale, *Mem. Indian Mus.*, Calcutta 2, p. 52, pl. 2, fig. 4.

Syntypes (2) : F 2285/1 & F 2286/1 ; Balasore, Orissa Coast ; *Bengal Fisheries*, "Golden Crown" Coll.

15. *Manta birostris* (Walbaum)

1908. *Ceratoptera orissa* Lloyd, *Rec. Indian Mus.*, Calcutta, 2, p. 176, text fig. 1, pl. 5, figs. 1, 2.

Holotype : F 2968/1 ; Puri, Orissa Coast, 30.i.1909, R.E. Lloyd Coll.

16. *Rhinoptera sewelli*⁹ Misra

1946. *Rhinoptera sewelli* Misra, *Rec. Indian Mus.*, Delhi, p. 361, pl. 1.

Holotype : F 79/2 ; West-Hill, Off Calicut Coast, Arabian Sea 24. xi. 1944 ; K. C. Chacko Coll.

Paratypes (2) : F 80/2 ; data exactly as for holotype.

Order 4. TORPEDINIFORMES

Family 6. TORPEDINIDAE

17. *Bengalichthys impennis* Annandale

- 1909 *Bengalichthys impennis* Annandale, *Mem. Indian Mus.*, Calcutta, 48, pl. 3a, fig. 7.

Holotype : F 2357/1 ; Balasore Bay, Orissa Coast ; *Bengal Fisheries*, "Golden Crown" Coll.

Remarks : Only head of the type preserved.

18. *Benthobatis moresbyi* (Alcock)

1898. *Benthobatis moresbyi* Alcock, *Ann. Mag. nat. Hist.*, London, (7) 2, p. 145.

1899. *Benthobatis moresbyi* Alcock, *Cat. Ind. Deep Sea Fish.*, Calcutta, 18 (*Ill. Zool. Investig. Fish.*, pl. 26, fig. 1).

Syntypes (2) : F 232/1 ; F.234/1 ; Laccadive See, 430 fms., 19.x. 1897 ; *R.I.M.S.* "Investigator" Coll.

19. *Narcine brunnea* Annandale

1909. *Narcine brunnea* Annandale, *Mem. Indian Mus.*, Calcutta, 2, p. 45, pl. 3a, figs. 2, 2a.

Syntypes (2) : F 2349/1 & F 2350/1 ; Aracan Coast ; *Bengal Fisheries*, "Golden Crown" Coll.

Syntypes (2) : F 11577 & F 11578 ; Sand heads, Hooghly ; *R. M. Daley* Coll.

Class II. TELEOSTOMI

Order 5. CLUPEIFORMES

Family 7. CLUPEIDAE

20. *Ehirava fluviatilis* Deraniyagala

1929. *Ehirava fluviatilis* Deraniyagala, *Spolia Zeylan*, Colombo, 15, p. 35, pl. 14.

Paratype (1) F 11043/1 ; Moratua, W.P. Ceylon, *P.E.P. Deraniyagala* Coll.

21. *Gonialosa modesta* (Day)

1869. *Chatoessus modestus* Day, *Proc. zool. Soc. Lond.*, London, p. 622.

Molotype : F 2695 ; Bassein River, Burma ; *F. Day* Coll.

Paratypes (2) : F 8022/1 & F 8023/1, data exactly as for holotype.

22. *Gudusia chapra* (Ham.)

1822. *Clupanodon chapra* Hamilton, *Fish Ganges*, pp. 248, 383.

Holotype : F 4648/1 ; Gandak River in Saran, Bihar ; x. 1909 ; *M. Mackenzie* Coll.

Family 8. ENGRAULIDAE**23. *Thrissocles annandalei* (Chaudhuri)**

1916. *Engraulis annandalei* Chaudhuri, *Mem. Indian Mus.*, Calcutta, 5, p. 419, fig. 3.

Holotype : F 8781/1 ; Off Nalbano Island, Chilka lake, Orissa ; 18. ix. 1914 ; *Zoological Survey of the Chilka Lake, 1914* Coll.

24. *Thrissocles kemp*i (Chaudhuri)

1916. *Engraulis kemp*i Chaudhuri, *Mem. Indian Mus.*, Calcutta, 5, p. 421, fig. 4.

Holotype : F 8782/1 : Off Barkul, Lower Chilka, Orissa ; 1. iii. 1914 ; *Zoological Survey of the Chilka Lake, 1914* Coll.

Paratypes (15) : F 8785/1 to 8799/1 ; data exactly as for holotype.

25. *Thrissocles rambhae* (Chaudhuri)

1915. *Engarulis rambhae* Chaudhuri, *Mem. Indian Mus.*, Calcutta, 5, p. 423, fig. 5.

Holotype : F 8783/1 ; Rambha Bay, Chilka Lake ; iii. 1914 ; *Zoological Survey of the Chilka Lake, 1914* Coll.

Paratypes (2) : F 8800/1 & 8801/1 ; data exactly as for holotype.

Family 9. ALEPOCEPHALIDAE**26. *Alepocephalus blanfordi* Alcock**

1892. *Alepocephalus blanfordi* Alcock, *Ann. Mag. nat. Hist.*, London, 10, p. 357.

1899. *Alepocephalus blanfordi* Alcock, *Cat. Ind. Deep Sea Fish*, Calcutta, p. 172 (*Ill. Zool. Investig. Fish.*, pl. 9, fig. 1).

Holotype : F 13191 ; South of Cape Comorin, 902 fms. ; 14. xii. 1891 ; *R.I.M.S. "Investigator"* Coll.

27. *Alepocephalus edentulus* (Alcock)

1892. *Alepocephalus edentulus* Alcock, *Ann. Mag. nat. Hist.*, London (6), 10, p. 358.

1899. *Alepocephalus edentulus* Alcock, *Cat. Ind. Deep Sea Fish.*, Calcutta, p. 172 (*Ill. Zool. Investig. Fish.*, pl. 32, fig. 4).

Holotype : F 13192 ; Bay of Bengal, 475 fms. ; 31. iii. 1892 ; *R.I. M.S. "Investigator"* Coll.

28. Alepocephalus macrops Lloyd

1909. *Alepocephalus macrops* Lloyd, *Mem. Indian Mus.*, Calcutta, 2, p. 148.

1909. *Alepocephalus macrops* Lloyd, *Ill. Zool. Investig. Fish.*, pl. 44, fig. 3.

Holotype : F 1094 ; Bay of Bengal, Off Arakan Coast, 419 fms.
5. iii. 1904 ; R.I.M.S. "Investigator" Coll.

29. Bathytroctes squamosus Alcock

1890. *Bathytroctes squamosus* Alcock, *Ann. Mag. nat. Hist.*, London, (6) 6, p. 303.

1899. *Bathytroctes squamosus* Alcock, *Cat. Ind. Deep Sea Fish.*, Calcutta, p. 173 (*Ill. Zool. Investig. Fish.*, pl. 4, fig. 1).

Holotype : F 12869 ; Arabian Sea, 740 fms. ; 5.v.1890 ; R.I.M.S. "Investigator" Coll.

30. Narcetes affinis Lloyd

1906. *Narcetes affinis* Lloyd, *Ann. Mag. nat. Hist.*, London, (7) 18, p. 308.

1908. *Narcetes affinis* Lloyd, *Ill. Zool. Investig. Fish.*, pl. 42, figs. 1, 1a.

Holotype : F 1385/1 ; Gulf of Oman, 1005 fms. ; 8.xii.1905 ; R.I.M.S. "Investigator" Coll.

31. Platytröctogen mirus Lloyd

1909. *Platytröctogen mirus* Lloyd, *Mem. Indian Mus.*, Calcutta, 2, p. 145

Holotype : F 2382/1 ; Bay of Bengal, 500 fms. ; R.I.M.S. "Investigator" Coll.

32. Tauredophidium hextii (Alcock)

1890. *Tauredophidium hextii* Alcock, *Ann. Mag. nat. Hist.*, London, (6) 6, p. 213, pl. 8, fig. 1.

1899. *Tauredophidium hextii* Alcock, *Cat. Ind. Deep Sea Fish.*, Calcutta, p. 97 (*Ill. Zool. Investig. Fish.*, pl. 21, fig. 3).

Syntypes (2) : F 12829 & F 12830 ; Bay of Bengal, 1310 fms., 14. iii. 1890 ; R.I.M.S. "Investigator" Coll.

33. Xenodermichthys guentheri Alcock

1892. *Xenodermichthys guentheri* Alcock, *Ann. Mag. nat. Hist.*, London, (6) 10, p. 359, pl. 18, fig. 3.

1899. *Xenodermichthys guentheri* Alcock, *Cat. Ind. Deep Sea Fish.*, Calcutta, p. 180 (*Ill. Zool. Investig. Fish.*, pl. 32, fig. 2).

Holotype : F 13193 ; Bay of Bengal, 678 fms., 1. iv. 1892 ; R.I.M.S. "Investigator" Coll.

34. *Xenodermichthys squamilateralis* Alcock

1898. *Xenodermichthys squamilateralis* Alcock, *Ann. Mag. nat. Hist.*, London, (7) 2, p. 148.

1899. *Xenodermichthys squamilateralis* Alcock, *Cat. Ind. Deep Sea Fish.*, Calcutta, p. 181 (*Ill. Zool. Investig. Fish.*, pl. 25, fig. 4).

Holotype : F 375/1 ; Andaman Sea, 370-419 ; 8. iv. 1898 ; *R.I.M.S.* "Investigator" Coll.

Family 10. DOLICHOPTERYGIDAE

35. *Aulastomatomorpha phospherops* Alcock

1890. *Aulastomatomorpha phospherops* Alcock, *Ann. Mag. nat. Hist.*, London, (6) 6, p. 307.

1899. *Aulastomatomorpha phospherops* Alcock, *Cat. Ind. Deep Sea Fish.*, Calcutta, p. 178 (*Ill. Zool. Investig. Fish.*, pl. 5, fig. 2).

Holotype : F 12872 ; Arabian Sea, 1,000 fms., 3. v. 1890 ; *R.I.M.S.* "Investigator" Coll.

Family 11. GONOSTOMIDAE

36. *Triplophos hemingi* (McArdle)

1901. *Photichthys hemingi* McArdle, *Ann. Mag. nat. Hist.*, London, (7) 8, p. 521.

Syntype (1) : F 928/1 ; South of Ceylon, 859-880 fms., 10. i. 1901 ; *R.I.M.S.* "Investigator" Coll.

Syntype (1) : F 13707 ; Bay of Bengal, 475 fms., *R.I.M.S.* "Investigator" Coll.

37. *Yarella corythaeolum* (Alcock)

1898. *Diplophos corythaeolum* Alcock, *Ann. Mag. nat. Hist.*, London, (7) 2, p. 147.

1899. *Diplophos corythaeolum* Alcock, *Cat. Ind. Deep Sea Fish.*, Calcutta, p. 142 (*Ill. Zool. Investig. Fish.*, pl. 25, fig. 3).

Syntypes (5) : F 13076, F 13077, F 150/1, F 314/1 & F 315/1 ; Andaman Sea ; 188-220 fms., 185 fms. & 405 fms., *R.I.M.S.* "Investigator" Coll.

Family 12. STOMIATIDAE

38. *Stomias affinis* (Gthr.)

1887. *Stomias affinis* Günther, *Challenger Rep. Deep Sea Fish.*, 22, p. 205, pl. 54, Fig. A.

1891. *Stomias elongatus* Alcock, *Ann. Mag. nat. Hist.*, London, (6) 8, p. 129.

Holotype : 13075 ; Laccadive sea, 738 fms., 23. x. 1890 ; *R.I.M.S.* "Investigator" Coll.

39. *Stomias nebulosus* Alcock

1889. *Stomias nebulosus* Alcock, *Ann. Mag. nat. Hist.*, London, (6) 4, p. 451.

1899. *Stomias nebulosus* Alcock, *Cat. Ind. Deep Sea Fish.*, Calcutta, p. 146 (Ill. Zool. Investig. Fish., pl. 7, fig. 1).

Syntypes (2) : F 11734 & F 11735 ; Gulf of Manaar, lat. 6° 29' N. long. 79° 34' E., 597 fms., R.I.M.S. "Investigator" Coll.

Order 6. BATHYCLUPEIFORMES

Family 13. BATHYCLUPEIDAE

40. *Bathyclupea hoskynii* Alcock

1891. *Bathyclupea hoskynii* Alcock, *Ann. Mag. nat. Hist.*, London, (6) 8, p. 131, fig. 4.

1899. *Bathyclupea hoskynii* Alcock, *Cat. Ind. Deep Sea Fish.*, Calcutta, p. 140, (Ill. Zool. Investig. Fish., pl. 28, fig. 2).

Syntypes (2) : F 13112 & F 13114 ; Andaman Sea, 188-220 fms., 9. xii. 1890 ; R.I.M.S. "Investigator" Coll.

Order 7. SCOPELIFORMES

Family 14. SYNODIDAE

41. *Harpodon squamosus* Alcock

1891. *Harpodon squamosus* Alcock, *Ann. Mag. nat. Hist.*, London, (6) 8, p. 127.

1899. *Harpodon squamosus* Alcock, *Cat. Ind. Deep Sea Fish.*, Calcutta, p. 154 (Ill. Zool. Investig. Fish., pl. 30, fig. 1).

Syntypes (10) : F 13084 to F 13086 & F 13088, F 13090 to F 13095; Bay of Bengal, 240 to 276 fms., 24.xii.1890 ; R.I.M.S. "Investigator" Coll.

42. *Synodus indicus* (Day)

1873. *Saurus indicus* Day, *J. Linn. Soc. (Zool.)*, London, 11, p. 526.

Holotype : F 2337 ; Madras ; F. Day Coll.

Family 15. SCOPELARCHIDAE

43. *Scopelarchus guentheri* Alcock

1896. *Scopelarchus guentheri* Alcock, *J. Asiat. Soc. Bengal*, Calcutta, 65, p. 307.

1899. *Scopelarchus guentheri* Alcock, *Cat. Ind. Deep Sea Fish.*, Calcutta, p. 153 (Ill. Zool. Investig. Fish., pl. 17, fig. 7).

Holotype : F 63/1 ; Arabian Sea, Off Indus delta, 947 fms., 2.i.1895 ; R.I.M.S. "Investigator" Coll.

Family 16. EVERMANNELLIDAE

44. *Evermannella atratus* (Alcock)

1893. *Odontostomus atratus* Alcock, *J. Asiat. Soc. Beng.*, Calcutta, 62, p. 182, pl. 9, fig. 4.
1899. *Odontostomus atratus* Alcock, *Cat. Ind. Deep Sea Fish.*, Calcutta, p. 167 (*Ill. Zool. Investig. Fish.*, pl. 33, fig. 3).

Holotype : F 13434 ; Bay of Bengal, 573 fms., 13.iv.1893 ; *R.I.M.S. "Investigator"* Coll.

Family 17. SUDIDAE

45. *Bathypterois guentheri* Alcock

1889. *Bathypterois guentheri* Alcock, *Ann. Mag. nat. Hist.*, London, (6) 4, p. 450.
1899. *Bathypterois guentheri* Alcock, *Cat. Ind. Deep Sea Fish.*, Calcutta, p. 157 (*Ill. Zool. Investig. Fish.*, pl. 7, fig. 6).

Holotype : F 11770 ; Andaman Sea, 490 fms., *R.I.M.S. "Investigator"* Coll.

46. *Bathypterois insularum* Alcock

1892. *Bathypterois insularum* Alcock, *Ann. Mag. nat. Hist.*, London, (6) 10, p. 356.
1899. *Bathypterois insularum* Alcock, *Cat. Ind. Deep Sea Fish.*, Calcutta, p. 158 (*Ill. Zool. Investig. Fish.*, pl. 7, fig. 6).

Syntypes (2) : F 13187 & F 13188 ; Arabian Sea, 1140 fms., 22.x.1891 ; *R.I.M.S. "Investigator"* Coll.

47. *Chlorophthalmus corniger* Alcock

1894. *Chlorophthalmus corniger* Alcock, *J. Asiat. Soc. Beng.*, Calcutta, 63 (2), p. 133, pl. 6, fig. 5.
1899. *Chlorophthalmus corniger* Alcock, *Cat. Ind. Deep Sea Fish.*, Calcutta, p. 155 (*Ill. Zool. Investig. Fish.*, pl. 15, fig. 8).

Syntypes (4) : F 13712 to 13715 ; Bay of Bengal, 145-250 fms., 30.i.1894 ; *R.I.M.S. "Investigator"* Coll.

Family 18. SCOPELIDAE

48. *Lampanyctus pyrsobolus* (Alcock)

1890. *Scopelus pyrsobolus* Alcock, *Ann. Mag. nat. Hist.*, London, (6) 6, p. 218, pl. 8, fig. 3.
1899. *Scopelus pyrsobolus* Alcock, *Cat. Ind. Deep Sea Fish.*, Calcutta, p. 163 (*Ill. Zool. Investig. Fish.*, pl. 30, fig. 3).

Holotype : F 12839 ; Bay of Bengal, 690-920 fms., 1.iv.1890 ; *R.I.M.S. "Investigator"* Coll.

49. *Myctophum pterotum* (Alcock)

1890. *Scopelus (Myctophum) pterotus* Alcock, *Ann. Mag. nat. Hist.*, London, (6) 6, p. 217.

1899. *Scopelus (Myctophum) pterotus* Alcock, *Cat. Ind. Deep Sea Fish.*, Calcutta, p. 162 (*Ill. Zool. Investig. Fish.*, pl. 9, fig. 3).

Syntypes (24) : F 12737, F 12738 & F 12739 ; Bay of Bengal, 98-102 fms., 4. iii. 1890 ; *R.I.M.S. "Investigator"* Coll.

50. *Scopelengys tristis* Alcock

1890. *Scopelengys tristis* Alcock, *Ann. Mag. nat. Hist.*, London, (6) 6, p. 303.

1899. *Scopelengys tristis* Alcock, *Cat. Ind. Deep Sea Fish.*, Calcutta, p. 166 (*III. Zool. Investig. Fish.*, pl. 7, fig. 7).

Holotype : F 12873 ; Arabian Sea, 1000 fms., 3.v.1890 ; *R.I.M.S. "Investigator"* Coll.

Order 8. CYPRINIFORMES

Family 19. CYPRINIDAE

51. *Amblypharyngodon saranensis* Chaudhuri

1912. *Amblypharyngodon saranensis* Chaudhuri, *Rec. Indian Mus.*, Calcutta, 7 (5), p. 440, pl. 39, fig. 2.

Syntypes (2) : F 3779/1 & F 3780/1 ; Jharia, Saran Dist., Bihar ; 15.vii.1909 ; *M. Mackenzie* Coll.

52. *Barbus belayewi* Menon

1960. *Barbus belayewi* Menon, *Rec. Indian Mus.*, Delhi, 54 (3 & 4), p. 144, Text-fig. 2.

Holotype : F 1046/2 ; Tigris, Baghdad, Iraq ; 1950 ; *Directorate General of Agriculture Baghdad, Iraq* Coll.

Paratype (1) : F 1047/2 ; data exactly as for holotype.

53. *Barbus cauveriensis* Hora

1937. *Barbus cauveriensis* Hora, *Rec. Indian Mus.*, Calcutta, 39, p. 20, fig. 7

Holotype : F 12179/1 ; Cauvery River, Coorg State ; *C. R. Narayana Rao* Coll.

54. *Barbus clevatus burtoni* Mukerji

1934. *Barbus clevatus burtoni* Mukerji, *J. Bombay nat. Hist. Soc.*, Bombay, 37 (1), p. 64, pl. 3, fig. 1 & text-figs.

Holotype : F 11437/1 ; Phungin Hka, tributary of Mali Hka River, Myitkyina district, Upper Burma ; 10.v.1930 ; *Lt. Col. R. W. Burton* Coll.

Paratypes (2) : F 11462/1 ; data exactly as for holotype.

55. *Barbus cogginii* Chaudhuri

1911. *Barbus cogginii* Chaudhuri, *Rec. Indian Mus.*, Calcutta, 6, p. 16, pl. 1, fig. 2.

Syntypes (4) : F 4680/1, F 4682/1, F 4685/1 and F 4686/1 ; Lake Tali Fu, 7,000 feet, Yunnan ; iv. 1909 ; *J. Coggin Brown* Coll.

56. *Barbus fraseri* Hora & Misra

1938. *Barbus fraseri* Hora & Misra, *J. Bombay nat. Hist. Soc.*, Bombay, 40 (1), p. 29, pl. 3, fig. 2, text-fig. 4.

Syntypes (6) : F 12497/1 ; Darna River, Deolali, Bombay State ; *A. G. L. Fraser* Coll.

57. *Barbus jerdoni muciveri* Annandale

1919. *Barbus jerdoni* var. *muciveri* Annandale, *Rec. Indian Mus.*, Calcutta, 16 (1), p. 137, pl. 2, fig. 4.

Syntypes (2) : F 9576/1 ; Kistna River near Mahuli, 3 miles from Satara, Bombay State ; *C. D. McIver* Coll.

58. *Barbus mcClellandi* Day

1869. *Barbus mcClellandi* Day, *Proc. zool. Soc. Lond.*, London, p. 619.

Syntype (1) : F 2298 ; Moulmein, Burma ; *F. Day* Coll.

59. *Barbus (Puntius) micropogon periyarensis* Raj

1941. *Barbus (Puntius) micropogon periyarensis* Raj, *Rec. Indian Mus.*, Delhi, 43 (3), p. 379, text-fig.

Holotype : F 13516/1 ; Periyar Lake, Travancore ; *B. Sundara Raj* Coll.

Paratype (1) : F 13517/1, data exactly as for holotype.

60. *Barbus narayani* Hora

1937. *Barbus narayani* Hora, *Rec. Indian Mus.*, Calcutta, 39, p. 24, fig. 10.

Syntypes (2) : F 12180/1 ; Cauvery River, Coorg, Mysore State, *C. R. Narayana Rao* Coll.

61. *Barbus (Puntius) ophiocephalus* Raj

1941. *Barbus (Puntius) ophiocephalus* Raj, *Rec. Indian Mus.*, Delhi, 43 (3), p. 375, text-figs. 1 & 2.

Holotype : F 13514/1 ; Kallar near Periyar Lake, Travancore ; *B. Sundara Raj* Coll.

62. *Barbus sewelli* Prashad & Mukerji

1929. *Barbus sewelli* Prashad & Mukerji, *Rec. Indian Mus.*, Calcutta, 31, (3), p. 197, pl. 9, figs. 1, 1a, 1b.

Holotype : F 10910/1 ; Indawgyi Lake, Myitkyna Dist., U. Burma ; *B. N. Chopra* Coll.

63. *Barbus (Puntius) smithi* Hora

1923. *Barbus (Puntius) smithi* Hora, *J. nat. Hist. Soc. Siam*, Bangkok, 6, p. 156, pl. 2, fig. 1.

Syntypes (2) : F 10526/1 ; Bangkok, Siam ; *H. M. Smith* Coll.

64. *Barilius auropurpureus* Annandale

1918. *Barilius auropurpureus* Annandale, *Rec. Indian Mus.*, Calcutta, 14, p. 51, pl. 2, fig. 4, pl. 4, figs. 11 & 12.

Holotype : F 9432/1 ; Shan State, Burma ; *N. Annardale* Coll.

65. *Barilius dogarsinghi* Hora

1921. *Barilius dogarsinghi* Hora, *Rec. Indian Mus.*, Calcutta, 22 (3), p. 191, text-fig. 3.

Holotype : F 9983/1 ; Etok stream near Chanderkhong, Manipur, Assam ; *S. L. Hora* Coll.

Paratypes (9) : F 9984/1 ; data exactly as for holotype.

66. *Chela dadyburjori* (Menon)

1951. *Laubuca dadyburjori* Menon, *Rec. Indian Mus.*, Delhi, 49(1), p. 1, text-fig. 1.

Holotype : F 541/2 ; Cochin, S. India ; viii. 1950 ; *Sam. J. Dadyburjor* Coll.

Paratypes (4) : F 542/2 ; data exactly as for holotype.

67. *Chela (Allochela) fasciata* Silas

1958. *Chela (Allochela) fasciata* Silas, *J. Bombay nat. Hist. Soc.*, Bombay, 55 (1), p. 87, pl. 2, figs. 1-5.

Holotype : F 744/2 ; Annamalai River at the base of the Annamalai Hills, Chittur Taluk, Kerala State ; 22. iv. 1950 ; *E. G. Silas* Coll.

Paratypes (2) : F 745/2 ; data exactly as for holotype.

68. *Cirrhinus horai* V. Lakshmanan

1966. *Cirrhinus horai* V. Lakshmanan, *J. zool. Soc. India*, Calcutta, 16, p. 59.

Holotype : F 2083/2 ; Godavari River, Rajahmundry ; i-ii. 1961
Central Inland Fisheries Research Institute (Krishna-Godavari Unit) Coll

Paratypes (8) : F 2084/2 ; data exactly as for holotype.

69. *Crossocheilus diplochilus* (Heckel)

1919. *Discognathus adiscus* Annandale, *Rec. Indian Mus.*, Calcutta, 18, p. 68, pl. 10, fig. 2 ; pl. 11, fig. 1.

Syntypes (20) : F 9758/1 ; Seistan ; xii. 1918 ; N. Annandale & S. W. Kemp Coll.

70. *Cultrops siamensis* (Hora)

1923. *Culter siamensis* Hora, *J. nat. Hist. Soc. Siam*, Bangkok, 6, p. 149, pl. 10, fig. 1 ; pl. 2, figs. 4, 5.

Holotype : F 10504/1 ; Bangkok, Siam, Malcom Smith Coll.

71. *Cyprinus carpio intha* Annandale

1918. *Cyprinus carpio* var. *intha* Annandale, *Rec. Indian Mus.*, Calcutta, 14, p. 47, pl. 111, fig. 1.

Syntypes (11) : F 9366/1 ; Inle Lake, S. Shan States, Burma ; N. Annandale Coll.

Syntypes (9) : F 9367/1 ; He-Ho, S. Shan States, Burma ; Collector same as above.

72. *Danio (Brachydanio) acuticephala* Hora

1921. *Danio (Brachydanio) acuticephala* Hora, *Rec. Indian Mus.*, Calcutta, 22 (3), p. 193, text-fig. 4.

Holotype : F 9986/1 ; Yaribuk, Manipur, Assam ; S. L. Hora Coll.

73. *Danio annandalei* Chaudhuri

1908. *Danio annandalei* Chaudhuri, *Rec. Indian Mus.*, Calcutta, 2 (2), p. 125.

Syntypes (2) : F 1599/1 ; Dawna Hills, Amherst distt., Tenasserim, Burma ; 18-19.i.1908 ; N. Annandale Coll.

74. *Danio browni* Regan

1907. *Danio browni* Regan, *Rec. Indian Mus.*, Calcutta, 1 (4), p. 395.

Syntypes (5) : F 1872/1 ; N. Shan States, Upper Burma ; J. Coggin Brown Coll.

75. *Danio* (*Brachydanio*) *choprae* Hora

1928. *Danio* (*Brachydanio*) *choprae* Hora, *Rec. Indian Mus.*, Calcutta, 30, p. 39, fig.

Holotype : F 10811/1 ; Kamaing, Myitkyna Distt., Upper Burma ; *B. N. Chopra* Coll.

76. *Danio* *feegradei* Hora

1937. *Danio feegradei* Hora, *Rec. Indian Mus.*, Calcutta, 39 (4), p. 325, text-fig. 3.

Holotype : F 12477/1 ; Sandoway, Lower Burma ; *Lieut. E. S. Fee-grade* Coll.

77. *Danio* *naganensis* Chaudhuri

1912. *Danio naganensis* Chaudhuri, *Rec. Indian Mus.*, Calcutta, 7 (5), p. 441, pl. 40, figs. 1, 1a, 1b.

Syntypes (6) : F 5297/1 to F 5302/1 ; Lungting River, Naga Hills, Manipur, xi. 1910 ; *Rev. Pettygrew* Coll.

78. *Danio* (*Brachydanio*) *shanensis* Hora

1928. *Danio* (*Brachydanio*) *shanensis* Hora, *Rec. Indian Mus.*, Calcutta, 30, p. 38, fig. 1.

Holotype : F 10814/1 ; Hsipaw, N. Shan States, Burma ; *B. N. Chopra & H. S. Rao* Coll.

79. *Danio* (*Brachydanio*) *sondhii* Hora & Mukerji

1934. *Danio* (*Brachydanio*) *sondhii* Hora & Mukerji, *Rec. Indian Mus.*, Calcutta, 36, p. 128, fig. 1.

Holotype : F 11513/1 ; S. Shan States. Burma ; *V P. Sondhi* Coll.

Paratype (9) : 11514/1 ; data exactly as for holotype.

80. *Diptychus* *annandalei* Regan

1907. *Diptychus annandalei* Regan, *Rec. Indian Mus.*, Calcutta, 1 (2), p. 158.

Syntypes (2) : F 1551/1 ; Pharping, Nepal ; *R. Hodgart* Coll.

81. *Esomus* *ahli* Hora & Mukerji

1928. *Esomus ahli* Hora & Mukerji, *Rec. Indian Mus.*, Calcutta, 30, p. 47, text-fig. 3.

Syntypes (22) : F 10794/1 ; Rangoon, Burma ; *F. G. Meggitt* Coll.

82. *Esomus altus* (Blyth)

1860. *Nuria alta* Blyth, *J. Asiat. Soc. Beng.*, Calcutta, 29, p. 162.

Syntypes (2) : A. S. B. Cat. No. 832 ; Tenasserim, Burma ; *Berdmore* Coll.

83. *Garra annandalei* Hora

1921. *Garra annandalei* Hora, *Rec. Indian Mus.*, Calcutta, 22 (5), p. 657

1921. *Garra chaudhurii* Hora, *Rec. Indian Mus.*, Calcutta, 22 (5), p. 671, pl. 25, fig. 3.

Syntypes (5) (*annandalei*) : F 10104/1 ; Mahanadi River, Darjeeling ; G. E. Shaw & S. L. Hora Coll.

Holotype (*chaudhurii*) : F 8146/1 ; Darjeeling ; *Walker* Coll.

Paratypes (2) (*chaudhurii*) : F 8147/1 & 8148/1 ; data exactly as for holotype.

84. *Garra arabica* Hora

1921. *Garra arabica* Hora, *Rec. Indian Mus.*, Calcutta, 22 (5), p. 677, text-fig. 5.

Holotype : F 8123/1 ; Lahej, Aden ; W. T. Blanford Coll.

85. *Garra barraeimiae* Fowler & Steinitz

1956. *Garra barraeimiae* Fowler & Steinitz, *Bull. Res. Counc. Israel*, Jerusalem, 5B (3 & 4), p. 262.

Paratypes (2) : F 2285/2 ; Barreimi, Oman ; H. Steinitz Coll.

86. *Garra ethelwynnae* Menon

1958. *Garra ethelwynnae* Menon, *Curr. Sci.*, Bangalore, 27, p. 450, text-fig. 1.

Paratype (1) : F 859/2 ; Salamona, Eritrea, Africa ; D. L. Eewis Coll.

87. *Garra gotyla gotyla* (Gray)

1921. *Garra monti-salsa* Hora, *Rec. Indian Mus.*, Calcutta, 22 (5), p. 651.

Holotype : F 9953/1 ; Nilwan ravine near the Shapur Salt range, Punjab ; F. Day Coll.

88. *Garra gravelyi* (Annandale)

1919. *Discognathus gravelyi* Annandale, *Rec. Indian Mus.*, Calcutta, 16 (1), p. 133, pl. 2, figs. 3, 3a.

Holotype : F 9694/1 ; He-Ho Stream, Yawaghwe States, 3,800 feet South Shan States, Burma, ii-iii. 1918 ; N. Annandale Coll.

89. *Garra hughi* Silas

1954. *Garra hughi* Silas, *Rec. Indian Mus.*, Delhi, 52 (1), p. 2, pl. 4, figs. 1-4.

Holotype : F 746/2 ; Vauguvarrai Estate, High Range, Travancore, Kerala State, 15.x.1952 ; E. G. Silas Coll.

Paratypes (51) : F 747/2 ; data exactly as for holotype.

90. *Garra kempi* Hora

1921. *Garra kempi* Hora, *Rec. Indian Mus.*, Calcutta, 22(5), p. 665, pl. 26, figs. 3, 3a.

Holotype : F 7716/1 ; Siyom River, below Damda, 1,300 feet, Abor Hills, Assam, 1912 ; S. W. Kemp Coll.

91. *Garra lamta* Ham.

1921. *Garra prashadi* Hora, *Rec. Indian Mus.*, Calcutta, 22 (5), p. 669, pl. 24, fig. 3.

Syntypes (3) : F 9971/1 ; Malwatal, U. P., B. Prashad & S. L. Hora Coll.

92. *Garra mcClellandi* (Jerdon)

1867. *Garra jerdoni* Day, *Proc. zool. Soc. Lond.*, p. 288.

1919. *Discognathus elegans* Annandale, *Rec. Indian Mus.*, Calcutta, 18, p. 76, pl. 9, fig. 4.

1920. *Garra platycephala* Rao, *Ann. Mag. nat. Hist.*, London, (9) 6, p. 56, pl. 1, figs. 2, 2a, 2b.

Holotype (*jerdoni*) : F 1507 ; Bhavani River, Nilgris, Madras State ; F. Day Coll.

Holotype (*elegans*) : F 9798/1 ; Nierolay Stream, Nilgris, Madras State ; N. Annandale Coll.

Paratype (2) (*elegans*) : F 9794/1 and F 9795/1 ; data exactly as for holotype.

Syntype (1) (*platycephala*) : F 9816/1 ; Cauvery River, Seringapatam, Mysore ; 1919 ; C. R. Narayana Rao Coll.

93. *Garra mullya* (Sykes)

1921. *Garra jenkinsonianum* Hora, *Rec. Indian Mus.*, Calcutta, 22 (5), p. 673, pl. 25, fig. 1.

1953. *Horablosa joshuai* Silas, *Rec. Indian Mus.*, Delhi, 51 (1), 30, text-figs., pl. 5.

Holotype (*jenkinsonianum*) : F 5736/1 ; Paresnath Hills, Bihar ; v. 1909 ; J. T. Jenkins & N. Annandale Coll.

Holotype (*joshuai*) : F 734/2 ; Stream in Singampatty, Singampatty range, Tinnevely Distt., Madras ; ix. 1949 ; *E. G. Silas* Coll.

Paratypes (11) (*joshuai*) : Data exactly as for holotype.

94. *Garra nasuta* (McClelland)

1934. *Garra salweenica* Hora & Mukerji, *Rec. Indian Mus.*, Calcutta, 36, p. 365, figs. 4, 5.

Holotype : F 11602/1 ; Salween River at Takaw Kengtung State, South Shan States, Burma ; *V. P. Sondhi* Coll.

Paratype (1) : F 11603/1 ; data exactly as for holotype.

95. *Garra rossica* (Nikolsky)

1919. *Discognathus phryne* Annandale, *Rec. Indian Mus.*, Calcutta, 18, p. 70, pl. 10, fig. 3 ; pl. 11, fig. 2.

Holotype : F 9787/1 ; Nasratabad, Seistan, 2,000 feet ; 25.xi. 19. xii. 1918 ; *S. W. Kemp & N. Annandale* Coll.

96. *Garra rufa obtusa* (Heckel)

1913. *Garra persica* Berg, *Ann. Mus. zool. Ac. St. Petersburg.*, 18, p. 61, pl. 61.

Syntypes (3) : F 11101/1 ; Bampur River, E. Persia ; *Institute of Fisheries, Industries and Scientific Exploration, Leningrad* (Exchange).

97. *Garra rupecula* McClelland

1921. *Garra abhoyai* Hora, *Rec. Indian Mus.*, Calcutta, 22 (5) ; p. 664, pl. 26, figs. 1, 1a, 1b.

Holotype : F 5307/1 ; Ukhral, 6,000 feet, Manipur, Assam ; xi. 1910 ; *Rev. Pettygrewe* Coll.

Paratypes (2) : F 5308/1 & F 5309/1 ; data exactly as for holotype.

98. *Gymnocypris hobsonii* Stewart

1911. *Gymnocypris hobsonii* Stewart, *Rec. Indian Mus.*, Calcutta, 6 (2), p. 90, pl. 3, fig. 6.

Holotype : F 452/1 ; Eastern Tibet ; *H. E. Hobson* Coll.

99. *Gymnocypris waddellii* Regan

1905. *Gymnocypris waddellii* Regan, *Ann. Mag. nat. Hist.*, London, (7) 15, p. 300.

Syntypes (2) : F 4952/1 ; Yamdok Lake, 14,800 feet, Tibet ; *British Museum* (Exchange).

100. *Labeo almorae* Chaudhuri

1912. *Labeo almorae* Chaudhuri, *Rec. Indian Mus.*, Calcutta, 7 (5), p. 438, pl. 38, figs. 2, 2a, 2b.

Holotype : F 2014/1 ; Almora, U. P., 10.x.1907 ; *Museum Collector Coll.*

101. *Labeo henshawi* Fowler

1924. *Labeo henshawi* Fowler, *Proc. Acad. nat. Sci. Philad.*, 76, p. 98, fig. 9.

Paratype (1) : F 11237/1 ; Ludhiana, Punjab ; *Academy of Natural Sciences, Philadelphia* (Exchange).

102. *Labeo kunki* Chaudhuri

1912. *Labeo kunki* Chaudhuri, *Rec. Indian Mus.*, Calcutta, 7 (5), p. 483, pl. 38, fig. 3.

Holotype : F 4659/1 ; Gandak River, Saran distt., Bihar ; x. 1909 ; *M. Mackenzie Coll.*

103. *Labeo rilli* Chaudhuri

1912. *Labeo rilli* Chaudhuri, *Rec. Indian Mus.*, Calcutta, 7 (5), p. 439, pl. 38, fig. 4.

Syntypes (4) : F 4653/1 to F 4656/1 ; Gandak River, Saran distt., Bihar ; x. 1909 ; *M. Mackenzie Coll.*

104. *Labeo tezpurenensis* Chaudhuri

1912. *Labeo tezpurenensis* Chaudhuri, *Rec. Indian Mus.*, Calcutta, 7 (5), p. 439, pl. 39, figs. 1, 1a, 1b.

Syntypes (3) : F 5788/1 to F 5790/1 ; Belsiri River ; Tezpur, Assam ; 10.x.1910 ; *Museum Collector Coll.*

105. *Labeo yunnanensis* Chaudhuri

1912. *Labeo yunnanensis* Chaudhuri, *Rec. Indian Mus.*, Calcutta, 6, p. 14, 15, pl. 1, figs. 1, 1a, 1b.

Holotype : F 4748/1 ; Lake Tali Fu, Yunnan, S. China ; 26. v. 1910 ; *Coggin Brown Coll.*

106. *Laubuca caeruleostigma* Smith

1931. *Laubuca caeruleostigma* Smith, *Proc. U. S. nat. Mus.*, Washington, 79 (7), p. 5, fig. 3.

Paratype (1) : F 11163/1 ; Menam Chao Phya below Nakon Sawan, Central Siam ; *Fisheries Dept., Bangkok, Thailand* (Donor).

107. *Lepidopygopsis typus* Raj

1941. *Lepidopygopsis typus* Raj, *Rec. Indian Mus.*, Delhi, 43 (2), p. 210, pl. 7, figs. 1-4.

Holotype : F 13510/1 ; Periyar Lakes, Travancore ; *B. Sundara Raj* Coll.

Paratypes (9) : F 13511/1 ; data exactly as for holotype,

108. *Lissochilus hendersoni* Herre

1940. *Lissochilus hendersoni* Herre, *Bull. Raffles Mus.*, Singapore, 16, p. 10, pl. 4.

Paratypes (2) : F 13631/1 ; Penang, Malaya ; *A. W. C. T. Herre* Coll.

109. *Microrasbora rubescens* Annandale

1918. *Microrasbora rubescens* Annandale, *Rec. Indian Mus.*, Calcutta, 14, p. 50, pl. 2, fig. 3 ; pl. 4, fig. 13.

Syntypes (84) : F 9386/1 to 9387/1 ; Fort Stedman, Inle Lake, S. Shan States, Burma ; *N. Annandale* Coll.

110. *Oreinus baileyi* Lloyd

1909. *Oreinus baileyi* Lloyd, *Rec. Indian Mus.*, Calcutta, 2, p. 344, pl. 25, figs. 2, 2a.

Syntypes (4) : F 2151/1 ; Gyantse, Tibet ; *F. H. Stewart* Coll.

111. *Oreinus molesworthi* Chaudhuri

1913. *Oreinus molesworthi* Chaudhuri, *Rec. Indian Mus.*, Calcutta, 8 (3), p. 247, pl. 7, figs. 2, 2a, 2b.

Holotype : F 7735/1 ; Yembung, 1100 feet ; Abor Hills, Assam, 1912 ; *S. W. Kemp* Coll.

112. *Osteocheilus hasseltii tweediei* Menon

1954. *Osteocheilus hasseltii tweediei* Menon, *Bull. Raffles Mus.*, Singapore, 25, p. 12.

Holotype : F 324/2 : Kuala Tahan, Pahang ; 1939 ; *Raffles Museum, Singapore* (Donor).

Paratypes (6) : F 325/2 ; 2 from Kuala Tahan, Pahang, and 4 from River Ketil and Candor, Kelantan ; donor same as above.

113. *Osteochilus sondhii* Hora & Mukerji

1954. *Osteochilus sondhii* Hora & Mukerji, *Res. Indian Mus.*, Calcutta, 36, p. 359, fig. 2.

Holotype : F 11600/1 ; Salween River at Takaw in Kengtung State, South Shan States, Burma ; *V P. Sondhi* Coll.

Paratype (1) : F 11601/1 ; data exactly as for holotype.

114. *Oxygaster horai* (Silas)

1951. *Chela horai* Silas, *J. zool. Soc. India*, Calcutta, 3, p. 8, fig. 1.

Holotype : F 635/2 ; Cauvery River, Coorg, Mysore State ; ix. 1949 ; *M. M. Belliapah* Coll.

Paratypes (2) : F 636/2 ; data exactly as for holotype.

115. *Parapsilorhynchus prateri* Hora & Misra

1938. *Parapsilorhynchus prateri* Hora & Misra, *J. Bombay nat. Hist., Soc.*, Bombay, 40, p. 32, pl. 2, fig. 1, text-figs. 5, 6.

Syntypes (14) : F 12498/1 ; Narsullah Wadi, Deolali ; *A. G. L. Fraser* Coll.

116. *Parapsilorhynchus tentaculatus* Annandale

1919. *Parapsilorhynchus tentaculatus* Annandale, *Rec. Indian Mus.*, Calcutta, 16 (1), p. 128, pl. 1, figs. 4, 4a ; pl. 3, fig. 2.

Syntypes (2) : F 9695/1 ; Khandalla, 2500 feet, Maharashtra State ; 6-10.ii.1918 ; *N. Annandale* Coll.

117. *Psilorhynchus homaloptera* Hora & Mukerji

1935. *Psilorhynchus homaloptera* Hora & Mukerji, *Rec. Indian Mus.*, Calcutta, 37, p. 391, pl. 7, figs. 1-6.

Holotype : F 11792/1 ; Emilomi, Keleki Stream, Naga Hills, Assam ; 26.ii.1935 ; *B. Prashad* & *B. N. Chopra* Coll.

Paratypes (13) : F 11796/1 ; data exactly as for holotype.

118. *Psilorhynchus homaloptera rowleyi* Hora & Misra

1941. *Psilorhynchus homaloptera* var. *rowleyi* Hora & Misra, *J. Bombay nat. Hist. Soc.*, Bombay, 42, 3, p. 481, pl. 1, figs. 1 & 2.

Syntypes (2) : F 13461/1 ; Kora, Upper Chindwin, Burma ; *Vernay—Hopwood Upper—Chindwin Expedition* Coll.

199. *Psilorhynchus pseudecheneis* Menon & Datta

1962. *Psilorhynchus pseudecheneis* Menon & Datta, *Rec. Indian Mus.*, Delhi, 59 (3), p. 253, pl. 16, figs. 1-3.

Holotype : F 1928/2 ; Dudh Kosi drainage, about 2,950 metres, Solokhumbhu Distt., Eastern Nepal ; 10.iv.1958 ; *A. K. Datta* Coll.

Paratypes (14) : F 1929/2 ; data exactly as for holotype.

120. *Puntius arenatus* (Day)

1878. *Barbus arenatus* Day, *Fish India*, London, p. 574, fig. 7.

Holotype: F 2737; Madras; *F. Day* Coll.

121. *Puntius arulius tambraparniei* Silas

1953. *Puntius arulius tambraparniei* Silas, *Rec. Indian Mus.*, Delhi, 51 (1), p. 34, text-figs. 2, 3 & 4.

Holotype: F 735/2; Kalladaikurichi, Tinnevely Distt., Madras State; ix.1949; *E. G. Silas* Coll.

Paratypes (12): Data exactly as for holotype.

122. *Puntius daruphani tweedei* Menon

1954. *Puntius daruphani tweedei* Menon, *Bull. Raffles Mus.* Singapore, 25 p. 17.

Holotype: F 248/2; Kuala Tahan, Pahang; *M. W.F. Tweedei* (Donor).

Paratypes (6): F 249/2; data exactly as for holotype.

123. *Puntius denisonii* (Day)

1865. *Labeo denisonii* Day, *Proc. zool. Soc. Lond.*, London, p. 299.

Holotype: F 2371; Mundakayam, Travancore; *F. Day* (Donor).

124. *Puntius leiocanthus malayensis* Menon

1954. *Puntius leiocanthus malayensis* Menon, *Bull. Raffles Mus.*, Singapore, 25, p. 21.

Holotype: F 246/2; Kota Bharu, Kelantan; *Raffles Museum, Singapore* (Donor).

Paratypes (4): F 247/2; data exactly as for holotype.

125. *Puntius melanampyx* (Day)

1865. *Labeo melanampyx* Day, *Proc. zool. Soc. Lond.*, London, p. 298.

Holotype: F 2719; Cochin; *F. Day* (Donor).

126. *Puntius oatesii* (Boulenger)

1893. *Barbus oatesii* Boulenger, *Ann. Mag. nat. Hist.*, London, (6) 12 p. 201.

Syntype (1): F 3002/1; Nampandet, 2,000 feet, Shan States, Burma ; *British Museum* (Donor).

127. *Puntius sahyadriensis* Silas

1953. *Puntius sahyadriensis* Silas, *J. Bombay nat. Hist. Soc.*, Bombay, **51**, p. 582.

Holotype: F 733/2 ; Yenna River; Mahabaleshwar, Satara Distt., iv.1952; E. G. Silas Coll.

Paratypes (2): F 733/2; data exactly as for holotype.

128. *Puntius sarana orphoides* (Val)

1937. *Barbus* (*Puntius*) *binduchitra* Hora, *Rec. Indian Mus.*, Calcutta, **39** (4), p. 327, text-fig.

Syntypes (10): F 12478/1; Sandoway, Lower Burma; *Feegrade* Coll.

129. *Puntius titteya* Deraniyāgala

1929. *Puntius titteya* Deraniyāgala, *Spoliae Zlan.*, Colombo, **15**, p. 73, pl. 21.

Paratypes (2): F 11044/1; Ceylon; P. E. P. Deraniyagala Coll.

130. *Rasbora rasbora kobonensis* Chaudhuri

1913. *Rasbora rasbora* var. *kobonensis* Chaudhuri, *Rec. Indian Mus.*, Calcutta, **8** (3), p. 251, pl. 8, figs. 1, 1a, 1b.

Holotype: F 7796/1; Brahmaputra River, Kobo, Abor Hills, Assam; 4.xii.1911; S. W. Kemp Coll.

131. *Rohtee dayi* Hora & Misra

1940. *Rohtee dayi* Hora & Misra, *Rec. Indian Mus.*, Delhi, **42** (1), p. 162.

Syntypes (3): F 2698; Godavari River; F. Day Coll.

132. *Sambwa resplendens* Annandale

1918. *Sambwa resplendens* Annandale, *Rec. Indian Mus.*, Calcutta, **14**, p. 48, p. 2, fig. 3; pl. 4, fig. 15.

Syntypes (13): F 9413/1; Fort Stedman, Inle Lake, South Shan States; Burma; N. Annandale Coll.

Syntypes (8): F 9414/1; Keyzagon, Inle Lake, South Shan States; Collector same as above.

133. *Scaphiodon baluchiorum* Jenkins

1910. *Scaphiodon baluchiorum* Jenkins, *Rec. Indian Mus.*, Calcutta, **5** (2), p. 124, pl. 6, fig. 1.

Syntypes (3): F 9398 to F 9400; Bumpusht, Gishtigan, Baluchistan; 1872; W. J. Blanford Coll.

134. *Scaphiodon daukesi* Zugmayer

1912. *Scaphiodon daukesi* Zugmayer, *Ann. Mag. nat. Hist.*, London, (8) 10, p. 596.

Syntypes (2): F 8028/1 to F 8032/1; Irrigation channel and pools near Pajur, Mekran; *E. Zugmayer* Coll.

135. *Scaphiodon macmahoni* Regan

1906. *Scaphiodon macmahoni* Regan. *J. Asiat. Soc. Beng.*, Calcutta, 2, p. 8.

Syntype (1) : F 1239/1; Helmund Basin; *Seistan Arbitration Commission* Coll.

136. *Scaphiodon readingi* Hora

1923. *Scaphiodon readingi* Hora, *Rec. Indian Mus.*, Calcutta, 25, p. 379, pl. 8.

Syntypes (27): F 10353/1 to F 10354/1; Khewrah gorge, Jhelum, Punjab; vii.1922; *S. L. Hora* Coll.

137. *Scaphiodon watsoni belense* Zugmayer

1912. *Scaphiodon watsoni* var. *belense* Zugmayer, *Ann. Mag. nat. Hist.*, London, (8) 10, p. 596.

Syntypes (4): F 8027/1, F 8029/1, F 8030/1 & 8031/1 ; Las Bela, Baluchistan; *E. Zugmayer* Coll..

138. *Schizocypris brucei* Regan

1914. *Schizocypris brucei* Regan, *Ann. Mag. nat. Hist.*, London, (8) 13, p. 262, fig. 8.

Paratype (1): F 9832/1; Wana Toi, a tributary of the Gomal River in Southern Waziristan, N.W.F.P., *British Museum, London* Coll.

139. *Schizopygopsis stewarti* Lloyd

1909. *Schizopygopsis stewarti* Lloyd, *Rec. Indian Mus.*, Calcutta, 2, p. 342, pl. 25, fig. 1.

Syntypes (2): F 2149/1 & F 2150/1; Gyantse, Tibet; *F. H. Stewart* Coll.

140. *Schizothorax o'connori* Lloyd

1909. *Schizothorax o'connori* Lloyd, *Rec. Indian Mus.*, Calcutta, 2, p. 343, pl. 25, fig. 3.

Syntypes (2): F 2147/1 to F 2148/1; Gyantse, Tibet; *F. H. Stewart* Coll.

141. *Semiplotus cirrhosus* Chaudhuri

1919. *Semiplotus cirrhosus* Chaudhuri, *Rec. Indian Mus.*, Calcutta, 16(4), p. 280, pl. 22, figs. 3, 3a.

Holotype: F 9747/1; Hill stream in the Putas plains, Upper Burma; vi.1918; Murray Stuart Coll.

142. *Semiplotus modestus* Day

1870. *Semiplotus modestus* Day, *Proc. zool. Soc. Lond.*, London, p. 101.

Syntype (1): F 2343; Hill ranges of Akyab; F. Day Coll.

Family 20. HOMALOPTERIDAE

143. *Balitora brucei burmanicus* Hora

1932. *Balitora brucei* var. *burmanicus* Hora, *Mem. Indian Mus.*, Calcutta, 12, p. 291.

Syntypes (2): F 11034/1; Meekalan, Burma; Genova Museum (Donor).

144. *Homaloptera leonardi* Hora

1941. *Homaloptera leonardi* Hora, *Bull. Raffles Mus.*, Singapore, 17 (2 & 3), p. 61, p. 5, figs. 5 & 6.

Holotype: F 13213/1; Kuala Tahan (King George V. National Park, Pahang.), Malaya; Raffles Museum, Singapore Coll.

Paratypes (7): F 13214/1; data exactly as for holotype.

145. *Homaloptera rupicola* (Prashad & Mukerji)

1929. *Chopraia rupicola* Prashad & Mukerji, *Rec. Indian Mus.*, Calcutta, 31, p. 188, p. 8, fig. 3.

Holotype: F 10879/1; Kamaing, Myitkyina Distt., U. Burma, B. N. Chopra Coll.

146. *Homaloptera smithi* Hora

1932. *Homaloptera smithi* Hora, *Mem. Indian Mus.*, Calcutta, 12, p. 286, pl. 11, fig. 3.

Syntypes (4): F 11293/1 & F 11294/1; Klong Pong, Ban Kiriwong Nakon Sritamarat, Peninsular Siam; 12. VII. 1928; H. M. Smith Coll.

Syntypes (2): F 11295/1; Tadi Stream, Bankiriwong Nakon Sritamarat, Peninsular Siam; data exactly as above.

147. *Homaloptera weberi* Hora

1932. *Homaloptera weberi* Hora, *Mem. Indian Mus.*, Calcutta, 12, p. 284, pl. 11, figs. 2.

Syntype (1): F 11292/1; Akar River, Sarawak, Borneo; *British Museum* (Exchange).

148. *Parhomaloptera disparis* Linn.

1934. *Parhomaloptera disparis* Lin, *Lingnan. Sci. J.*, Canton, 13 (2), p. 225, fig. 1-4.

Paratype (1): F 11873/1; White cloud mount, Canton, China; *British Museum* (Donor).

149. *Travancoria jonesi* Hora

1941. *Travancoria jonesi* Hora, *Rec. Indian Mus.*, Delhi, 43(2), p. 230, pl. 8, figs. 5-9.

Holotype: F 13507/1; Pampadampara, Travancore, Kerala Stat S. Jones Coll.

Paratype (1): F 13508/1; data exactly as for holotype.

Family 21. COBITIDAE

150. *Aborichthys elongatus* Hora

1921. *Aborichthys elongatus* Hora, *Rec. Indian Mus.*, Calcutta, 22 (5), p. 735, text-fig.

Syntypes (3): F 10087/1; Reang River, 2,000 ft., Darjeeling distt. ; G. C. Shaw Coll.

151. *Aborichthys garoensis* Hora

1925. *Aborichthys garoensis* Hora, *Rec. Indian Mus.*, Calcutta, 27, p. 233, text-figs. 1-4.

Syntypes (2): F 10669/1; Tura, Garo Hills, Assam; S. W. Kemp Coll.

152. *Aborichthys kempi* Chaudhuri

1913. *Aborichthys kempi* Chaudhuri, *Rec. Indian Mus.*, Calcutta, 8 (3), p. 245, pl. 7 figs. 1, 1a, 1b.

Syntypes (3): F 7721/1 to F 7723/1; Egar stream between Renging and Rotung Abor; 1912; S. W. Kemp Coll.

Syntypes (3): F 7725/1 to 7727/1; Sirpo River, near Renging, Abor Country; data exactly as above.

Syntypes (2): F 7769 /1 to 7770/1; Yambang, East side of Dhang River, Abor Country; data exactly as above.

Syntypes (8): F 7778 /1 to 7779/1, F 7878/1 to F 7879/1 & F 8297/1 to F 8298/1; Egar stream between Renging and Rotung Abor; Mde Courey Coll.

153. *Adiposia macmahoni* (Chaudhuri)

1909. *Nemachilus macmahoni* Chaudhuri, *Rec. Indian Mus.*; Calcutta, 3, p. 341.

Holotype : F 1222/1; Helmand River, Seistan; *Seistan Arbitration Commission* Coll.

154. *Adiposia rhadinaea* (Regan)

1906. *Nemachilus rhadinaeus* Regan, *J. Asiat. Soc. Beng.*, Calcutta, 2, p. 8.

Syntype (1): F 1240/1; Helmand basin, Seistan, *Seistan Arbitration Commission* Coll.

155. *Apua fusca* Blyth

1860. *Apua fusca* Blyth, *J. Asiat. Soc. Beng.*, Calcutta, 29, p. 169.

Syntypes (2): F 2647/1; Tenasserim, Burma; *Berdmore* Coll.

156. *Botia berdmorei* (Blyth)

1860. *Syncrossus berdmorei* Blyth, *J. Asiat. Soc. Beng.*, Calcutta, 29, p. 166.

Syntypes (4): F 2636/1; Tenasserim, Burma; *Berdmore* Coll.

157. *Botia birdi* Chaudhuri

1909. *Botia birdi* Chaudhuri, *Rec. Indian Mus.*, Calcutta, 3, p. 339.

Syntypes (3): F 3578/1 to F 3580/1; Sirhind Canal, Punjab; *W. J. A. Bird* Coll.

158. *Botia dayi* Hora

1932. *Botia dayi* Hora, *Rec. Indian Mus.*, Calcutta, 34, p. 571.

Holotype: F 11299/1; Mahandi River at Siliguri, at the base of Himalayas; *G. E. Shaw & E. O. Shebbeare* Coll.

Paratypes (2): F 11300/1; data exactly as for holotype.

159. *Botia histrionica* Blyth

1860. *Botia histrionica* Blyth, *J. Asiat. Soc. Beng.*, Calcutta, 29, p. 166.

Holotype: F 2634/1; Pegu, Burma, *Berdmore* Coll.

160. *Botia lohachata* Chaudhuri

1912. *Botia lohachata* Chaudhuri, *Rec. Indian Mus.*, Calcutta, 7, p. 441, pl. 40, figs. 2, 2a, 2b.

Holotype: F 8068/1; Gandak River, Saran; *M. Mackenzie* Coll.

161. *Botia nebulosa* Blyth

1860. *Botia nebulosa* Blyth, *J. Asiat. Soc. Beng.*, Calcutta, 29, p. 165,

Holotype : F 2637/1; Darjeeling; *Wallich* Coll.

162. *Botia striata* Rao

- 1920 *Botia striata* Rao, *Ann. Mag. nat. Hist.*, London, (9) 6, p. 60, pl. 2, figs. 4, 4a, 4b.

Syntypes (2): F 9817/1 to F 9818/1; Thunga River, Shimoga Town, Mysore, 1919; C. R. Narayana Rao Coll.

163. *Diplophysa stewarti* Hora

- 1922 *Diplophysa stewarti* Hora, *Rec. Indian Mus.*, Calcutta, 24, p. 70, text-figs. 2c, 2d.

Holotype: F 2894/1; Rham-tso, Tibet, 30.vii.1909; R. S. Kennedy Coll.

Paratypes (7): F 2897/1 to F 2903/1; data exactly as for holotype.

164. *Lepidocephalichthys annandalei* Chaudhuri

1912. *Lepidocephalichthys annandalei* Chaudhuri, *Rec. Indian Mus.*, Calcutta, 7, p. 442, pl. 40, figs. 3, 3a, 3b.

Syntypes (3): F 5593/1 to F 5595/1; River Mahanadi, Siliguri, 17.xii.1911; N. Annandale Coll.

165. *Noemacheilichthys shimogensis* Rao

1920. *Nemachilichthys shimogensis* Rao, *Ann. Mag. nat. Hist.*, London, (9) 6, p. 62, pl. 2, figs. 5, 5a, 5b.

Syntypes (3): F 9824/1 to 9826/1; River Thunga, Shimoga Town, Mysore, 1919; C. R. Narayana Rao Coll.

166. *Noemacheilus acuticephalus* Hora

1929. *Nemachilus acuticephalus* Hora, *Rec. Indian Mus.*, Calcutta, 31, p. 328, pl. 14, figs. 5, 6.

Holotype: F 6675/1; Hwe-gna-Sang River, Monglong subdivision, Hsipaw State, N. Shan States, Burma; i.v. 1908; J. Coggin Brown Coll.

167. *Noemacheilus akhtari* V. Lakshmanan

1950. *Noemachilus akhtari* V. Lakshmanan, *Rec. Indian Mus.*, Delhi, 47, p. 219, fig.

Holotype: F 244/2; Helmand River, Afghanistan; 1937; S. Ali Akhtar Coll.

168. *Noemacheilus anguilla* Annandale

1919. *Nemachilus anguilla* Annandale, *Rec. Indian Mus.*, Calcutta, 16 (1), p. 127, pl. 1, fig. 3; pl. 3, fig. 1.

Holotype: F 9692/1; Yenna River at Medha, Satara Distt., Bombay; 27.ii.1918 to 4.iii.1918; N. Annandale Coll.

169. *Noemacheilus bhimachari* Hora

1937. *Nemachilus bhimachari* Hora, *Rec. Indian Mus.*, Calcutta, 39, p. 13, text-fig. 5.

Holotype: F 12178/1; Thunga River at Shimoga Town, Mysore ; xii. 1935 ; B. S. Bhimachar Coll.

170. *Noemacheilus deterrai* Hora

1936. *Nemachilus deterrai* Hora, *Mem. Conn. Acad. Arts. Sci.*, Bangkok, p. 311, text-figs. 4, 5; pl. 12, figs. 5, 6.

Syntypes (6): F 12200/1; Man Lagoon; *Yale North India Expedition*, 1932 Coll.

171. *Noemacheilus griffithi afghana* Hora

1935. *Nemachilus griffithi* var. *afghana* Hora, *J. Bombay nat. Hist. Soc.*, Bombay, 37, p. 799.

Paratypes (2): F 11526/1; Sir-i-Chashma, Afghanistan; A. E. Farwell Coll.

172. *Noemacheilus horai* Menon

1951. *Nemachilus horai* Menon, *Rec. Indian Mus.*, Delhi, 49 (2), p. 227, pl. 7, figs. 1-3.

Holotype: F 637/2; Bener Khand, South of Kangra, Kangra Distt., Punjab; S. L. Hora Coll.

Paratypes (8): F 638/2; data exactly as for holotype.

173. *Noemacheilus hutchinsoni* Hora

1936. *Nemachilus hutchinsoni* Hora, *Mem. Conn. Acad. Arts. Sci.*, Bangkok, 10, p. 314, text-figs. 6, 7, pl. 12, figs. 1, 2.

Syntype (1): F 12201/1; About 3 miles west of Mugleb; *Yale North India Expedition*, 1932 Coll.

Syntypes (3): F 12202/1; Pond between Durbuk and Tangtse; data exactly as above.

Syntype (1) : F 12203/1; Tsar-Tso; data exactly as above.

174. *Noemacheilus kangjupkhulensis* Hora

1921. *Nemachilus kangjupkhulensis* Hora, *Rec. Indian Mus.*, Calcutta, 22 (3), p. 202, pl. 10, figs. 4, 4a.

Holotype: F 10060/1; Yaribuk, Manipur; S. L. Hora Coll.

175. *Noemacheilus kangrae* Menon

1951. *Nemachilus kangrae* Menon, *Rec. Indian Mus.*, Delhi, 49(2), p. 229, pl. 7, figs. 4-5.

Holotype: F 639/2; Baijnath, Kangra distt., Punjab; S. L. Hora Coll.

Paratypes (3): F 640/2; data exactly as for holotype.

176. *Noemacheilus kashmirensis* Hora

1922. *Nemachilus kashmirensis* Hora, *Rec. Indian Mus.*, Calcutta, p. 76.

Syntypes (7) : F 10122/1 ; Harwan, Kashmir, *Zoological Survey, Kashmir Coll.*

Syntypes (9) : F 10121/1 ; Stream flowing from Kukar-nag Spring, Kashmir; data exactly as above.

177. *Noemacheilus mackenziei* Chaudhuri

1910. *Nemachilus mackenziei* Chaudhuri, *Rec. Indian Mus.*, Calcutta, 5 (3), p. 183.

Syntype (1) : F 2017/1 ; Cheriadhang, U.P., 1908-1909 ; *Museum Collector Coll.*

Syntypes (2) : F 4170/1 to F 4171/1 ; Jhil at Purnea, Champaran Distt., 1908-1909, *Walker Coll.*

Syntypes (2) : F 4172/1 to 4173/1 ; Jamwari River, Saran Distt.; Bihar ; 1908-1909 ; *M. Mackenzie Coll.*

178. *Noemacheilus monilis* Hora

1921. *Nemachilus monilis* Hora, *Rec. Indian Mus.*, Calcutta, 22 (1), p. 19.

Holotype : F 9981/1 ; Bhavani River, 10 miles from Methupalayam, Nilgiris, alt. 1,800 feet, Madras State ; 20.viii.1918 ; *N. Annandale Coll.*

Paratype (1) : data exactly as for holotype.

179. *Noemacheilus multifasciatus* Day

1878. *Nemachilus multifasciatus* Day, *Fish., India*, London, p. 617, pl. 153, fig. 7.

Holotype : F 2677 ; Darjeeling ; *F. Day Coll.*

180. *Noemacheilus panguri* Hora

1936. *Nemachilus panguri* Hora, *Mem. Conn. Acad. Arts. Sci.*, Bangkok, p. 318, text-figs. 8, 9 ; pl. 12, figs. 3, 4.

Syntypes (2) : F 12204/1 ; Pangur Tso ; *Yale North India Expedition*, 1932 Coll.

181. *Noemacheilus paucifasciatus* Hora

1929. *Nemachilus paucifasciatus* Hora, *Rec. Indian Mus.*, Calcutta, 31, p. 330.

Holotype : F 6314/1 ; Hwe-gna-sang River, Monglong subdivision, N. Shan States, Burma ; v.1910, *J. Coggin Brown Coll.*

182. *Noemacheilus peguensis* Hora

1929. *Nemachilus peguensis* Hora, *Rec. Indian Mus.*, Calcutta, 31, p. 320, pl. 14, figs. 1-2.

Holotype : F 11057/1 ; Pegu Yoma hills, Burma ; *J. P. Cook Coll.*

183. Noemacheilus poonaensis Menon

1949. *Nemachilus poonaensis* Menon, *Rec. Indian Mus.*, Delhi, **42** (2), p. 226, text-figs.

Holotype : F 242/2 ; Mula-Mutha river, Poona, Bombay State; xi.1948; A. G. K. Menon Coll.

Paratypes (7) : F 243/2 ; data exactly as for holotype.

184. Noemacheilus prashadi Hora

1921. *Nemachilus prashadi* Hora, *Rec. Indian Mus.*, Calcutta, **22**, p. 203, pl. 10, figs. 2, 2a.

Syntypes (26): F 9988/1; Thonagpal tank, 5 miles from Yaribuk, Manipur ; S. L. Hora Coll.

185. Noemacheilus punjabensis Hora

1923. *Nemachilus punjabensis* Hora, *Rec. Indian Mus.*, Calcutta, **25**, p. 384, text-figs. 2, 3.

Syntypes (6): F 10348/1 ; Stream below Watta Hills, salt range Punjab ; 16.vii.1922; S. L. Hora Coll.

186. Noemacheilus raoe Hora

1929. *Nemachilus raoe* Hora, *Rec. Indian Mus.*, Calcutta, **31**, p. 332, pl. 15, figs. 7 & 8.

Holotype : F 11062/1; Mongyai, N. Shan States, Burma ; B.N. Chopra & H. S. Rao Coll.

Paratypes (4) : F 11063/1 ; data exactly as for holotype.

187. Noemacheilus rivulicola Hora

1929. *Nemachilus rivulicola* Hora, *Rec. Indian Mus.*, Calcutta, **31**, p. 324, pl. 15, figs. 3, 4.

Holotype : F 11060/1 ; He-Ho plain, South Shan States ; iii.1922; S. L. Hora Coll.

188. Noemacheilus rupecola inglisi Hora

1935. *Noemacheilus rupecola* var. *inglisi* Hora, *Rec. Indian Mus.*, Calcutta, **37**, p. 18, pl. 3, figs. 9 & 10.

Holotype : F 11755/1; Eastern Himalayas. Rivers below Darjeeling and Sikkim ; S. L. Hora Coll.

189. Noemacheilus salmonides Chaudhuri

1911. *Nemachilus salmonides* Chaudhuri, *Rec. Indian Mus.*, Calcutta, **6**, p. 18, pl. 1, figs. 3, 3a.

Holotype : F 4732/1; Mongpan, Southern Yunnan; 26.v.1910; J. Coggin Brown Coll.

190. Noemacheilus shebbeari Hora

1935. *Nemachilus shebbeari* Hora, *Rec. Indian Mus.*, Calcutta, 37 (1) p. 52, pl. 3, figs. 1, 2.

Holotype : F 11719/1 ; rivers of North Bengal ; G. E. Shaw & E. O. Shebbeare Coll.

191. Noemacheilus vinciguerrae Hora

1935. *Nemachilus vinciguerrae* Hora, *Rec. Indian Mus.*, Calcutta, 37 (1), p. 62, pl. 3, fig. 12.

Holotype : F 11754/1 ; Meekalam, Burma ; Genova Museum (Exchange).

192. Noemacheilus yasinensis Alcock

1898. *Nemachilus yasinensis* Alcock, *Rep. Nat. Hist. Res. Pamir. Bound Comm.*, p. 38, pl. 2, figs. 2, 2a.

Holotype : F 14181 ; Yasin River, Pamir Boundary Commission Coll.

193. Vaillantella flavofasciata Tweedie

1956. *Vaillantella flavofasciata* Tweedie, *Bull. Raffles Mus.*, Singapore 27, p. 59, fig.

Paratypes (2): F 855/2 ; Than river, Pahang, Malaya ; 3.i.1955. M. W. F. Tweedie Coll.

Family 22. ARIIDAE

194. Arius satparanus Chaudhuri

1916. *Arius satparanus* Chaudhuri, *Mem. Indian Mus.*, Calcutta, 4, p. 430, figs. 6-8.

Holotype : F 8784/1 ; Channel between Satpara and Barkuda ; 4.ix. 1914 ; Zoological Survey of the Chilka Lake Coll.

Family 23. SILURIDAE

195. Wallago tweediei (Hora & Misra)

1941. *Wallagonia tweediei* Hora & Misra, *Bull. Raffles Mus.*, Singapore, 17, p. 18, text-fig. 3.

Holotype : F 13365/1 (Right anterior gill arch only) ; Kuala Tahan, Pahang, Malaya Peninsula ; M. W. F. Tweedie Coll.

Family 24. BAGRIDAE

196. Rita chrysea Day

1878. *Rita chrysea* Day, *Fish India*, London, p. 455, pl. 104, fig. 1,

Holotype : F 498 ; Orissa ; F. Day Coll.

197. Mystus blythii (Day)

1878. *Macrones blythi* Day, *Fish. India*, London, p. 445.

Holotype : F 7880/1; Sittang River, Tenasserim ; *Berdmore* Coll.

198. *Mystus merianiensis* (Chaudhuri)

1913. *Macrones merianiensis* Chaudhuri, *Rec. Indian Mus.*, Calcutta, 8 (3), p. 253, pl. 9, figs. 1, 1a, 1b.

Holotype : F 7781/1 ; Meriani Junction, N.E. Assam 1911; *S. W. Kemp* Coll.

199. *Mystus pulcher* (Chaudhuri)

1911. *Macrones pulcher* Chaudhuri, *Rec. Indian Mus.*, Calcutta, 6 (1), p. 20, pl. 1, fig. 4.

Syntypes (4) : F 4716/1 to F 4719/1; Bhamo, Upper Burma; 26.v.1910; *J. Coggin Brown* Coll.

Family 25. AMBLYCIPITIDAE

200. *Amblyceps horai* Prashad & Mukerji

1929. *Amblyceps horai* Prashad & Mukerji, *Rec. Indian Mus.*, Calcutta, 31, p. 173, pl. 7, fig. 1.

Holotype : F 10854/1 ; Indawgyi Lake along its Western shore, Myitkyina Distt., Upper Burma ; *B. N. Chopra* Coll.

Family 26. AKYSIDAE

201. *Akysis variegatus variegatus* Prashad & Mukerji

1919. *Akysis variegatus variegatus* Prashad & Mukerji, *Rec. Indian Mus.*, Calcutta, 31, p. 180, p. 8, figs. 1, 2.

Holotype : F 10873/1; south end of Indawgyi Lake, and along west shore near Lonton village, Myitkyina distt., U. Burma ; *B. N. Chopra* Coll.

Family 27. SISORIDAE

202. *Batasio travancoria* Hora & Law

1941. *Batasio travancoria* Hora & Law, *Rec. Indian Mus.*, Delhi, 43 (1), p. 40, pl. 2, figs. 7-9.

Holotype : F 13449/1; Peruntenuvi, tributary of the Pamba river at Edakadathy, Travancore; *C. C. John* Coll.

Paratypes (2) : F 13450/1 ; Kolathupuzha, a tributary of the Kallada river. Travancore; collector same as above.

Par type (1) : F 13451/1 ; Kallada river, 4 miles east of Thenmalai, Travancore; collector same as above.

Paratype (1) : F 13452/1 ; Chittar river, Palode, Travancore ; collector same as above.

203. *Erethistoides montana* Hora

1949. *Erethistoides montana* Hora, *Rec. Indian Mus.*, Delhi, 47 (2), pl. 191, pl. 1, figs., 10-12.

Holotype : F 314/2 ; streamlets round about Tangla, Darrang Distt. Assam ; 14.xi.1939 ; S. L. Hora Coll.

204. *Erethistoides montana pipri* Hora

1949. *Erethistoides montana pipri* Hora, *Rec. Indian Mus.*, Delhi, 47 (2), p. 193, pl.1, figs. 7-9.

Holotype : F 315/2 ; Rihand river, Pipri, Mirzapur distt., U.P., 16. xii.1947 ; K. S. Misra Coll.

205. *Euchiloglanis hodgarti* (Hora)

1923. *Glyptosternum hodgarti* Hora, *Rec. Indian Mus.*, Calcutta, 25, p. 38, pl. 11, figs. 1, 2, 3.

Holotype : F 1553/1 ; Pharping, Nepal ; R. Hodgart Coll.

206. *Exostoma berdmorei* Blyth

1860. *Exostoma berdmorei* Blyth, *J. Asiat. Soc. Beng.*, Calcutta, 29, p. 155.

Syntypes (2) : A.S.B. Cat. No. 597, Tenasserim, Burma ; *Berdmore* Coll.

Remarks : Hora & Silas (*Vide Rec. Indian Mus.*, 49, p. 24, 1951) in their revision of the Glyptosternoid fishes selected two specimens registered under A.S.B. Cat. No. 597 as the types of *E. berdmorei* Blyth as these specimens agree well with Blyth's description of the species even though A.S.B. Cat. No. 600 bears the type label of this species. A.S.B. Cat. No. 600 is in a badly damaged condition and practically worthless for any study.

207. *Exostoma stuarti* (Hora)

1923. *Glyptosternum staurti* Hora, *Rec. Indian Mus.*, Calcutta, 25, p. 39, pl. 2, figs. 4, 5, 6.

Holotype : F 9742/1 ; Nam-Yak river at Tanja, N. E. Burma ; vi.1918 ; *Murray Stewart* Coll.

208. *Exostoma vinciguerrae* Regan

1923. *Glyptosternum chaudhuri* Hora, *Rec. Indian Mus.*, Calcutta, 25, p. text-fig. 7.

Holotype : F 9741/1 ; Putao plains, N. F. Burma ; vi.1918 ; *Murray Stewart* Coll.

209. *Glaridoglanis andersonii* (Day)

1869. *Exostoma andersonii* Day, *Proc. zool. Soc. Lond.*, London, p. 524.

Syntypes (2) : F 9173/1 ; F 9174/1 & A.S.B. Cat. No. 596 ; Yunnan, China ; J. Anderson Coll.

Remarks : Body desiccated ; head separated from the body in one of the specimens.

210. *Glyptosternum akhtari* Silas

1941. *Glyptosternum akhtari* Silas, *Rec. Indian Mus.*, Delhi, 49(1), p. 11, pl. 1, figs. 4-6.

Holotype : F 643/2 ; Bamian river, Oxus Watershed, Afghanistan ; A. S. Akhtar Coll.

Paratype (1) : F 644/2 ; data exactly as for holotype.

211. *Glyptosternum armenicum* Berg

1918. *Glyptosternum armenicum* Berg, *Bull. Mus. Georgie Tiflis*, 11, p. 145.

Paratype (1) : F 11319/1 ; Muktam-Darash (Trib. Euphrates lower Chata) ; 2.viii.1916 ; *Institute of Ichthyology, Leningrad (Exchange)*.

212. *Glyptosternum reticulatum* McClelland

1876. *Exostoma stoliczkae* Day, *Proc. zool. Soc. Lond.*, London, p. 782, pl. 1, fig. 1.

Holotype : F 497 ; upper waters of the Indus ; F. Day Coll.

213. *Glyptothorax anamalaiensis* Silas

1951. *Glyptothorax anamalaiensis* Silas, *J. Bombay nat. Hist. Soc.*, Bombay, 50, p. 370.

Holotype : F 629/2 ; Anamalai Hills, South India ; E. G. Silas Coll.

214. *Glyptothorax annandalei* Hora

1923. *Glyptothorax annandalei* Hora, *Rec. Indian Mus.*, Calcutta, 25, p. 14, pl. 1, fig. 3.

Holotype : F 10135/1 ; Nierolay stream, Bhavani river, Nilgiri Distt., Madras State, N. Annandale Coll.

Paratypes (2) : data exactly as for holotype.

215. *Glyptothorax brevipinnis* Hora

1923. *Glyptothorax brevipinnis* Hora, *Rec. Indian Mus.*, Calcutta, 25, p. 16, pl. 1, fig. 4.

Syntypes (4) : F 10134/1 ; no history.

216. *Glyptothorax cavia* (Ham.)

1877. *Euglyptosternum lineatum* Day, *Fish India*, London, p. 500, pl. 116, fig. 7.

1929. *Glyptothorax burmanicus* Prashad & Mukerji, *Rec. Indian Mus.*, Calcutta, 31, p. 184, fig. 5, pl. 7, fig. 3.

Holotype (lineatum) : 1312 ; Jumna (Bengal?) ; F. Day Coll.

Holotype (burmanicus) : F 10877/1; Sankha, a large hill-stream, mid-way between Kamaing and Mogaung, Myitkyina Distt., U. Burma; *B. N. Chopra* Coll.

217. *Glyptothorax conirostre poonaensis* Hora

1938. *Glyptothorax conirostre poonaensis* Hora, *Rec. Indian Mus.*, Calcutta, 40(4), p. 368, pl. 17, figs. 5 & 6.

Holotype : F 12126/1; Mula-Mutha river, Poona, Bombay State; *C. V. Kulkarni* Coll.

Paratypes (3): data exactly as for holotype.

218. *Glyptothorax horai* Shaw & Shebbeare

1937. *Glyptothorax horai* Shaw & Shebbeare, *J. Bombay. nat. Hist. Soc.* Bombay, 39, p. 188.

Holotype : F 11376/1; streams of the Terai, N. Bengal; *G. E. Shaw & E. O. Shebbeare* Coll.

219. *Glyptothorax kashmirensis* Hora

1923. *Glyptothorax kashmirensis* Hora, *Rec. Indian Mus.*, Calcutta, 22, p. 22, text-fig. 2.

Syntypes (2) : F 10270/1; Kashmir Valley; 25.x.1915; *T. H. Pearse* Coll.

220. *Glyptothorax madraspatanum* (Day)

1873. *Glyptosternum madraspatanum* Day, *J. Linn. Soc. (Zool.)*, London, 11, p. 526.

Syntypes (2) : F 1235 & F 1313; Bhavani river, Nilgiris, Madras State; *F. Day* Coll.

221. *Glyptothorax prashadi* Mukerji

1932. *Glyptothorax prashadi* Mukerji, *Rec. Indian Mus.*, Calcutta, 34, p. 281, text-fig. 1.

Holotype : F 11334/1; Kyenchaung river, Mergui Distt., Lower Burma; *K. Biswas* Coll.

222. *Glyptothorax platypogonoides* (Bleeker)

1923. *Glyptothorax siamensis* Hora, *Journ. Siam. Soc. Nat. Hist. Supp.*, Bangkok, 6, p. 168, pl. 10, figs. 1-3.

Holotype : F 10548/1; Nakon Sritamart hills, Thailand; *H. M. Smith* Coll.

223. *Glyptothorax ribeiroi* (Hora)

1921. *Laguvia ribeiroi* Hora, *Rec. Indian Mus.*, Calcutta, 22(5), p. 741, pl. 29, fig. 3.

Holotype : F 10086/1; Khoila river, a tributary of Tista at Jalpaiguri, Darjeeling Distt., *S. H. Ribeiro* Coll.

224. Glyptothorax saisii (Jenkins)

1910. *Glyptosternum saisii* Jenkins, *Rec. Indian Mus.*, Calcutta, 5, p. 128, pl. 6, fig. 6, text-fig. 1.

Holotype : F 2583/1 ; Paresnath Hills, Bihar ; 11.iv.1909 ; N. Annadale & J. T Jenkins Coll.

Paratypes (2) : F 3260/1 and F 3261/1 ; data exactly as for holotype.

225. Glyptothorax shawi (Hora)

1921. *Laguvia shawi* Hora, *Rec. Indian Mus.*, Calcutta, 22(5), p. 741, pl. 29, fig. 2.

Holotype : F 10085/1 ; Mahanadi river below Darjeeling ; G. E. Shaw Coll.

226. Glyptothorax sinense manipurensis Menon

1956. *Glyptothorax sinense manipurensis* Menon, *Rec. Indian Mus.*, Delhi, 52 (1954), p. 23.

Holotype : F 738/2 ; Barak river, Karong, Naga Hills, A. G. K. Menon Coll.

Paratypes (6) : F 739/2 ; data exactly as for holotype.

227. Glyptothorax trewavasae Hora

1938. *Glyptothorax trewavasae* Hora, *Rec. Indian Mus.*, Calcutta, 40(4), p. 373, pl. 7, figs. 3 and 4.

Holotype : F 9723/1 ; Yenna valley in the Satara Distt., Bombay State ; 1918 ; N. Annandale Coll.

228. Glyptothorax trilineatus Blyth

1860. *Glyptothorax trilineatus* Blyth ; *J. Asiat. Soc. Beng.*, Calcutta, 29, p. 154.

Syntypes (2) : F 10380/1 ; Tenasserim, Burma ; Berdmore Coll.

229. Glyptothorax tuberculatus Prashad & Mukerji

1929. *Glyptothorax tuberculatus* Prashad & Mukerji, *Rec. Indian Mus.*, Calcutta, 31, p. 182, pl. 7, fig. 2, text-fig. 4.

Holotype : F 10876/1 ; Sankha, a large hill-stream, midway between Kamaing and Mogaung, Myitkyina Distt., U. Burma ; B. N. Chopra Coll.

230. Myersglanis blythi (Day)

1869 *Exostoma blythi* Day, *Proc. zool. Soc. Lond.*, London, p. 525.

Syntypes (2) : A. S. B. Cat. No. 599 ; Darjeeling ; Stoliczka Coll.

Remarks : The specimens are in a very bad state of preservation ; in one the head is severed from the body.

331. *Oreoglanis siamensis* Smith

1933. *Oreoglanis siamensis* Smith, *Journ. Siam. Soc. nat. Hist. Supp.*, Bangkok, 9(1), p. 72, pl.3, figs. 1 & 3, text-fig. 4.

Holotype : F 12233/1 ; Kang river, near the base of Doi Angka, Northern Siam.

Family 28. SCHILBEIDAE**232. *Clupisoma prateri* Hora**

1937. *Clupisoma prateri* Hora, *J. Bombay nat. Hist. Soc.*, Bombay, 39, p. 671.

Holotype : A. S. B. Dup. Cat. No. 219 ; Irrawady, F. Day Coll.

Paratypes (1) : F 8709 ; Burma ; collector same as above.

233. *Neotropius khavalchor* Kulkarni

1951. *Neotropius khavalchor* Kulkarni, *Rec. Indian Mus.*, Delhi, 49 (3-4), p. 232, text-figs. 1-2.

Holotype : F 647/2 ; Panchaganga river, near Kolhapur, Bombay State ; S. B. Setna Coll.

Paratype (1) : F 648/2 ; data exactly as for holotype.

Family 29. CLARIIDAE**234. *Horaglanis krishnai* Menon**

1950. *Horaglanis krishnai* Menon, *Rec. Indian Mus.*, Delhi, 48 (1), p. 64, pl. 1, figs. 1, 2, 3.

Holotype : F 313/2 ; Kottayam, Travancore, *Krishna Pillay* Coll.

Paratype (1) : data exactly as for holotype.

Family 30. OLYRIDAE**235. *Olyra kempi* Chaudhuri**

1912. *Olyra kempi* Chaudhuri, *Rec. Indian Mus.*, Calcutta, 7(5), p. 443, pl. 41, figs. 4, 4a, 4b.

Syntype (1): F 5387/1 ; Dishnor R., Mangaldai Distt., Assam-Bhutan Frontier ; 25.xii.1910 ; S. W. Kemp Coll.

Family 31. TRICHOMYCTERIDAE**236. *Pygidium emanueli emanueli* Schultz**

1944. *Pygidium emanueli emanueli* Schultz *Proc. U. S. Nat. Mus.*, Washington, 94, No. 3172, p. 259, pl. 5, C.

Paratypes (3) : F 2254/2 ; Venezuela, Riogonzales, Trib. Rio Gonzales, Estado de Merida ; L. P. Schultz Coll.

Paratypes (3) : F 2255/2 ; Venezuela, Rio Chama et Estangues, Estado de Merida ; Collector same as above.

Order 9. ANGUILLIFORMES

Family 32. MURAENIDAE

237. *Bathymyrus echinorhynchus* Alcock

1889. *Bathymyrus echinorhynchus* Alcock, *J. Asiat. Soc. Beng.*, Calcutta, 63, p. 305, pl. 22, fig. 6.

Holotype : F 12440 ; 16 miles east of the mouth of the Devi river in the Mahanadi delta, 68 fms. ; *R. I. M. S. "Investigator"* Coll.

238. *Coloconger raniceps* Alcock

1889. *Coloconger raniceps* Alcock, *Ann. Mag. nat. Hist.*, London, (6) 4, p. 456.

1899. *Coloconger raniceps* Alcock, *Cat. Ind. Deep Sea Fish.*, Calcutta, p. 196. (*Ill. Zool. Investig. Fish*, pl. 7, fig. 4).

Syntypes (2) : F 11777 and F 11778 ; Andaman Sea, Off Ross Island, 267-271 fms. ; 11. iv. 1888 ; *R. I. M. S. "Investigator"* Coll.

239. *Congromuraena macrocerus* (Alcock)

1889. *Congromuraena longicauda* Alcock, *Ann. Mag. nat. Hist.*, London, p. 455.

1899. *Congromuraena longicauda* Alcock, *Cat. Ind. Deep Sea Fish.*, Calcutta, p. 197 (*Ill. Zool. Investig. Fish*, pl. 7, fig. 5).

Syntypes (2) : F 11781 & F 11782 ; Andaman sea, 215 fms. ; 11. iv. 1888 ; *R. I. M. S. "Investigator"* Coll.

240. *Congromuraena musteliceps* Alcock

1894. *Congromuraena musteliceps* Alcock, *J. Asiat. Soc. Beng.*, Calcutta, 63 (2), p. 133, pl. 7, fig. 5.

1899. *Congromuraena musteliceps* Alcock, *Cat. Ind. Deep Sea Fish.*, Calcutta, p. 199 (*Ill. Zool. Investig. Fish*, pl. 15, fig. 7).

Holotype : F 13698 ; Bay of Bengal, 145-250 fms. ; 30. i. 1894 ; *R. I. M. S. "Investigator"* Coll.

Paratypes (4) : F 13699 to F 13702 ; data exactly as for holotype.

241. *Congromuraena nasica* Alcock

1893. *Congromuraena nasica* Alcock, *J. Asiat. Soc. Beng.*, Calcutta, 62(2), p. 183.

1899. *Congromuraena nasica* Alcock, *Cat. Ind. Deep Sea Fish.*, Calcutta, p. 198 (*Ill. Zool. Investig. Fish*, pl. 9, fig. 2).

Syntypes (4) : F 13453 to F 13456 ; Bay of Bengal, 128 fms. ; 1893 ; *R. I. M. S. "Investigator"* Coll.

242. *Congromuraena squaliceps* Alcock

1893. *Congromuraena squaliceps* Alcock, *J. Asiat. Soc. Beng.*, Calcutta, 62 (2), p. 183.

1899. *Congromuraena squaliceps* Alcock, *Cat. Ind. Deep Sea Fish.*, Calcutta, p. 197.

Holotype : F 13450 ; Bay of Bengal, 128 fms. ; 1893 ; *R. I. M. S.* "Investigator" Coll.

243. *Haplogeny petersi* Day

1876. *Haplogeny petersi* Day, *Fish. India*, Calcutta, p. 77, pl. 20, fig. 3.

Holotype : F 336 ; Sind ; *F. Day* Coll.

244. *Moringua hodgarti* Chaudhuri

1913. *Moringua hodgarti* Chaudhuri, *Rec. Indian Mus.*, Calcutta, 8(3), p. 255, pl. 9, figs. 3-3b.

Syntypes (6) : F 7830/1 to F 7834/1 & F 7838/1 ; Upper Rotung, Abor Hills, Assam ; 24-25. i. 1912 ; *S. W. Kemp* Coll.

245. *Nettenchelys taylori* Alcock

1898. *Nettenchelys taylori* Alcock, *Ann. Mag. nat. Hist.*, London, (7)2, p. 150.

1899. *Nettenchelys taylori* Alcock, *Cat. Ind. Deep Sea Fish.*, Calcutta, p. 207 (*Ill. Zool. Investig. Fish.*, pl. 25, fig. 5).

Holotype : F 317/1 ; Off the Travancore coast, 430 fms. ; 19. x. 1897 ; *R. I. M. S.* "Investigator" Coll.

246. *Promyllantor purpureus* Alcock

1890. *Promyllantor purpureus* Alcock, *Ann. Mag. nat. Hist.*, London, 6, p. 310.

1899. *Promyllantor purpureus* Alcock, *Cat. Ind. Deep Sea Fish.*, Calcutta, p. 202 (*Ill. Zool. Investig. Fish.*, pl. 6, fig. 2).

Holotype : F 12878 ; Arabian Sea, 1,000 fms. ; 3. v. 1890, *R.I.M.S.* "Investigator" Coll.

247. *Sauromuraenesox vorax* Alcock

1889. *Sauromuraenesox vorax* Alcock, *Ann. Mag. nat. Hist.*, London, (6) 4, p. 458.

1899. *Sauromuraenesox vorax* Alcock, *Cat. Ind. Deep Sea Fish.*, Calcutta, p. 203 (*Ill. Zool. Investig. Fish.*, pl. 6, fig. 3).

Holotype : F 11672 ; Bay of Bengal, lat. 20° 17' 30" N., long. 88° 51' E., 193 fms. ; 25. iii. 1885, *R. I. M. S.* "Investigator" Coll.

248. *Xenomystax trucidans* Alcock

1894. *Xenomystax trucidans* Alcock, *J. Asiat. Soc. Beng.*, Calcutta, 63(2), p. 134.

1899. *Xenomystax trucidans* Alcock, *Cat. Ind. Deep Sea Fish.*, Calcutta; p. 205 (*Ill. Zool. Investig. Fish.*, pl. 16, fig. 5).

Holotype : F 13704 ; Laccadive Sea, 719 fms. ; 29. i. 1893 ; *R.I. M.S. "Investigator"* Coll.

Family 33. OPHICHTHYIDAE

249. *Bascanichthys deraniyagalai* Menon

1961. *Bascanichthys deraniyagalai* Menon, *J. zool. Soc. India*, Calcutta, 13(1), p. 13, text-fig.

Holotype : F 1964/2 ; mouth of Arasalar river, Karaikkal, Tanjore distt., Madras State, 10. iii. 1958, *A. G. K. Menon* Coll.

Paratypes (2) : F 1965/2 ; data exactly as for holotype.

250. *Ophichthys chilkensis* Chaudhuri

1916. *Ophichthys chilkensis* Chaudhuri, *Mem. Indian Mus.*, Calcutta, 5, p. 445, figs. 12, 13.

Holotype : F 9177/1 ; Rambha Bay, Lower Chilka, Orissā ; 22.vii. 1914 ; *Zoological Survey of Chilka Lake, 1914* Coll.

Paratype : F 9182/1 ; data exactly as for holotype.

251. *Ophichthys microcephalus* Day

1878. *Ophichthys microcephalus* Day, *Fish. India*, London, p. 665, pl. 170, fig. 2.

Holotype : F 2759 ; Malabar ; *F. Day* Coll.

Family 34. DYSOMINIDAE

252. *Dysomma bucephalus* Alcock

1889. *Dysomma bucephalus* Alcock, *Ann. Mag. nat. Hist.*, London, (6)4, p. 459.

1899. *Dysomma bucephalus* Alcock, *Cat. Ind. Deep Sea Fish.*, Calcutta, p. 192 (*Ill. Zool. Investig. Fish.*, pl. 6, fig. 1).

Holotype : F 11675 ; Bay of Bengal, lat. 20° 17' 30" N., long. 88° 51' E., 193 fms. ; 25. iii. 1885 ; *R. I. M. S. "Investigator"* Coll.

253. *Dysommopsis mucipara* Alcock

1891. *Dysommopsis mucipara* Alcock, *Ann. Mag. nat. Hist.*, London, p. 137.

1899. *Dysommopsis mucipara* Alcock, *Cat. Ind. Deep Sea Fish.*, Calcutta, p. 193 (*Ill. Zool. Investig. Fish.*, pl. 34, figs. 1, 1a).

Syntypes (2) : F 13106 & F 13107 ; Bay of Bengal, 240-276 fms. ; 24. xii. 1890 ; *R. I. M. S. "Investigator"* Coll.

Family 35. SYNAPHOBRANCHIDAE

254. *Synaphobranchus pinnatus* var. *brevadorsalis* Lloyd

1909. *Synaphobranchus pinnatus* var. *brevadorsalis* Lloyd, *Mem. Indian Mus.*, Calcutta, 2, p. 152.

Holotype : F 1141/1 ; Arabian Sea, 839 fms. ; 12.x.1904 ; *R.I.M.S.* "Investigator" Coll.

Family 36. SERRIVOMERIDAE

255. *Gavialiceps microps* Alcock

1889. *Gavialiceps microps* Alcock, *Ann. Mag. nat. Hist.*, London, (6)4, p. 461.
1899. *Gavialiceps microps* Alcock, *Cat. Ind. Deep Sea Fish.*, Calcutta, p. 191.

Holotype : F 11662. ; Bay of Bengal, 1045 fms. ; 6.xi.1887 ; *R.I.M.S.* "Investigator" Coll.

Family 37. NEMICHTHYIDAE

256. *Nemichthys acanthonotus* Alcock

1894. *Nemichthys acanthonotus* Alcock, *J. Asiat. Soc. Beng.*, Calcutta, 63(2), p. 136.
1899. *Nemichthys acanthonotus* Alcock, *Cat. Ind. Deep Sea Fish.*, Calcutta, p. 190 (*Ill. Zool. Investig. Fish.*, pl. 13, fig. 5).

Holotype : F 13643 ; Bay of Bengal ; 475 fms. ; 2. ii.1894 ; *R.I.M.S.* "Investigator" Coll.

Order 10. HALOSAURIFORMES

Family 38. HALOSAURIDAE

257. *Halosaurichthys carinicauda* Alcock

1889. *Halosaurichthys carinicauda* Alcock, *Ann. Mag. nat. Hist.*, London, (6)4, p. 454.
1899. *Halosaurichthys carinicauda* Alcock, *Cat. Ind. Deep Sea Fish.*, Calcutta, p. 187 (*Ill. Zool. Investig. Fish.*, pl. 7, figs. 2, 2a).

Holotype : F 11763'; Andaman Sea, 7½ miles east of—North Cinque Island, 490 fms. ; 11-12.iv.1888 ; *R. I. M. S.* "Investigator" Coll.

258. *Halosaurichthys nigerrimus* Alcock

1898. *Halosaurichthys nigerrimus* Alcock, *Ann. Mag. nat. Hist.*, London, (7)2, p. 149.
1899. *Halosaurichthys nigerrimus* Alcock, *Cat. Ind. Deep Sea Fish.*, Calcutta, p. 188 (*Ill. Zool. Investig. Fish.*, pl. 35, fig. 2).

Holotype : F 165/1 ; Arabian Sea, Off Maldives, 459 fms. ; 21.x.1896 ; *R.I.M.S.* "Investigator" Coll.

259. *Halosaurus anguilliformes* Alcock

1889. *Halosaurus anguilliformes* Alcock, *Ann. Mag. nat. Hist.*, London, (6) 4, p. 453.

1899. *Halosaurus anguilliformes* Alcock, *Cat. Ind. Deep Sea Fish.*, Calcutta, p. 184 (*Ill. Zool. Investig. Fish.*, pl. 7, fig. 3).

Syntype (1) : F 11542 ; Off Colombo, Gulf of Manaar, lat. 60' 33" N. ; long 79' 37" E., 675 fms. ; 5.v.1886 ; *R.I.M.S.* "Investigator" Coll.

260. *Halosaurus hoskynii* Alcock

1890. *Halosaurus hoskynii* Alcock, *Ann. Mag. nat. Hist.*, London, 6. p. 309.

1899. *Halosaurus hoskynii* Alcock, *Cat. Ind. Deep Sea Fish.*, Calcutta, p. 184 (*Ill. Zool. Investig. Fish.*, pl. 7, fig. 3).

Syntype (1) : F 12876 ; Arabian Sea, 1,000 fms. ; 3.v.1890 ; *R.I.M.S.* "Investigator" Coll.

261. *Halosaurus parvipennis* Alcock

1892. *Halosaurus parvipennis* Alcock, *Ann. Mag. nat. Hist.*, London, (6)10, p. 362.

1899. *Halosaurus parvipennis* Alcock, *Cat. Ind. Deep Sea Fish.*, Calcutta, p. 186 (*Ill. Zool. Investig. Fish.*, pl. 33, fig. 1).

Holotype : F 13198 ; Arabian Sea, Laccadive Sea, lat. 12° 05' 55" N., long. 24 E. ; 29.x.1891 ; *R.I.M.S.* "Investigator" Coll.

Order 11. BELONIFORMES**Family 39. HEMIRAMPHIDAE****262. *Dermogenys burmanicus* Mukerji**

1935. *Dermogenys burmanicus* Mukerji, *Rec. Indian Mus.*, Calcutta, 37, p. 213.

Paratypes (4) : F 11779/1 ; Myagaing Kyanktan, Hanthawaddy distt., Lower Burma ; Director, Harcourt Butler Institute of Public Health, Rangoon Donor.

Order 12. NOTACANTHIFORMES**Family 40. NOTACANTHIDAE****263. *Notacanthus indicus* Lloyd**

1909. *Notacanthus indicus* Lloyd, *Mem. Indian Mus.*, Calcutta, 2, p. 153.

Holotype : F 1019/1 ; Arabian Sea, 512 fms. ; 1.v. 1902 ; *R.I.M.S.* "Investigator" Coll.

Order 13. GADIFORMES

Family 41. MORIDAE

264. *Physiculus argyropastus* Alcock

1893. *Physiculus argyropastus* Alcock, *J. Asiat. Soc. Beng.*, Calcutta, 62(2), p. 180, pl. 9, fig. 2.

1899. *Physiculus argyropastus* Alcock, *Cat. Ind. Deep Sea Fish.*, Calcutta, p. 77 (*Ill. Zool. Investig. Fish.*, pl. 22, fig. 1).

Syntypes (3) : F 13439 to F 13441 ; Bay of Bengal, 128 fms. ; 1893 ; *R.I.M.S. "Investigator"* Coll.

265. *Physiculus roseus* Alcock

1891. *Physiculus roseus* Alcock, *Ann. Mag. nat. Hist.*, London, 68, p. 28.

1899. *Physiculus roseus* Alcock, *Cat. Ind. Deep Sea Fish.*, Calcutta, p. 76. (*Ill. Zool. Investig. Fish.*, pl. 11, fig. 2).

Holotype : F 13047 ; Andaman Sea, 188-220 fms. ; 9. xii. 1890 ; *R.I.M.S. "Investigator"* Coll.

Order 14. MACRURIFORMES

Family 42. MACRURIDAE

266. *Bathygadus (Bathygadus) furvescens* (Alcock)

1894. *Bathygadus furvescens* Alcock, *J. Asiat. Soc. Beng.*, Calcutta, (63)2, p. 128.

1899. *Bathygadus furvescens* Alcock, *Cat. Ind. Deep Sea Fish.*, Calcutta, p. 121 (*Ill. Zool. Investig. Fish.*, pl. 16, fig. 1).

Holotype : F 13470 ; Arabian Sea, 719 fms. ; 29.xi.1893 ; *R.I.M.S. "Investigator"* Coll.

267. *Coelorhynchus quadricristatus* Alcock

1891. *Macrurus quadricristatus* Alcock, *Ann. Mag. nat. Hist.*, London, (6)8, p. 119.

1899. *Macrurus quadricristatus* Alcock, *Cat. Ind. Deep Sea Fish.*, Calcutta, p. 106 (*Ill. Zool. Investig. Fish.*, pl. 3, fig. 1).

Syntypes (2) : F 13070 & F 13071 ; Andaman Sea, 188-220 fms. ; 9.xii.1890 ; *R.I.M.S. "Investigator"* Coll.

Syntype (1) : F 13072, Andaman Sea, 405 fms. ; data same as above.

268. *Hymenocephalus cavernosus* (Goode & Bean)

1889. *Macrurus heterolepis* Alcock, *Ann. Mag. nat. Hist.*, London, (6)4, p. 396.

1899. *Macrurus heterolepis* Alcock, *Cat. Ind. Deep Sea Fish.*, Calcutta, p. 117 (*Ill. Zool. Investig. Fish.*, pl. 3, fig. 3).

Syntype (1) : F 11774, Off Ross Island, 265-271 fms., 11. iv. 1888, R.I.M.S. "Investigator" Coll.

269. *Macrurus flabellispinnis* Alcock

1894. *Macrurus flabellispinnis* Alcock, *J. Asiat. Soc. Beng.*, Calcutta, 63(2), p. 123.

1899. *Macrurus flabellispinnis* Alcock, *Cat. Ind. Deep Sea Fish.*, Calcutta, p. 107 (*Ill. Zool. Investig. Fish.*, pl. 16, figs. 2, 2a).

Holotype : F 13472 ; 13½ miles N., 64' W. of Colombo Light House, 142-400 ; 4.xii.1893 ; R.I.M.S. "Investigator" Coll.

270. *Macrurus hoskynii* Alcock

1890. *Macrurus hoskynii* Alcock, *Ann. Mag. nat. Hist.*, London, (6)6, p. 214.

1899. *Macrurus hoskynii* Alcock, *Cat. Ind. Deep Sea Fish.*, Calcutta, p. 116 (*Ill. Zool. Investig. Fish.*, pl. 9, fig. 4).

Holotype : F 12833 ; Bay of Bengal, Off Madras Coast, lat. 18° 26' N., long. 85° 24' E., 1310 fms. ; 14.iii.1890 ; R.I.M.S. "Investigator" Coll.

271. *Macrurus lophotes* Alcock

1889. *Macrurus ophotes* Alcock, *Ann. Mag. nat. Hist.*, London, (6)4, p. 395.

1899. *Macrurus lophotes* Alcock, *Cat. Ind. Deep Sea Fish.*, Calcutta, p. 116 (*Ill. Zool. Investig. Fish.*, pl. 33, fig. 2).

Syntypes (2) : F 11670 & F 11671 ; Bay of Bengal, 285-405 fms. ; 25.ii.1885 ; R.I.M.S. "Investigator" Coll.

272. *Macrurus macrolophus* Alcock

1889. *Macrurus macrolophus* Alcock, *Ann. Mag. nat. Hist.*, London, (6)4, p. 394.

1899. *Macrurus macrolophus* Alcock, *Cat. Ind. Deep Sea Fish.*, Calcutta, p. 115 (*Ill. Zool. Investig. Fish.*, pl. 12, fig. 1).

Holotype : F 11776 ; 7 miles South-east by south of Ross Island, Port Blair, Andamans, 265 fms. ; 11.iv.1888 ; R.I.M.S. "Investigator" Coll.

273. *Macrurus polylepis* Alcock

1839 *Macrurus polylepis* Alcock, *Ann. Mag. nat. Hist.*, London, (6)4, p. 395.

1899. *Macrurus polylepis* Alcock, *Cat. Ind. Deep Sea Fish.*, Calcutta, p. 112 (*Ill. Zool. Investig. Fish.*, pl. 29, figs. 4, 4a).

Syntypes (2) : F 11678 & F 11724 ; Bay of Bengal, lat. 20° 17' 30" N., long. 88° 51' E., 193 fms. ; lat. 19° 35' N., long. 92° 24' E., 272 fms. ; 25.iii.1885 ; R.I.M.S. "Investigator" Coll.

274. *Macrurus pumiliceps* Alcock

1894. *Macrurus pumiliceps* Alcock, *J. Asiat. Soc. Beng.*, Calcutta, 63(2), p. 125.

1899. *Macrurus pumiliceps* Alcock, *Cat. Ind. Deep Sea Fish*, p. 113 (*Ill. Zool. Investig. Fish.*, pl. 16, fig. 3).

Syntypes (2) : F 13561 & F 13562 ; Laccadive Sea, 719 fms. ; 29. xi. 1893 ; *R.I.M.S. "Investigator"* Coll.

275. *Macrurus semiquincunciatus* Alcock

1889. *Macrurus semiquincunciatus* Alcock, *Ann. Mag. nat. Hist.*, London, (6)4, p. 392.

1899. *Macrurus semiquincunciatus* Alcock, *Cat. Ind. Deep Sea Fish.*, Calcutta, p. 111 (*Ill. Zool. Investig. Fish*, pl. 12, fig. 2).

Holotype : F 11660 ; Bay of Bengal, south-west of Sentinelist and, Andamans, 130-250 fms. ; 1.ii.1888 ; *R.I.M.S. "Investigator"* Coll.

276. *Macrurus wood-masoni* Alcock

1890. *Macrurus wood-masoni* Alcock, *Ann. Mag. nat. Hist.*, London, (6)6, p. 301.

1899. *Macrurus wood-masoni* Alcock, *Cat. Ind. Deep Sea Fish.* Calcutta, p. 114 (*Ill. Zool. Investig. Fish*, pl. 13, fig. 1).

Holotype : F 12867 ; Arabian Sea, 1,000 fms. ; 3.iv.1890 ; *R.I.M.S. "Investigator"* Coll.

277. *Ventrifossa patersonii* (Alcock)

1891. *Macrurus patersonii* Alcock, *Ann. Mag. nat. Hist.*, London, (6)8, p. 121.

1899. *Macrurus patersonii* Alcock, *Cat. Ind. Deep Sea Fish.*, Calcutta, p. 110 (*Ill. Zool. Investig. Fish.*, pl. 3, fig. 5).

Syntypes (2) : F 13117 & F 13118 ; Andaman Sea, lat. 11° 31' 40" N., long. 92° 46' 40" E., 188-220 fms. ; 9.xii.1890 ; *R.I.M.S. "Investigator"* Coll.

Order 15. GASTEROSTEIFORMES**Family 43. INDOSTOMIDAE****278. *Indostomus paradoxus* Prashad & Mukerji**

1929. *Indostomus paradoxus* Prashad & Mukerji, *Rec. Indian Mus.*, Calcutta, 31, p. 220, pl. 10, figs. 1, 2, 3.

Syntypes (59) : F 11013/1 & F 11014/1 ; North of the Indawgyi Lake near Nyaungbin, Upper Burma ; *B. N. Chopra* Coll.

Order 16. SYNGNATHIFORMES**Family 44. SYNGNATHIDAE****279. *Bhanotia sewelli* Hora**

1925. *Bhanotia sewelli* Hora, *Rec. Indian Mus.*, Calcutta, 27, p. 465, p. 11, fig. 5.

Holotype : F 10690/1 ; South Pt. of Outram Island, Andamans , 5.ii.1924 ; R. B. S. Sewell Coll.

280. *Dorichthys dunckeri* Prashad & Mukerji

1929. *Dorichthys dunckeri* Prashad & Mukerji, *Rec. Indian Mus.*, Calcutta, 31, p. 222, pl. 10, fig. 4.

Holotype : F 11018/1 ; Namkawng chaung (stream) at Kamaing, Myitkyina distt., Upper Burma ; B. N. Chopra Coll.

281. *Dorichthys heraldi* Menon

1962. *Dorichthys heraldi* Menon, *J. zool. Soc. India*, Calcutta, (In press).

Holotype : F 1893/2 ; Ponnayar river, about 5 miles north-west of Cuddalore O.T. ; South Arcot distt., Madras State ; 12.i.1957 ; A.G.K. Meron Coll.

282. *Dorichthys insularis* Hora

1925. *Dorichthys insularis* Hora, *Rec. Indian Mus.*, Calcutta, 27, p. 38, pl. 2, fig. 1.

Syntypes (5) : F 10705/1 ; On coral reef at Aberdeen at Andamans ; S. W. Kemp Coll.

Syntypes (2) : F 10706/1 ; stream at Corbyns Cove, Andamans ; Collector same as above.

283. *Dorichthys ocellatus* Duncker

1911. *Dorichthys ocellatus* Dunker, *Spolia Zeylan*, Colombo, 7, 28, pl. fig. A.

Syntype (1) : F 10073/1 ; Ganjain near Valvello, S. W. Ceylon ; G. Duncker Coll.

284. *Hippocampus brachyrhynchus* Duncker

1914. *Hippocampus brachyrhynchus* Dunker, *Rec. Indian Mus.*, Calcutta, 10, p. 295.

Syntype (1) : F 8539/1 ; Rambha Bay, Lower Chilka, Orissa ; Zoological Survey of Chilka Lake, 1914 Coll.

285. *Hippocampus horai* Duncker

1925. *Hippocampus horai* Dunker, *Rec. Indian Mus.*, Calcutta, 27, p. 475.

Holotype : F 11836 ; Andaman ; G. H. Booley Coll.

286. *Microphis annandalei* Hora

1924. *Microphis annandalei* Hora, *Mem. Asiat. Soc. Beng.*, Calcutta, 6, p. 472, fig. 1.

Holotype : F 10377/1 ; Lake at Lampan patelung, Thailand ; 16.i.1916 ; N. Annandale Coll.

287. *Nannocapichthys gigas* Hora & Mukerji

1936. *Nannocapichthys gigas* Hora and Mukerji, *Rec. Indian Mus., Calcutta*, **38**, p. 23.

Holotype : F 11870/1 ; Maungmagan, Tavoy distt., Lower Burma ; 1934 ; *F. J. Meggit* Coll.

288. *Syngnathus analicarens* Duncker

1915. *Syngnathus analicarens* Duncker, *Hamburg. Jahrb. Wiss. Aust.*, **32**, p. 83.

Syntype (1) : F 14297 ; Persian Gulf, Baluchistan ; *F. W. Townsend* Coll.

289. *Syngnathus investigatoris* Hora

1925. *Syngnathus investigatoris* Hora, *Rec. Indian Mus., Calcutta*, **27**, p. 461, pl. 11, fig. 4.

Syntypes (2) : F 10723/1 ; Mergui Harbour, 6 fms., *Sewell* Coll.

Order 17. CYPRINODONTIFORMES**Family 45. CYPRINODONTIDAE****290. *Cyprinodon blanfordi* Jenkins**

1910. *Cyprinodon blanfordi* Jenkins, *Rec. Indian Mus., Calcutta*, **5**, p. 124, pl. 6, fig. 3.

Syntypes (3) : F 9416 to F 9418 ; east of Shiraz, South Persia ; 1872 ; *W. T. Blanford* Coll.

291. *Cyprinodon persicus* Jenkins

1910. *Cyprinodon persicus* Jenkins, *Rec. Indian Mus., Calcutta*, **5**, p. 125 ; pl. 6, fig. 4.

Syntypes (2) : F 9403 & F 9404* ; spring on the edge of Shiraz Lake, South Persia ; 1872 ; *W. T. Blanford* Coll.

292. *Cyprinodon pluristriatus* Jenkins

1910. *Cyprinodon pluristriatus* Jenkins, *Rec. Indian Mus., Calcutta*, **5**, p. 125, pl. 6, fig. 5.

Syntypes (4) : F 9408 to F 9411 ; east of Shiraz, stream running into Fussa, South Persia ; 1872 ; *W. T. Blanford* Coll.

293. *Horaichthys setnai* Kulkarni

1940. *Horaichthys setnai* Kulkarni, *Rec. Indian Mus., Delhi*, **42**, pt.2, p. 385, figs. 2-20.

Syntypes (87) : F 13203/1 & F 13204/1 ; Creeks near Bombay ; *C. V. Kulkarni* Coll.

294. *Panchax panchax blockii* (Arnold)

1916. *Panchax parvus* Sundara Raj, *Rec. Indian Mus.*, Calcutta, 12, p. 268, pl. 25, figs. 2, 8 ; pl. 26, fig. 2.

Syn types (19) : F 9103/1 ; Madras ; *B. Sundara Raj Coll.*

Order 18. MUGILIFORMES**Family 46. SPHYRAENIDAE****295. *Sphyraena raghava* Chaudhuri**

1917. *Sphyraena raghava* Chaudhuri, *Rec. Indian Mus.*, Calcutta, 5, p. 500, text-figs. 20, 21.

Holotype : F 9453/1 ; Satpara, Chilka Lake ; *Zoological Survey of the Chilka Lake, 1914 Coll.*

Family 47. MUGILIDAE**296. *Mugil (Liza) hishni* Hora & Misra**

1943. *Mugil (Liza) hishni* Hora & Misra, *J. Asiat. Soc. Beng.*, (Sci.), Calcutta, 9(1), p. 10, fig. 5.

Holotype : F 13626/1 ; Rivers and Hors, Iraq ; *D. D. Belayew Coll.*

Paratype (1) : F 13627/1 ; data exactly as for holotype.

Order 19. POLYNEMIFORMES**Family 48. POLYNEMIDAE****297. *Polynemus sextarius mullani* Hora**

925. *Polynemus sextarius mullani* Hora, *Rec. Indian Mus.*, Calcutta, 27, p. 453.

Holotype : F 10747/1 ; Bombay ; *J. P. Mullan Coll.*

Paratypes (3) : F 10748/1 to 10750/1 ; data exactly as for holotype.

Order 20. OPHIOCEPHALIFORMES**Family 49. OPHIOCEPHALIDAE****298. *Channa burmanica* Chaudhuri**

1919. *Channa burmanica* Chaudhuri, *Rec. Indian Mus.*, Calcutta, 16, p. 284, pl. 22, figs. 4, 4a, and 4b.

Holotype : F 9755/1 ; Sen-Bin-Ti, Putao plains, N.E. Burma, Tibetan Frontier ; vi.1918 ; *Murray-Stuart Coll.*

Paratypes (3) : F 9754/1, F 9756/1 & F 9757/1 ; data exactly as for holotype.

Order 21. PERCIFORMES

Family 50. SERRANIDAE

299. *Chelidoperca investigatoris* (Alcock)

1890. *Centropristis investigatoris* Alcock, *Ann. Mag. nat. Hist.*, London, (6)6, p. 199.

1899. *Centropristis investigatoris* Alcock, *Cat. Ind. Deep Sea Fish.*, Calcutta, p. 23 (*Ill. Zool. Investig. Fish.*, pl. 10, fig. 1).

Syntypes (2) : F 12820 & F 12821 ; Bay of Bengal, off Madras Coast, lat. 18° 30' N., long. 84° 46' E., 98-102 fms., 4. iii. 1890 ; *R.I.M.S. "Investigator"* Coll.

Family 51. APOGONIDAE

300. *Acropoma splendens* (Lloyd)

1909. *Synagrops splendens* Lloyd, *Mem. Indian Mus.*, Calcutta, 2(3), p. 159.

Holotype : F 1164/1 ; Gulf of Oman, 230 fms.; 18.x.1904 *R.I.M.S. "Investigator"* Coll.

301. *Gymnapogon japonicus* Regan

1905. *Gymnapogon japonicus* Regan, *Ann. Mag. nat. Hist.*, London, (7)15, p. 20.

Syntypes (3) : F 2994/1 to F 2996/1 ; Inland Sea of Japan ; British Museum (Exchange).

Family 52. PERCIDAE

302. *Nemipterus marginatus* (C.V.)

1876. *Synagris bleekeri* Day, *Fish India*, p. 92, pl. 24, fig. 1.

Holotype : F 290 ; Madras ; *F. Day* Coll.

Family 53. LACTARIIDAE

303. *Lactarius burmanicus* Lloyd

1907. *Lactarius burmanicus* Lloyd, *Rec. Indian Mus.*, Calcutta, 1. p. 219.

Holotype : F 1512/1 ; Akyab, Burma ; *I. H. Burkill* Coll.

Family 54. CARANGIDAE

304. *Bathyseriola cyanea* Alcock

1890. *Bathyseriola cyanea* Alcock, *Ann. Mag. nat. Hist.* London, (6)6 p. 202.

1899. *Bathyseriola cyanea* Alcock, *Cat. Ind. Deep Sea Fish.*, Calcutta, p. 43 (*Ill. Zool. Investig. Fish.*, pl. 18, fig. 1).

Syntypes (4) : F 12816, F 12817 and F 12819 ; Bay of Bengal, off Madras Coast, lat. 18° 30' N., long. 84° 46' E. ; 98-102 fms. ; 4.iii.1890 ; R. I. M. S. "Investigator" Coll.

305. *Caranx auricoronae* Chaudhuri

1909. *Caranx auricoronae* Chaudhuri *Rec. Indian Mus.*, Calcutta, 3, p. 142, fig. 2.

Syntypes (3) : F 2717/1 to E 2719/1 ; Bay of Bengal, off Chittagong Coast ; Bengal Fisheries "Golden Crown" Coll.

306. *Caranx guptae* Chaudhuri

1909. *Caranx guptae* Chaudhuri, *Rec. Indian Mus.*, Calcutta, 3, p. 14, fig. 1.

Syntypes (2) : F 2165/1 & F 2166/1 ; Bay of Bengal, off Elephant-point ; Bengal Fisheries "Golden Crown" Coll.

307. *Psenes nigrescens* Lloyd

1909. *Psenes nigrescens* Lloyd, *Mem. Indian Mus.*, Calcutta, 2, p. 158.

Syntypes (17) : F 1038/1 to F 1049/1 ; Andaman Sea, 960 fms., 5.xi.1902 ; R. I. M. S. "Investigator" Coll.

Family 55. SCIAENIDAE

308. *Johnius osseus* (Day)

1876. *Sciaena osseus* Day, *Fish. India*, London, p. 193, pl. 46, fig. 3.

Holotype : F 1340 ; Malabar Coast of India ; F. Day Coll.

309. *Otolithoides brunneus* (Day)

1873. *Otolithus brunneus* Day, *J. Linn. Soc. (Zool.)*, London, 11, p. 524.

Holotype : F 906 ; Bombay, F. Day Coll.

310. *Pseudosciaena bleekeri* (Day).

1876. *Sciaena bleekeri* Day, *Fish. India*, London, p. 185, pl. 45, fig. 4.

Syntypes (2) : F 968 & F 988 ; Bombay ; F. Day Coll.

311. *Pseudosciaena ophiceps* (Alcock)

1889. *Sciaena ophiceps* Alcock, *J. Asiat. Soc. Beng.*, Calcutta, 58(2), p. 300.

Syntypes (8) : F 12099 to F 12101, F 12103, F 12170 to F 12171, F 12336 & F 12381 ; Bay of Bengal, off Orissa Coast; 1888-89; R.I.M.S. "Investigator" Coll.

Family 56. SPARIDAE

312. *Chrysophrys berda calamara* Day

1876. *Chrysophrys berda calamara* Day, *Fish. India*, London, p. 140. pl. 34 fig. 2, and pl. 35, fig. 2 (var. *calamara*).

Holotype : F 1785 ; Sind ; *F. Day* Coll.

313. *Crenidens indicus* Day

1876. *Crenidens indicus* Day, *Fish. India*, London, p. 132. pl. 32, fig. 4.

Holotype : F 1774 ; Sind ; *F. Day* Coll.

Paratypes (2) : F 1775 to F 1776 ; data exactly as for holotype.

314. *Petrus belayewi* Hora & Misra

1943. *Petrus belayewi* Hora & Misra, *J. Asiat. Soc. Beng.*, Calcutta, 9(1), p. 12, figs. 6-7.

Holotype : F 13628/1 ; Rivers & Hors, Iraq ; *D. D. Belayew* Coll.

Family 57. CHAETODONTIDAE

315. *Pomacanthus (Pomacanthodes) semicirculatus* (Cuvier)

1897. *Holacanthus alternans* var. *meleagris* Alcock, *J. Asiat. Soc. Beng.*, Calcutta, 65(2), p. 303.

Holotype : F 14074 ; Palk strait ; *A. R. Anderson* Coll.

Family 58. LABRIDAE

316. *Epibulus striatus* Day

1870. *Epibulus striatus* Day, *Proc. zool. Soc. Lond.*, London, p. 697

Holotype : F 1562 ; Andamans ; *F. Day* Coll.

Family 59. TRACHINIDAE

317. *Chiasmodon niger* Johnson

1890. *Ponerodon vastator* Alcock, *Ann. Mag. nat. Hist.*, London, (6)6, p. 203, pl. 9, fig. 5.

1899. *Ponerodon vastator* Alcock, *Cat. Ind. Deep Sea Fish.*, Calcutta, p. 50 (*Ill. Zool. Investig. Fish.* pl. 28, fig. 3).

Holotype : F 12836 ; Bay of Bengal ; off Madras Coast, lat. 15° 38' N., long. 82° 30' E., 690-920 fms.; 1.iv.1890 ; *R. I. M. S. " Investigator "* Coll.

Family 60. BEMBROPIDAE

318. *Bembrops caudimacula* Steind

1899. *Bembrops platyrhynchus* Alcock, *Cat. Ind. Deep Soc. Fish.*, Calcutta, p. 48 (*Ill. Zool. Investig. Fish.* pl. 20, fig. 6).

Holotype : F 13437 ; Bay of Bengal ; 128 fms. ; 3.iii.1893 ; *R.I.M.S. " Investigator "* Coll.

Family 61. TRICHONOTIDAE

319. *Taeniolabrus cyclograptus* Alcock

1890. *Taeniolabrus cyclograptus* Alcock, *Ann. Mag. nat. Hist.*, London, (6)6, p. 430, fig. 1.

1899. *Taeniolabrus cyclograptus* Alcock, *Ill. Zool. Investig. Fish.*, pl. 20, fig. 5.

Syntypes (3) : F 12932, F 12935 & F 12936 ; Bay of Bengal, Ganjam Coast, 10-13 fms.; *R. I. M. S. "Investigator"* Coll.

Family 62. URANOSCOPIDAE

320. *Centridermichthys adhesipinnis* (Blyth)

1860. *Uranoscopus adhesipinnis* Blyth, *J. Asiat. Soc. Beng.*, Calcutta, 29, p. 142.

Syntype (1) : A.S.B. Cat. No. 119 ; Calcutta, *Asiatic Society of Bengal* Donor.

321. *Uranoscopus crassiceps* Alcock

1890. *Uranoscopus crassiceps* Alcock, *Ann. Mag. nat. Hist.*, London, (6)6, p. 205.

1899. *Uranoscopus crassiceps* Alcock, *Cat. Ind. Deep Sea Fish.*, Calcutta, p. 45 (*Ill. Zool. Investig. Fish.*, pl. 10, fig. 4).

Syntype (1) : F 12788 ; Bay of Bengal, off Madras Coast, lat. 18° 30' N., long. 84° 46' E., 100 fms.; 4.iii.1890 ; *R. I. M. S. "Investigator"* Coll.

Family 63. CHIASMODONTIDAE

322. *Dysalotus alcocki* Mac Gilchrist

1905. *Dysalotus alcocki* Mac Gilchrist, *Ann. Mag. nat. Hist.*, London, (7)15, p. 268.

Holotype : F 1053/1 ; South of Andaman Island ; 705 fms.; 12.iv.1903 ; *R. I. M. S. "Investigator"* Coll.

323. *Kali indica* Lloyd

1909. *Kali indica* Lloyd, *Mem. Indian Mus.*, Calcutta, 2, p. 154.

Holotype : F 1054/1 ; Bay of Bengal, 1343 fms.; 18.iii.1903 ; *R.I.M.S. "Investigator"* Coll.

Family 64. BLENNIDAE

324. *Andamia raoi* Hora

1938. *Andamia raoi* Hora, *Rec. Indian Mus.*, Delhi, 40, p. 398, pl. 10, figs. 1-4 & 6.

Holotype : F 12933/1 (♂) : East Ross Island, Andamans ; *Andaman Fisheries* Coll.

Paratypes (6) : F 12934/1 ; data exactly as for holotype.

Remarks :—Two specimens, a male and a female are kept together as holotype. Evidently the female specimen is the Allotype.

325. *Petroscirtes bhattacharyae* Chaudhuri

1916. *Petroscirtes bhattacharyae* Chaudhuri, *Rec. Indian Mus.*, Calcutta, 12, p. 107.

Holotype : F 8764/1 ; Chilka Lake, Orissa, 2.iii.1914 ; *Zoological Survey of Chilka Lake, 1914 Coll.*

Paratypes (7) : F 8770/1, F 8774/1 to F. 8779/1 ; data exactly as for holotype.

326. *Salarias burmanicus* Hora & Mukerji

1936. *Salarias burmanicus* Hora & Mukerji, *Rec. Indian Mus.*, Calcutta, 38, p. 34, pl. 1, fig. 1.

Holotype : F 11872/1 ; Maungmagan, Tavoy distt., Lower Burma, i.1934 ; *F.S. Meggit Coll.*

Family 65. BROTLIDAE

327. *Dinematichthys piger* Alcock

1890. *Dinematichthys piger* Alcock, *Ann. Mag. nat. Hist.*, London, (6)6, p. 432.

Holotype : F 12939 ; Coral reefs of Great Coco Island, Andaman Archipelago ; *R.I.M.S. "Investigator" Coll.*

Family 66. OPHIDIIDAE

328. *Bathyonus glutinosus* Alcock

1890. *Bathyonus glutinosus* Alcock, *Ann. Mag. nat. Hist.*, London, (6)6, p. 211.

1899. *Bathyonus glutinosus* Alcock, *Cat. Ind. Deep Sea Fish.*, Calcutta, p. 88 (*Ill. Zool. Investig. Fish.*, pl. 1, fig. 3).

Syntype (1) : F 12824 ; Bay of Bengal, off Madras Coast, lat. 18° 26' N., long. 85° 24' E., 1310 fms.; 1889-90 ; *R.I.M.S. "Investigator" Coll.*

329. *Dermatorus melanocephalus* Alcock

1891. *Dermatorus melanocephalus* Alcock, *Ann. Mag. nat. Hist.*, London, (6)8, p. 32.

1899. *Dermatorus melanocephalus* Alcock, *Cat. Ind. Deep Sea Fish.*, Calcutta, p. 91 (*Ill. Zool. Investig. Fish.*, pl. 21, fig. 4).

Syntype : F 13073 ; Bay of Bengal ; 1644 fms., 6.xi.1890 ; *R.I.M.S. "Investigator" Coll.*

330. *Dermatorus trichiurus* Alcock

1890. *Dermatorus trichiurus* Alcock, *Ann. Mag. nat. Hist.*, London, (6)6, p. 298.

1899. *Dermatorus trichiurus* Alcock, *Cat. Ind. Deep Sea Fish.*, Calcutta, p. 90 (*Ill. Zool. Investig. Fish.*, pl. 1, fig. 1).

Holotype : F 12865 ; Arabian Sea, lat. 11° 12' 47" N., long. 74° 25' 30" E., 1000 fms.; 3.v.1890 ; *R.I.M.S.* "Investigator" Coll.

331. *Diplacanthopoma raniceps* Alcock

1898. *Diplacanthopoma raniceps* Alcock, *Ann. Mag. nat. Hist.*, London, (7)2, p. 154.

1899. *Diplacanthopoma raniceps* Alcock, *Cat. Ind. Deep Sea Fish.*, Calcutta, p. 101 (*Ill. Zool. Investig. Fish.*, pl. 26, fig. 2, 2a).

Syntypes (3) : F 117/1, F 118/1 & F 139/1 ; Andaman Sea, 405 fms.; 21.xii.1896 ; *R.I.M.S.* "Investigator" Coll.

332. *Diplacanthopoma ravers-andersonii* Alcock

1895. *Diplacanthopoma ravers-andersonii* Alcock, *Ann. Mag. nat. Hist.*, London, (6)16, p. 144.

1899. *Diplacanthopoma ravers-andersonii* Alcock, *Cat. Ind. Deep Sea Fish.*, Calcutta, p. 99 (*Ill. Zool. Investig. Fish.*, pl. 17, fig. 1).

Holotype : F 14136 ; Arabian Sea, lat. 22° 14' 25" N., long. 67° 8' 55" E., 947 fms. ; 2.i.1895 ; *R.I.M.S.* "Investigator" Coll.

333. *Diplacanthopoma squamiceps* Lloyd

1907. *Diplacanthopoma squamiceps* Lloyd, *Rec. Indian Mus.*, Calcutta, 1, p. 10.

Syntypes (2) : F 1321/1 & F 1322/1 ; S.E. Coast of Arabia ; 540 fms., 24.iii.1906 ; *R.I.M.S.* "Investigator" Coll.

334. *Glyptophidium argenteum* Alcock

1889. *Glyptophidium argenteum* Alcock, *Ann. Mag. nat. Hist.*, London, (6)4, p. 390.

1899. *Glyptophidium argenteum* Alcock, *Cat. Ind. Deep Sea Fish.*, Calcutta, p. 93 (*Ill. Zool. Investig. Fish.*, pl. 2, fig. 3).

Holotype : F 11661 ; Andaman Sea, Off Ross Island, 271 fms.; 2.i.1888 ; *R.I.M.S.* "Investigator" Coll.

335. *Glyptophidium macropus* Alcock

1894. *Glyptophidium macropus* Alcock, *J. Asiat. Soc. Beng.*, Calcutta, 63(1), p. 122, pl. 6, fig. 3.

1899. *Glyptophidium macropus* Alcock, *Cat. Ind. Deep Sea Fish.*, Calcutta, p. 94 (*Ill. Zool. Investig. Fish.*, pl. 15, fig. 6).

Syntype (7) : F 13529 to F 13635 ; Bay of Bengal, 145-250 fms.; 30.i.1894 ; *R.I.M.S.* "Investigator" Coll.

336. *Hepthocara simum* Alcock

1892. *Hepthocara simum* Alcock, *Ann. Mag. nat. Hist.*, London, (6)10, p. 349, pl. 18, fig. 1.

1899. *Hepthocara simum* Alcock, *Cat. Ind. Deep Sea Fish.*, Calcutta, p. 103 (*Ill. Zool. Investig. Fish.*, pl. 22, fig. 3).

Holotype : F 13172 ; Gulf of Manaar, lat. 16° 41' N., long. 82° 33' 45" E., 902 fms.; 14.xii.1891 ; R.I.M.S. "Investigator" Coll.

337. *Lamprogrammus fragilis* Alcock

1892. *Lamprogrammus fragilis* Alcock, *Ann. Mag. nat. Hist.*, London, (6)10, p. 348.

1899. *Lamprogrammus fragilis* Alcock, *Cat. Ind. Deep Sea Fish.*, Calcutta, p. 96.

Holotype : F 13171 ; Bay of Bengal, lat. 15° 13' 43' N., long. 81° 19' 30" E., 678 fms., 1.iv.1892 ; R.I.M.S. "Investigator" Coll.

338. *Lamprogrammus niger* Alcock

1891. *Lamprogrammus niger* Alcock, *Ann. Mag. nat. Hist.*, London, (6)8, p. 33, fig. 2.

1899. *Lamprogrammus niger* Alcock, *Cat. Ind. Deep Sea Fish.*, Calcutta, p. 95 (*Ill. Zool. Investig. Fish.*, pl. 1, fig. 2).

Syntypes (2) : F 13048 & F 13049 ; Bay of Bengal, 561 fms. ; 7.xi.1890 ; R.I.M.S. "Investigator" Coll.

339. *Neobythites (Monomitopus) conjugator* Alcock

1896. *Neobythites (Monomitopus) conjugator* Alcock, *J. Asiat. Soc. Beng.*, Calcutta, 65(2), p. 304.

1899. *Neobythites (Monomitopus) conjugator* Alcock, *Cat. Ind. Deep Sea Fish.*, Calcutta, p. 81 (*Ill. Zool. Investig. Fish.*, pl. 17, fig. 4).

Syntypes (2) : F 56/1 & F 57/1 ; Bay of Bengal, 296-320 fms. ; 16.vi.1895 ; R.I.M.S. "Investigator" Coll.

340. *Neobythites pterotus* Alcock

1890. *Neobythites pterotus* Alcock, *Ann. Mag. nat. Hist.*, London, 4, p. 210.

1899. *Neobythites pterotus* Alcock, *Cat. Ind. Deep Sea Fish.*, Calcutta, p. 83 (*Ill. Zool. Investig. Fish.*, pl. 11, fig. 4 (♀), and pl. 29, fig. 1 (♂)).

Holotype : F 12832 ; Bay of Bengal, off Madras Coast, lat. 18° 26' N., long. 85° 24' E., 1310 fms. ; 14.iii.1890 ; R.I.M.S. "Investigator" Coll.

341. *Neobythites steatiticus* Alcock

1893. *Neobythites steatiticus* Alcock, *J. Asiat. Soc. Beng.*, Calcutta, 62(2), p. 181, pl. 9, fig. 3.

1899. *Nobythites sleatitcus* Alcock, *Cat. Ind. Deep Sea Fish.*, Calcutta, p. 82 (*Ill. Zool. Investig. Fish.*, pl. 21, fig. 2).

Holotype : F 13435 ; Bay of Bengal, 128 fms. ; 3.iii.1893 ; *R.I.M.S.* "Investigator" Coll.

342. *Paradicrolene multifilis* Alcock

1889. *Paradicrolene multifilis* Alcock, *Ann. Mag. nat. Hist.*, London, (6)4, p. 387.

1899. *Paradicrolene multifilis* Alcock, *Cat. Ind. Deep Sea Fish*, Calcutta, p. 86 (*Ill. Zool. Investig. Fish.*, pl. 11, fig. 1).

Syntype (1) : F 11717 ; Bay of Bengal, lat. 20° 17' 30" N., long. 88° 50' E., 193 fms. ; *R.I.M.S.* "Investigator" Coll.

343. *Paradicrolene nigricaudis* Alcock

1891. *Paradicrolene nigricaudis* Alcock, *Ann. Mag. nat. Hist.*, London, (6)4, p. 30.

1899. *Paradicrolene nigricaudis* Alcock, *Cat. Ind. Deep Sea Fish.*, Calcutta, p. 87 (*Ill. Zool. Investig. Fish.*, pl. 2, fig. 4).

Syntypes (2) : F 13040 & F 13044 ; Andaman Sea, 188-220 fms. 9.xii.1890 ; *R.I.M.S.* "Investigator" Coll.

344. *Pycnocraspedum squamipinne* Alcock

1889. *Pycnocraspedum squamipinne* Alcock, *Ann. Mag. nat. Hist.*, London, (6)4, p. 386.

1899. *Pycnocraspedum squamipinne* Alcock, *Cat. Ind. Deep Sea Fish.*, Calcutta, p. 84 (*Ill. Zool. Investig. Fish.*, pl. 21, fig. 1).

Syntypes (2) : F 11700 & F 11703, Bay of Bengal, lat. 20° 17' 30" N., long. 88° 50' E., 193 fms. ; *R.I.M.S.* "Investigator" Coll.

345. *Saccogaster maculatus* Alcock

1889. *Saccogaster maculatus* Alcock, *Ann. Mag. nat. Hist.*, London, (6)4, p. 389.

1899. *Saccogaster maculatus* Alcock, *Cat. Ind. Deep Sea Fish.*, Calcutta, p. 102 (*Ill. Zool. Investig. Fish.*, pl. 29, fig. 2).

Syntypes (2) : F 11673 and F 11674 ; Bay of Bengal, lat. 20° 17' 30" N., long. 88° 50' E., 193 fms., 25.iii.1885 ; *R.I.M.S.* "Investigator" Coll.

346. *Sirembo nigripinnis* Alcock

1889. *Sirembo nigripinnis* Alcock, *Ann. Mag. nat. Hist.*, London, (6)4, p. 384.

1899. *Sirembo nigripinnis* Alcock, *Cat. Ind. Deep Sea Fish.*, Calcutta, p. 82 (*Ill. Zool. Investig. Fish.*, pl. 11, fig. 3).

Holotype : F 11764 ; Andaman Sea, 7½ miles east of North Cinque Island, 490 fms. ; *R.I.M.S.* "Investigator" Coll.

Family 67. CALLIONYMIDAE

347. *Callionymus carebares* Alcock

1890. *Callionymus carebares* Alcock, *Ann. Mag. nat. Hist.*, London, (6)6, p. 209.

1899. *Callionymus carebares* Alcock, *Cat. Ind. Deep Sea Fish.*, Calcutta, p. 73 (*Ill. Zool. Investig. Fish.*, pl. 20, fig. 4.)

Syntypes (2) : F 12740 & F 12741 ; Bay of Bengal, off Madras Coast, lat. 18° 30' N., 84° 46' E., 98-102 fms. ; 4.iii.1890 ; *R.I.M.S.* "Investigator" Coll.

348. *Callionymus ornatipinnis* Alcock

1905. *Callionymus ornatipinnis* Alcock, *Ann. Mat. nat. Hist.*, London, (7)15, p. 23, pl. 3.

Syntype (1) : F 2991/1 ; Inland Sea of Japan ; *British Museum* (Exchange).

Family 68. GEMPYLIDAE

349. *Rexea prometheoides* (Bleeker)

1894. *Thyrsites bengalensis* Alcock, *J. Asiat. Soc. Beng.*, Calcutta, 63(2), p. 117, pl. 6, fig. 1.

1899. *Thyrsites bengalensis* Alcock, *Cat. Ind. Deep Sea Fish.*, Calcutta, p. 42 (*Ill. Zool. Investig. Fish.*, pl. 15, fig. 10).

Syntypes (4) : F 13518, F 13521, F 13522, & F 13524 ; Bay of Bengal, 145-250 fms. ; 30.i.1894 ; *R.I.M.S.* "Investigator" Coll.

Family 69. TETRAGONURIDAE

350. *Mulichthys squamiceps* Lloyd

1910. *Mulichthys squamiceps* Lloyd, *Mem. Indian Mus.*, Calcutta, 2, p. 158.

Holotype : F 1020/1 ; Arabian Sea, 512 fms. ; 1.v.1902 ; *R.I.M.S.* "Investigator" Coll.

Family 70. ANABANTIDAE

351. *Parasphaerichthys ocellatus* Prashad & Mukerji

1929. *Parasphaerichthys ocellatus* Prashad and Mukerji, *Rec. Indian Mus.*, Calcutta, 31, p. 217, pl. 8, figs. 4, 4a.

Holotype : F 11011/1 ; Kamaing, Myitkyina distt., U. Burma ; *B. N. Chopra* Coll.

Family 71. ELEOTRIDAE

352. *Eleotris andamensis* Herre

1939. *Eleotris andamensis* Herre, *Rec. Indian Mus.*, Delhi, 41, p. 344.

Holotype : F 13632/1 ; Port Blair, Andamans ; x.1934 ; *H.S. Rao* Coll.

Paratypes (6) : F 13633/1 & F 13634/1 ; data exactly as for holotype.

Family 72. GOBIIDAE

353. *Acentrogobius cyanomos* (Bleeker)

1923. *Ctenogobius dentifer* Hora, *Mem. Indian Mus.*, Calcutta, 5, p. 747, fig. 29.

Syntype (1) : F 10187/1 ; Manikpatna, Lower Chilka, iii.1914 ; *Zoological Survey of Chilka Lake, 1914 Coll.*

354. *Acentrogobius globiceps* (Hora)

1923. *Ctenogobius globiceps* Hora, *Mem. Indian Mus.*, Calcutta, 5, p. 744, text-figs. 24, 25.

Syntypes (2) : F 10214/1 ; between Cherria and main land, Chilka Lake ; 20.vii.1914 ; *Zoological Survey of Chilka Lake, 1914 Coll.*

355. *Amblyotrypauchen arctocephalus* (Alcock)

1890. *Amblyopus arctocephalus* Alcock, *Ann. Mag. nat. Hist.*, London, (6)6, p. 432.

1899. *Amblyopus arctocephalus* Alcock, *Cat. Ind. Deep Sea Fish.*, Calcutta, p. 72 (*Ill. Zool. Investig. Fish.*, pl. 20, fig. 7).

1924. *Amblyotrypauchen fraseri* Hora, *Rec. Indian Mus.*, Calcutta, 26, p. 160, figs. 3-4.

Syntype (*arctocephalus*) (1) : F 12926 ; Bay of Bengal, off Orissa Coast, 50 fms. ; 7.i.1890 ; *R.I.M.S. "Investigator"* Coll.

Holotype (*fraseri*) : F 10819/1 ; Sand heads, mouth of river Hooghly, 20 fms. ; ii.1923 ; *P. V. Fraser Coll.*

356. *Brachyamblyopus burmanicus* Hora

1925. *Brachyamblyopus burmanicus* Hora, *Rec. Indian Mus.*, Calcutta, 27, p. 455.

Syntypes (2) : F 10746/1 ; a small pond opening into the Rangoon river about 3 miles below Rangoon, Burma ; *F. J. Meggitt Coll.*

357. *Callogobius seshaiyai* Jacob & Rangarajan

1960. *Callogobius seshaiyai* Jacob & Rangarajan, *J. zool. Soc. India*, Calcutta, 12(1), p. 20.

Holotype : F 1908/2 ; vellar estuary, Portonovo, South India ; *Jacob & Rangarajan Coll.*

358. *Cryptocentrus leptcephalus* Bleeker

1914. *Cryptocentrus rubropunctatus* Sewell, *Rec. Indian Mus.*, Calcutta, 10, p. 134, pl. 8, fig. 3.

Holotype : F 8033/1 ; Fisher Bay in Port Owen, Tavoy Island on the Coast of Burma ; 1911 ; *R.I.M.S. "Investigator"* Coll.

359. *Ctenotrypauchen banardi* Hora

1926. *Ctenotrypauchen banardi* Hora, *Rec. Indian Mus.*, Calcutta, 28, p. 221, text-figs. 1-2.

Paratypes (2) : F 10753/1 ; Natal Coast, S. Africa ; *South African Museum* (Exchange).

Remarks :—"The type specimen and a cotype are preserved in the South African Museum, Cape Town"

360. *Gobiopterus chuno* (Hamilton)

1923. *Micrapocryptes fragilis* Hora, *Mem. Indian Mus.*, Calcutta, 5, p. 751, figs. 31-33.

1934. *Gobiella birtwistlei* Herre, *Bull. Raffles Mus.*, Singapore, 9, p. 85.

Syntypes (35) (*fragilis*) : F 10165/1 ; Beliaghata canal near Gas Works, Calcutta ; 17.vii.1916 ; *B.L. Chaudhuri* Coll.

Syntypes (3) (*birtwistlei*) : F 13513/1 ; Singapore ; *A.W.C.T Herre* Coll.

361. *Obliquogobius cometus* (Alcock)

1890. *Gobius cometus* Alcock, *Ann. Mag, nat Hist.*, London, (6)6, p. 208, pl. 8, fig. 2.

1899. *Gobius cometus* Alcock, *Cat. Ind. Deep Sea Fish*, Calcutta, p. 71 (*Ill. Zool. Investig. Fish.*, pl. 20, fig. 3).

Syntype (1) : F 12729 ; Bay of Bengal, off Madras Coast, lat. 18° 30' N., long. 84° 46' E., 98-102 fms. ; 4.iii.1890 ; *R.I.M.S. "Investigator"* Coll.

362. *Oligolepis cylindriceps* (Hora)

1923. *Ctenogobius cylindriceps* Hora, *Mem. Indian Mus.*, Calcutta, p. 745, figs. 26, 27 & 28.

Syntypes (9) : F 10189/1 ; between Cherria and mainland, Chilka Lake ; 20.vii.1914 ; *Zoological Survey of Chilka Lake, 1914* Coll.

363. *Paragobiopsis ostreicola* (Chaudhuri)

1916. *Gobius ostreicola* Chaudhuri, *Rec. Indian Mus.*, Calcutta, 12, p. 105.

Holotype : F 10406/1 ; Oyster beds near Manikpur, Chilka Lake ; xii.1914 ; *Zoological Survey of Chilka Lake, 1914* Coll.

Paratypes (3) : F 10407/1 ; data exactly as for holotype.

364. *Raogobius andamanicus* Mukerji

1935. *Raogobius andamanicus* Mukerji, *Rec. Indian Mus.*, Calcutta, 37, p. 264, pl. 6, figs. 1 & 2.

Holotype : F 12980/1 ; Aberdeen, Andamans ; 12.ii.1934 ; *H.S. Rao* Coll.

Remarks :—Reg. No. (F 11788/1) as given in the original description is wrong.

365. *Sicyopterus microcephalus* (Bleeker)

1925. *Sicyopterus garra* Hora, *Rec. Indian Mus.*, Calcutta, 27, p. 35, pl. 2, figs. 2-5.

Syntypes (2) : F 10831/1 ; Birchgunge, South Andamans ; N. Annandale Coll.

366. *Stigmatogobius minima* (Hora)

1923. *Ctenogobius minima* Hora, *Mem. Indian Mus.*, Calcutta, 5, p. 749, text-fig. 30.

Syntypes (72) : F 10172/1 to F 10185/1 ; Chilka Lake ; ix. 1913 ; Zoological Survey of Chilka Lake, 1914 Coll.

367. *Taenioides buchanani* (Day)

1873. *Amblyopus buchanani* Day, *Proc. zool. Soc. Lond.*, London, p. 110.

Syntype (1) : F 76, Calcutta ; F. Day Coll.

Syntype (1) : F 2113 ; Moulmein ; Collector same as above.

368. *Taenioides chilensis* Chaudhuri

1923. *Taenioides chilensis* Chaudhuri, *Mem. Indian Mus.*, Calcutta, 5, p. 757, text-fig. 34.

Syntypes (5) : F 10385/1 ; Channel off Barhampur Island, Chilka, Orissa ; 2.ix. 1914 ; N. Annandale Coll.

369. *Taenioides nigrimarginatus* Hora

1924. *Taenioides nigrimarginatus* Hora, *Mem. Asiat. Soc. Beng.*, Calcutta, 6, p. 496, fig. 8.

Holotype : F 10465/1 ; Singgora, Tale Sap, Thailand, N. Annandale Coll.

Paratypes (2) : F 10466/1 ; data exactly as for holotype.

Family 73. SCORPAENIDAE**370. *Centropogon indicus* Day**

1876. *Centropogon indicus* Day, *Fish India*, London, p. 155, pl. 38, fig. 2.

Holotype : F 1734 ; Madras ; F. Day Coll.

371. *Minous coccineus* Alcock

1890. *Minous coccineus* Alcock, *Ann. Mag. nat. Hist.*, London, (6)6, p. 428.

Syntypes (2) : F 12924 ; Bay of Bengal, off Ganjam Coast, 28 fms. ; 17-21.ii.1890 ; R.I.M.S. "Investigator" Coll.

372. *Minous inermis* Alcock

1889. *Minous inermis* Alcock, *J. Asiat. Soc. Beng.*, Calcutta, 58(2), p. 299, pl. 22, fig. 4.

1899. *Minous inermis* Alcock, *Cat. Ind. Deep Sea Fish.*, Calcutta, p. 30, (Ill. Zool. Investig. Fish., pl. 18, fig. 3).

Syntypes (2) : F 12444 & F 12445 ; Godavari Coast, 70 fms. ; R.I.M.S. "Investigator" Coll.

373. *Parascorpaena erostris* (Alcock)

1896. *Scorpaena erostris* Alcock, *J. Asiat. Soc. Beng.*, Calcutta, 65(2), p. 302.

1899. *Scorpaena erostris* Alcock, *Ill. Zool. Investig. Fish.*, pl. 18, fig. 6.

Syntypes (2) : F 12977 & F 12978; Bay of Bengal, off Ceylon Coast, 34 fms.; *R.I.M.S. "Investigator"* Coll.

374. *Pterois macrura* Alcock

1896. *Pterois macrura* Alcock, *J. Asiat. Soc. Beng.*, Calcutta, 65 (2) p. 303,

1899. *Pterois macrura* Alcock, *Cat. Ind. Deep Sea Fish.*, Calcutta, p. 30
(*Ill. Zool. Investig. Fish.*, pl. 18, fig. 4).

Syntypes (6) : F 13823 to F 13828; Malabar Coast, 45 fms., *R.I.M.S.*,
" *Investigator* " Coll.

375. *Scorpaena bucephalus* Alcock

1896. *Scorpaena bucephalus* Alcock, *J. Asiat. Soc. Beng.*, Calcutta, 65(2),
p. 302.

1899. *Scorpaena bucephalus* Alcock, *Ill. Zool. Investig. Fish.*, pl. 18, fig. 7.

Syntype (1) : F 13737; Laccadive Sea, off Malabar Coast, 36 fms.;
R.I.M.S. "Investigator" Coll.

Syntype (1) : F 14084; Bay of Bengal, off Coromandel Coast, 33 fms.;
collector same as above.

376. *Sebastes muciparus* Alcock

1889. *Sebastes muciparus* Alcock, *J. Asiat. Soc. Beng.*, Calcutta, 58(2), p. 298,
pl. 22, fig. 3.

Holotype : F 12432; Bay of Bengal, off Ganjam Coast, 23 fms.,
7.iii.1889 ; *R.I.M.S. "Investigator"* Coll.

Family 74. TRIGLIDAE**377. *Lepidotrigla spiloptera* var. *longipinnis* Alcock**

1890. *Lepidotrigla spiloptera* var. *longipinnis* Alcock, *Ann. Mag. nat. Hist.*,
London, p. 429, p. 42, pl. 18, fig. c.

1899. *Lepidotrigla spiloptera* var. *longipinnis* Alcock, *Cat. Ind. Deep Sea
Fish.*, Calcutta, p. 68. (*Ill. Zool. Investig. Fish.*, pl. 31, fig. 1).

Holotype : F 12925; Bay of Bengal, off Ganjam Coast, 18 fms.,
15.i.1890 ; *R.I.M.S. "Investigator"* Coll.

378. *Peristethion adeni* (Lloyd)

1907. *Peristethus adeni* Lloyd, *Rec. Indian Mus.*, Calcutta, 1, p. 8.

Holotype : F 1443/1; Arabian Sea, Gulf of Aden, 130 fms., 20.xii.
1905; *R.I.M.S. "Investigator"* Coll.

379. *Peristedion investigatoris* (Alcock)

1898. *Peristethers investigatoris* Alcock, *Ann. Mag. nat. Hist.*, London, (7)2, p. 153.

1899. *Peristethus investigatoris* Alcock, *Cat. Ind. Deep Sea Fish.*, Calcutta, p. 70 (*Ill. Zool. Investig. Fish.*, pl. 25, figs. 1, 1a).

Syntypes (2) : F 13037 & F 13038; Andaman sea, 188-220 fms.; *R.I.M.S. "Investigator"* Coll.

380. *Peristedion rivers-andersoni* (Alcock)

1894. *Peristethium rivers-andersoni* Alcock, *J. Asiat. Soc. Beng.*, Calcutta, 63(2), p. 121, pl. 6, figs. 2, 2a, 2b.

1899. *Peristethium rivers-andersoni* Alcock, *Cat. Ind. Deep Sea Fish.*, Calcutta, p. 68.

Holotype : F 13469 ; 13½ miles N. 64° . W. off Colombo Lt., 142-400 fms., 4.xii. 1893; *R.I.M.S. "Investigator"* Coll.

381. *Peristedion serrulatum* (Alcock)

1898. *Peristethus serrulatum* Alcock, *Ann. Mag. nat. Hist.*, London, (7) 2, p. 153.

1899. *Peristethus serrulatum* Alcock, *Cat. Ind. Deep Sea Fish.*, p. 69 (*Ill. Zool. Investig. Fish.*, pl. 25, figs. 2, 2a).

Syntypes (2) : F 296/1 & F 297/1; Andaman sea, 185 fms., 6.xii. 1897; *R.I.M.S. "Investigator"* Coll.

382. *Prionotus alepis* Alcock

1889. *Prionotus alepis* Alcock, *J. Asiat. Soc. Beng.*, Calcutta, 58(2), p. 303, pl. 22, fig. 5.

Syntypes (2) : F 12442 & F 12443; Bay of Bengal, off Orissa Coast, 68 fms.; *R.I.M.S. "Investigator"* Coll.

Order 22. PLEURONECTIFORMES**Family 75. BOTHIDAE****383. *Arnoglossus brevirectis* Alcock**

1890. *Arnoglossus brevirectis* Alcock, *Ann. Mag. nat. Hist.*, London (6)6, p. 433. (*Ill. Zool. Investig. Fish.*, pl. 22, fig. 4).

Syntypes (2) : F 12922 & F 12923 ; Bay of Bengal, off Ganjam Coast, 30 fms., 31.i.1890; *R.I.M.S. "Investigator"* Coll.

384. *Arnoglossus polylepis* Alcock

1889. *Arnoglossus polylepis* Alcock, *J. Asiat. Soc. Beng.*, Calcutta, 58(2), p. 290, pl. 16, fig. 1.

Holotype : F 11750; Bay of Bengal, off the east coast of Ceylon, 34 fms.; *R.I.M.S. "Investigator"* Coll.

385. *Arnoglossus tapeinosoma* (Bleeker)

1889. *Arnoglossus macrolophus* Alcock, *J. Asiat. Soc. Beng.*, Calcutta, 58(2), p. 280, pl. 18, fig. 2.

Holotype. : F 12441; Bay of Bengal, 5 miles south of Ganjam, 25 fms., 12.iii.1889 ; *R.I.M.S.* "Investigator" Coll.

386. *Chascanopsetta lugubris* Alcock

1894. *Chascanopsetta lugubris* Alcock, *J. Asiat. Soc. Beng.*, Calcutta, 63(2), p. 129, pl. 6, fig. 4.

1899. *Chascanopsetta lugubris* Alcock, *Cat. Ind. Deep Sea Fish.*, Calcutta p. 125 (*Ill. Zool. Investig. Fish.*, pl. 15, fig. 3).

Syntypes (2) : F 13728 & 13729; Bay of Bengal, 145-250 fms., 30.i. 1894 ; *R.I.M.S.* "Investigator" Coll.

387. *Citharichthys aureus* Day

1878. *Citharichthys aureus* Day, *Fish India*, London, p. 422, pl. 9, fig. 3.

Holotype : F 1243; Madras; F. Day Coll.

388. *Laeops guentheri* Alcock

1890. *Laeops guentheri* Alcock, *Ann. Mag. nat. Hist.*, London, 6,(6) p. 438.

Syntype (1) : F 12888; Bay of Bengal, off Vizagapatnam Coast, 20 fms., 21.iii. 1890; *R.I.M.S.* "Investigator" Coll.

389. *Laeops nigrescens* Lloyd

1907. *Laeops nigrescens* Lloyd, *Rec. Indian Mus.*, Calcutta, 1, p. 9.

Syntypes (4) : F 1291/1 to F 1293/1 & F 1296/1; Arabian sea, Gulf of Aden, 130 fms., 20.xii. 1905; *R.I.M.S.* "Investigator" Coll.

390. *Psettylis ocellata* Alcock

1890. *Psettylis ocellata* Alcock, *Ann. Mag. nat. Hist.*, London, 6(6), p. 437, fig. 3.

Syntype (1) : F 12944; Bay of Bengal, off Ganjam coast, 9-13 fms., 20. xii. 1889; *R.I.M.S.* "Investigator" Coll.

391. *Psettylis pelluceda* Alcock

1890. *Psettylis pelluceda* Alcock, *Ann. Mag. nat. Hist.*, London, (6)6, p. 437, fig. 2.

Syntype (1) : F 12940; Bay of Bengal, off Ganjam coast, 9-13 fms., 20. xii. 1889; *R.I.M.S.* "Investigator" Coll.

392. *Pseudorhombus micrognathus* Norman

1927. *Pseudorhombus micrognathus* Norman, *Rec. Indian Mus.*, Calcutta, 29, p. 16, pl. 3.

Holotype : F 3441/1; Puri beach, Orissa, N. Annandale Coll.

Paratype (1) : F 5039/1; data exactly as for holotype.

393. Rhomboidichthys valde-rostratus Jenkins

1890. *Rhomboidichthys valde-rostratus* Alcock, *Ann. Mag. nat. Hist.*, London, (6)6, p. 435.

Holotype : F 12910; off the south-east coast of Ceylon, 32 fms., 11.xi. 1889 ; *R.I.M.S.* " *Investigator* " Coll.

394. Scianectes macrophthalmus Alcock

1889. *Scianectes macrophthalmus* Alcock, *J. Asiat. Soc. Beng.*, Calcutta, 58(2), p. 292, pl. 16, fig. 4.

1899. *Scianectes macrophthalmus* Alcock, *Cat. Ind. Deep Sea Fish.*, Calcutta, p. 128 (*Ill. Zool. Investig. Fish.*, pl. 23, fig. 1).

Holotype : F 11721; S.W. of Akyab, 100 fms.; *R.I.M.S.* " *Investigator* " Coll.

Family 76. PLEURONECTIDAE**395. Brachypleura novaezeelandiae Günther**

1889. *Brachypleura xanthosticta* Alcock, *J. Asiat. Soc. Beng.*, 58(2), p. 281, pl. 17, fig. 3.

Syntypes (3) : F 12426 to F 12428; Bay of Bengal, off Orissa Coast, 25 fms., ii-iii. 1889; *R.I.M.S.* " *Investigator* " Coll.

396. Poecilopsetta maculosa Alcock

1894. *Poecilopsetta maculosa* Alcock, *J. Asiat. Soc. Beng.*, Calcutta, 63(2), p. 130, pl. 7, fig. 1.

1899. *Poecilopsetta maculosa* Alcock, *Cat. Ind. Deep Sea Fish.*, Calcutta, p. 127 (*Ill. Zool. Investig. Fish.*, pl. 15, fig. 1).

1894. *Poecilopsetta praelonga* Alcock, *J. Asiat. Soc. Beng.*, Calcutta, 63 (2), p. 130, pl. 7, fig. 2.

1899. *Poecilopsetta praelonga* Alcock, *Cat. Ind. Deep Sea Fish.*, Calcutta, p. 126 (*Ill. Zool. Investig. Fish.*, pl. 15, fig. 2).

Holotype (maculosa) : F 13732; Bay of Bengal, 145-250 fms., 30.i. 1894; *R.I.M.S.* " *Investigator* " Coll.

Syntype (praelonga) : F 61/1; S.W. of Ceylon, 180-217 fms., *R.I.M.S.* " *Investigator* " Coll.

397. Samaris inornatus Lloyd

1909. *Samaris inornatus* Lloyd, *Mem. Indian Mus.*, Calcutta, 2, p. 160.

Syntypes (2) : F 2401/1 & F 2402/1; Arabian sea, 20.xii.1905; *R.I.M.S.* " *Investigator* " Coll.

398. Samariscus longimanus Norman

1927. *Samariscus longimanus* Norman, *Rec. Indian Mus.*, Calcutta, 29, p. 46, pl. 7.

Holotype : F 10846/1; West of Ceylon, 102-105 fms.; *R.I.M.S.* " *Investigator* " Coll.

Family 77. SOLEIDAE

399. *Aseraggodes cyaneus* (Alcock)

1890. *Solea cyanea* Alcock, *Ann. Mag. nat. Hist.*, London, (6)6, p. 439.

1894. *Solea umbratilis* Alcock. *J. Asiat. Soc. Beng.*, Calcutta, 63(2), p. 131.

1899. *Solea umbratilis* Alcock, *Cat. Ind. Deep Sea Fish.*, Calcutta, p. 12
(*Ill. Zool. Investig. Fish.*, pl. 15, fig. 4).

Syntype (*cyanea*) : F 12918; Bay of Bengal, off Ganjam Coast, 33 fms., 17. i. 1890 ; *R. I. M.S.* " *Investigator* " Coll.

Syntypes (3) (*umbratilis*) : F 13616, F 13618 & F 13624; Bay of Bengal, 91-107 fms., 16. ii. 1894; *R.I.M.S.* " *Investigator* " Coll.

400. *Solea oculus* Alcock

1889. *Solea oculus* Alcock, *J. Asiat. Soc. Beng.*, Calcutta, 58(2), p. 285, pl. 18, fig. 3.

Syntypes (2) : F 12429 & F 12430; Bay of Bengal, Orissa Coast, 7 fms., 26. ii. 1889; *R.I.M.S.* " *Investigator* " Coll.

401. *Solea synapturoides* Jenkins

1910. *Solea synapturoides* Jenkins, *Mem, Indian Mus.*, Calcutta, 3, p. 28, pl. 3, figs. 4, 4a, 4b.

Holotype : F 3430/1; Bay of Bengal, off Ganjam Coast, 24-30 fms., 9-16.iii.1909; *Bengal Fisheries " Golden Crown "* Coll.

402. *Synaptura altipinnis* Alcock

1890. *Synaptura altipinnis* Alcock, *Ann. Mag. nat. Hist.*, London, (6)6, p. 441.

Holotype : F 12917; Bay of Bengal, off Vizagapatam Coast, 25 fms ; *R.I.M.S.* " *Investigator* " Coll.

Family 78. CYNOGLOSSIDAE

403. *Aphoristia septemstriata* Alcock

1891. *Aphoristia septemstriata* Alcock, *Ann. Mag. nat. Hist.*, London, (6)8 p. 125.

1899. *Aphoristia septemstriata* Alcock, *Cat. Ind. Deep Sea Fish.*, Calcutta, p. 132 (*Ill. Zool. Investig. Fish.*, pl. 2, fig. 1).

Syntype (1) : F 13109; Andaman Sea, 188-220 fms., 9.xii.1890 ; *R.I.M.S.* " *Investigator* " Coll.

404. *Aphoristia trifasciata* Alcock

1894. *Aphoristia trifasciata* Alcock, *J. Asiat. Soc. Beng.*, Calcutta, 63(2), p. 132.

1899. *Aphoristia trifasciata* Alcock, *Cat. Ind. Deep Sea Fish.*, Calcutta, p. 133. (*Ill. Zool. Investig. Fish.*, pl. 15, fig. 5).

Syntypes (10) : F 13611, F 13612, F 13598 to F 13602, F 13604 & F 13605; Bay of Bengal, 145-250 fms., 30.i. 1894; *R.I.M.S.* " *Investigator* " Coll.

405. *Aphoristia wood-masoni* Alcock

1889. *Aphoristia wood-masoni* Alcock, *J. Asiat. Soc. Beng.*, Calcutta, 58(2), p. 294, pl. 17, fig. 1.

1899. *Aphoristia wood-masoni* Alcock, *Cat. Ind. Deep Sea Fish.*, Calcutta, p. 131 (*Ill. Zool. Invest. Fish.*, pl. 16, fig. 4).

Holotype : F 11765; Andaman sea, 490 fms., 11-12. iv. 1888; *R.I.M.S.* "Investigator" Coll.

406. *Cynoglossus acinaces* Jenkins

1910. *Cynoglossus acinaces* Jenkins, *Rec. Indian Mus.*, Calcutta, 5, p. 130.

Syntypes (4) : F 4149/1; Morelgunge, Khulna dist., Bengal; 25.viii. 1909; *Bengal Fisheries* Coll.

407. *Cynoglossus brachycephalus* (Bleeker)

1878. *Cynoglossus brevirostris* Day, *Fish India*, London, p. 437, pl. 97, fig. 6.

Holotype : F 2690; Madras; *F. Day* Coll.

408. *Cynoglossus carpenteri* Alcock

1889. *Cynoglossus carpenteri* Alcock, *J. Asiat. Soc. Beng.*, Calcutta, 58(2), p. 287, pl. 8, fig. 1.

1889. *Cynoglossus carpenteri* Alcock, *Cat. Ind. Deep Sea Fish.*, Calcutta, p. 133 (*Ill. Zool. Invest. Fish.*, pl. 22, fig. 5).

Syntypes (2) : F 12433 & F 12423; Bay of Bengal, off Orissa Coast, 68 fms., 4.ii.1889; *R.I.M.S.* "Investigator" Coll.

409. *Cynoglossus deltae* Jenkins

1910. *Cynoglossus deltae* Jenkins, *Rec. Indian Mus.*, Calcutta, 5, p. 130.

Syntypes (2) : F 4150/1; Morelgunge, Khulna dist., Bengal; 25.viii. 1909; *R.I.M.S.* "Investigator" Coll.

410. *Cynoglossus intermedius* Alcock

1889. *Cynoglossus intermedius* Alcock, *J. Asiat. Soc. Beng.*, Calcutta, 58(2), p. 288.

Holotype : F 12264; Bay of Bengal, off Orissa Coast, 7 fms., *R.I.M.S.* "Investigator" Coll.

411. *Cynoglossus praecisus* Alcock

1890. *Cynoglossus praecisus* Alcock, *Ann. Mag. nat. Hist.*, London, (6)6, p. 442 (*Ill. Zool. Invest. Fish.*, pl. 23, fig. 6).

Syntype (1) : F 12893; Bay of Bengal, off Ganjam Coast, 33 fms., 17.i.1890; *R.I.M.S.* "Investigator" Coll.

412. *Cynoglossus versicolor* Alcock

1890. *Cynoglossus versicolor* Alcock, *Ann. Mag. nat. Hist.*, London, (6)6, p. 442 (*Ill. Zool. Invest. Fish.*, pl. 23, fig. 5).

Holotype : F 12895; Bay of Bengal, off Ganjam Coast, 11 fms., 9.1.1890 ; R.I.M.S. " Investigator " Coll.

413. *Plagusia obscura* Jenkins

1910. *Plagusia obscura* Jenkins, *Rec. Indian Mus.*, Calcutta, 5, p. 134.

Holotype : F 1845/1; Karachi; W.D. Cumming Coll.

414. *Symphurus gilesii* (Alcock)

1889. *Aphoristia gilesii* Alcock, *J. Asiat. Soc. Beng.*, Calcutta, 58(2), p. 293, pl. 17, fig. 2.

1899. *Aphoristia gilesii* Alcock, *Cat. Ind. Deep Sea Fish.*, Calcutta, p. 131, (*Ill. Zool. Investig. Fish.*, pl. 14, fig. 4).

Holotype : F 13630; Bay of Bengal, 210 fms., R.I.M.S. " Investigator " Coll.

Order 23. CHAUDHURIFORMES

Family 79. CHAUDHURIDAE

415. *Chaudhuria caudata* Annandale

1918. *Chaudhuria caudata* Annandale, *Rec. Indian Mus.*, Calcutta, 14, p. 41, pl. 1, fig. 1; pl. 4, figs. 1-10.

Syntypes (2): F 9402/1; Inle Lake, S. Shan States, alt. 3000 ft., N. Annandale Coll.

Order 24. MASTOCEMBELIFORMES

Family 80. MASTOCEMBELIDAE

416. *Mastocembelus armatus favus* Hora

1924. *Mastocembelus armatus* var. *favus* Hora, *Mem. Asiat. Soc. Beng.*, Calcutta, 6, p. 474, fig. 2.

Holotype : F 10340/1; from the mouth of the Patelung river near Lampaw, Siam; 12-16.i.1916 ; N. Annandale Coll.

417. *Mastocembelus circumcinctus* Hora

1924. *Mastocembelus circumcinctus* Hora, *Mem. Asiat. Soc. Beng.*, Calcutta, 6, p. 475, fig. 3.

Holotype : F 10342/1; mouth of Patelung river in the inner portion of the Tale Sap; 12-16.i.1916; N. Annandale Coll.

418. *Mastocembelus manipurensis* Hora

1921. *Mastocembelus manipurensis* Hora, *Rec. Indian Mus.*, Calcutta, 22, p. 206, pl. 9, fig. 3.

Holotype : F 13630/1; Khurda stream, a mile from Thanga, Manipur, Assam ; S. L. Hora Coll.

419. *Rhynchobdella dhanshorii* Hora

1921. *Rhynchobdella dhanshorii* Hora, *Rec. Indian Mus.*, Calcutta, 22, p. 205, pl. 9, figs. 2.

Holotype : F 9989/1; Dhanshori stream about a mile from Dinapur, Assam ; S. L. Hora Coll.

Order 25. TETRAODONTIFORMIDAE

Family 81. TETRAODONTIFORMES

420. Halimochirurgus centriscoides Alcock

1899. *Halimochirurgus centriscoides* Alcock, *Proc. Asiat. Soc. Beng.*, Calcutta, p. 78.

1899. *Halimochirurgus centriscoides* Alcock, *Cat. Ind. Deep. Sea Fish.*, Calcutta, p. 209 (*Ill. Zool. Investig. Fish.*, pl. 31, fig. 3).

Holotype : F 781/1; Gulf of Mannar, 143 fms., 22. iv. 1899; R.I.M.S. "Investigator" Coll.

421. Triacanthodes ethiops Alcock

1894. *Triacanthodes ethiops* Alcock, *J. Asiat. Soc. Beng.*, Calcutta, 63(2), p. 137, pl. 7, fig. 6.

1899. *Triacanthodes ethiops* Alcock, *Cat. Ind. Deep Sea Fish.*, Calcutta, p. 208 (*Ill. Zool. Investig. Fish.*, pl. 15, fig. 9).

Holotype : F 13709; Bay of Bengal, 145-250 fms., 30. i. 1894; R.I.M.S. "Investigator" Coll.

422. Triacanthus weberi Chaudhuri

1910. *Triacanthus weberi* Chaudhuri, *J. Asiat. Soc. Beng.*, Calcutta, 6, p. 497, pl. 32.

Syntypes (4) : F 3507/1, F 4078/1, F 4080/1 & F 4081/1; Bay of Bengal, off Gopalpur, Ganjam Coast ; *Bengal Fisheries "Golden Crown"* Coll.

Syntypes (3) : F 3511/1, F 4058/1 & F 4082/1; Arakan Coast, Burma ; Collector same as above.

Syntype (1) : F 4072/1; mouth of river Hooghly; Collector same as above.

Family 82. TETRAODONTIDAE

423. Tetraodon (Monotretus) travancoricus Hora & Nair

1941. *Tetraodon (Monotretus) travancoricus* Hora & Nair, *Rec. Indian Mus.*, Delhi, 43, p. 391, fig. 4.

Holotype : F 13601/1; River Rambha, Travancore; K. Bhaskaran Nair Coll.

Paratypes (9) : F 13601/1; data exactly as for holotype.

424. Tropicichthys investigatoris Annandale & Jenkins

1914. *Tropicichthys investigatoris* Annandale & Jenkins, *Mem. Indian Mus.*, Calcutta, 3, p. 16, pl. 1, fig. 4.

Syntypes (2) : F 436/1 & 437/1; Andaman sea, 55 fms., 14. iv. 1898; R.I.M.S. "Investigator" Coll.

Order 26. LOPHIFORMES

Family 83. LOPHIFORMEIDAE

425. *Lophiodes lugubris* (Alcock)

1894. *Lophius lugubris* Alcock, *J. Asiat. Soc. Beng.*, Calcutta, p. 55 (*Ill. Zool. Investig. Fish.*, pl. 14, fig. 1).

Holotype : F 13467; 13½ miles N. 64° W. off Colombo Light House, 142-400 fms., 4.xii. 1893; *R.I.M.S.* "Investigator" Coll.

426. *Lophiomus setigerus* (Vahl)

1889. *Lophius indicus* Alcock, *Cat. Ind. Deep Sea Fish.*, Calcutta, 58(2), p. 302.

1899. *Lophius iudicus* Alcock. *Cat. Ind. Deep Sea Fish.*, Calcutta, p. 53, (*Ill. Zool. Investig. Fish.*, pl. 19, fig. 3).

Syntypes (2) : F 12450 & F 12451; Bay of Bengal, 5 miles S. of Ganjam Coast, 25-60 fms., 12. iii. 1889; *R.I.M.S.* "Investigator" Coll.

427. *Lophius gracilimanus* Alcock

1899. *Lophius gracilimanus* Alcock. *Cat. Ind. Deep Sea Fish.*, p. 54 (*Ill. Zool. Investig. Fish.*, pl. 29, fig. 3).

Syntypes (3) : F 488/1 to 490/1; Laccadive sea, off the Malabar Coast, 68-148 fms., 15.x.1898; *R.I.M.S.* "Investigator" Coll.

428. *Lophius mutilus* Alcock

1893. *Lophius mutilus* Alcock, *J. Asiat. Soc. Beng.*, Calcutta, 62(2), p. 179.

1899. *Lophius mutilus* Alcock, *Cat. Ind. Deep Sea Fish.*, Calcutta, p. 5 (*Ill. Zool. Investig. Fish.*, pl. 10, fig. 2).

Holotype : F 13438; Bay of Bengal, 128 fms., 1893; *R.I.M.S.* "Investigator" Coll.

429. *Lophius triradiatus* Lloyd

1909. *Lophius triradiatus* Lloyd, *Mem. Indian Mus.*, Calcutta, 2, p. 166.

Holotype : F 878/1; Laccadive sea, 259-360 fms., 17. i. 1900; *R.I.M.S.* "Investigator" Coll.

430. *Lophodolos indicus* Lloyd

1909. *Lophodolos indicus* Lloyd, *Mem. Indian Mus.*, Calcutta, 2, p. 167.

Holotype : F 1024/1; S. W. of Cape Comorin, 888 fms., 20. x. 1902; *R.I.M.S.* "Investigator" Coll.

Family 84. CHAUNACIDAE

431. *Chaunax apus* Lloyd

1909. *Chaunax apus* Lloyd, *Mem. Indian Mus.*, Calcutta, 2, p. 169.

Holotype : F 2404/1; Bay of Bengal, off Akyab Coast, 250 fms., 1 i. 1908; *R.I.M.S.* "Investigator" Coll.

Family 85. ONCOCEPHALIDAE

432. *Dibranchus micropus* Alcock

1891. *Dibranchus micropus* Alcock, *Ann. Mag. nat. Hist.*, London, (6)8, p. 25, pl. 7, figs. 2, 2a, 2b.

1899. *Dibranchus micropus* Alcock, *Cat. Ind. Deep Sea Fish., Calcutta*, p. 63 (Ill. Zool. Investig. Fish., pl. 20, fig. 1).

Syntypes : F 13029 & F 13030; Bay of Bengal, 240 fms., 24.xii. 1890; R.I.M.S. "Investigator" Coll.

433. *Dibranchus nasutus* Alcock

1891. *Dibranchus nasutus* Alcock, *Ann. Mag. nat. Hist.*, London, (6)8, p. 24, pl. 7, fig. 1.

1899. *Dibranchus nasutus* Alcock, *Cat. Ind. Deep Sea Fish., Calcutta*, p. 63 (Ill. Zool. Investig. Fish., pl. 20, fig. 2).

Holotype : F 13028; Andaman Sea, 188-220 fms., 9.xii. 1890; R.I.M.S. "Investigator" Coll.

434. *Halicmetus ruber* Alcock

1891. *Halicmetus ruber* Alcock, *Ann. Mag. nat. Hist.*, London, (6)8, p. 27, pl. 8, fig. 1, 1a, 1b.

1899. *Halicmetus ruber* Alcock, *Cat. Ind. Deep Sea Fish., Calcutta*, p. 66 (Ill. Zool. Investig. Fish., pl. 19, fig. 5).

Syntypes (2) : F 13025 & F 13026, Andaman Sea, 188-220 fms. 9. xii. 1890; R.I.M.S. "Investigator" Coll.

435. *Halieutaea coccinea* Alcock

1889. *Halieutaea coccinea* Alcock, *Ann. Mag. nat. Hist.*, London, (6)4, p. 382.

1899. *Halieutaea coccinea* Alcock, *Cat. Ind. Deep Sea Fish., Calcutta*, p. 61 (Ill. Zool. Investig. Fish., pl. 19, fig. 1).

Holotype : F 11741; Andaman Sea, 7 miles south-east by south of Ross Island, 265 fms., R.I.M.S. "Investigator" Coll.

436. *Halieutaea fumosa* Alcock

1894. *Halieutaea fumosa* Alcock, *J. Asiat. Soc. Beng.*, Calcutta, 63 (2), p. 119.

1899. *Halieutaea fumosa* Alcock, *Cat. Ind. Deep Sea Fish., Calcutta*, p. 62 (Ill. Zool. Investig. Fish., pl. 14, fig. 2).

Syntype (1) : F 13716; Bay of Bengal, 145-250 fms., 30.i. 1894; R.I.M.S. "Investigator" Coll.

437. *Halieutaea indica* Annandale & Jenkins

1910. *Halieutaea indica* Annandale & Jenkins, *Mem. Indian Mus.*, Calcutta, 3, p. 19, pl. 12, fig. 4.

Syntypes (8) : F 2207/1, F 4142/1 to F 4143/1, F 4145/1, F 2205/1, F 2206/1, F 3545/1 & F 4192/1; Bay of Bengal, off Orissa Coast; Bengal Fisheries "Golden Crown" Coll.

438. *Halieutaea nigra* Alcock

1891. *Halieutaea nigra* Alcock, *Ann. Mag. nat. Hist.*, London, (6)8, p. 24

1899. *Halieutaea nigra* Alcock, *Cat. Ind. Deep Sea Fish.*, Calcutta, p. 60
(*Ill. Zool. Investig. Fish.*, pl. 19, fig. 2).

Holotype : F 13027; Andaman Sea, 180-220 fms., 9.xii. 1890; *R.I.M.S.*
“*Investigator*” Coll.

439. *Malthopsis luteus* Alcock

1891. *Malthopsis luteus* Alcock, *Ann. mag. nat. Hist.*, London, (6)8, p. 26,
pl. 8, figs. 2, 2a.

1899. *Malthopsis luteus* Alcock, *Cat. Ind. Deep Sea Fish.*, Calcutta, p. 64
(*Ill. Zool. Investig. Fish.*, pl. 19, fig. 4).

Syntypes (5) : F 13014 to F 13016, F 13018 & F 13021; Andaman
Sea, 188-220 fms., 9.xii.1890 ; *R.I.M.S.* “*Investigator*” Coll.

440. *Malthopsis triangularis* Lloyd

1909. *Malthopsis triangularis* Lloyd, *Mem. Indian Mus.*, Calcutta, 2, p. 169.

Syntypes (2) : F 1121/1; & F 1125/1; Andaman sea, 279 fms., *R.I.M.S.*
“*Investigator*” Coll.

Family 86. ONEIRODIDAE**441. *Paroneiroides glomeratus* Alcock**

1890. *Paroneiroides glomeratus* Alcock, *Ann. Mag. nat. Hist.*, London, (6)6,
p. 206, pl. 9, fig. 6.

1899. *Paroneiroides glomeratus* Alcock, *Cat. Ind. Deep Sea Fish.*, Calcutta,
p. 57 (*Ill. Zool. Investig. Fish.*, pl. 28, fig. 4).

Holotype : F 12840; Bay of Bengal, off Madras coast, lat. 15° 14'
N., long. 81° 9' E., 1260 fms., 188-90; *R.I.M.S.* “*Investigator*” Coll.

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THIRD SUPPLEMENT TO ROONWAL'S BIBLIOGRAPHIA ACRIDIDIORUM

By

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Zoological Survey of India, Calcutta

(With 2 Tables)

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I—INTRODUCTION

Roonwal's *Bibliographia Acrididiorum* was published in 1961*. It consisted of a Main Part (pp. 1-549) and two Supplements, the First (pp. 551-591) and the Second (pp. 591-611). The object of the *Bibliographia* was to bring together a list of references on the family Acrididae in the broad sense (now equivalent to the superfamily Acridoidea of several authors) from the earliest times to the end of the year 1954 ; a few references published during the years 1955-57 were also included to enhance its usefulness. A total of about 7000 references were thus listed. In so comprehensive a work it was inevitable that some references would be overlooked, and indeed one of the purposes of such a bibliography is that it helps to spot such omissions or errors instantly. To ensure that, I had appealed as follows (p. 14) for my attention being called to such lacunae :

"In spite of all this effort it is possible, and indeed almost certain, that some references have been overlooked, although I hope and believe that their number is small. The publication of the Bibliography will highlight those omissions. I will be grateful if readers will be kind enough to bring any omissions and inaccuracies to my notice."

It is gratifying that the usefulness of the *Bibliographia* has been widely acknowledged, and readers have also generously responded to my appeal for filling in the lacunae. As a result, the record or Third Supplement is issued. It consists of two portions :

- (i) A list of *errata* to the original *Bibliographia*.
- (ii) A list of supplementary references which were overlooked earlier. Only those references which were published up to end of the year 1954 are included.

*ROONWAL, M. L. 1961. *Bibliographia Acrididiorum*. A bibliography of the Orthopteran insects of the family Acrididae (comprising the short-horned grasshoppers and locusts) from the earliest times to the end of 1954 (with some additions for 1955-57).—*Rec. Indian Mus.*, Delhi, 56 (1-4) [1958], pp. 1-611, 1 pl.

A total of 1104 new references (Table 1) are thus added, bringing the grand total to about 8012 (Table 2). For the more recent years there does not appear to be any need for a separate bibliography since the Anti-Locust Research Centre, London, publishes periodically (in cyclostyled form) the "Acridological Abstracts" which include the current references.

The largest single oversight in my original *Bibliographia* was the important paper of S. H. Scudder* (1900) on the North American Orthoptera which contains a full bibliography. Nearly 300 references from this paper have now been included here. About 35 references have been taken from the list of papers on Orthoptera and Dermaptera by Rehn and Hebard for the years 1919-28 (Anonymous, 1929). My attention to these lacunae was called by Dr. James A. G. Rehn. Another large inclusion is a list of about 70 references, mainly on the South American Locust, supplied by Mr. H. J. Bredo. Besides these, numerous references have been taken from several other sources.

It is a pleasure to acknowledge my indebtedness to several zoologists, and in particular the following ones, who have brought these lacunae to my attention: Dr. James A. G. Rehn, Chairman, Department of Insects, Academy of Natural Sciences of Philadelphia, Philadelphia, U.S.A. ; Prof. Emeritus Dr. A. M. Da Costa Lima, Instituto Oswaldo Cruz, Rio de Janeiro, Brazil ; Dr. Jose Lieberman, Instituto de Patologia Vegetal, Secretaria de Estado de Agricultura of Ganaderia de la Nacion, Castelar, Argentine Republic ; and Mr. H. J. Bredo, Project Manager, UNSF Desert Locust Project, Food and Agricultural Organization of the United Nations, Rome, Italy.—M.L.R.

TABLE 1.—*Distribution of the Acrididae references in the 3rd Supplement in chronological periods from the years 1700 to 1954.*

Years (A.D.)								Total period (years)	Total No. of references
1700—1799	.	.	.	.	.	.	.	100	27
1800—1849	.	.	.	.	.	.	.	50	37
1850—1899	.	.	.	.	.	.	.	50	238
1900—1909	.	.	.	.	.	.	.	10	30
1910—1919	.	.	.	.	.	.	.	10	153
1920—1929	.	.	.	.	.	.	.	10	142
1930—1939	.	.	.	.	.	.	.	10	122
1940—1949	.	.	.	.	.	.	.	10	183
1950	.	.	.	.	.	.	.	1	61
1951	.	.	.	.	.	.	.	1	24
1952	.	.	.	.	.	.	.	1	29
1953	.	.	.	.	.	.	.	1	27
1954	.	.	.	.	.	.	.	1	31
TOTAL								255	1104

*SCUDDER, S. H. 1901. *Alphabetical index to North American Orthoptera described in the eighteenth and nineteenth centuries*.—*Occ. Paper, Boston Soc. nat. Hist.*, Boston, No. 6, vi+1+436 pp.

TABLE 2.—*Revised chronological distribution of the references on the Acrididae from the 2nd century to the end of 1954 (as compiled from the Main Bibliography and the 1st, 2nd and 3rd Supplements).*

Years (A.D.)	Total period (years)	No. of references			Total	Average No. of references per year
		Main Bibliography	I & II Supplements	III Supplement		
2nd century—1599	1,499	3	..	..	3	..
1600—1699	100	13		..	13	0.13
1700—1799	100	43	.	27	70	0.70
1800—1849	. 50	77	.	37	114	2.2
1850—1899	. 50	722	5	238	965	19.30
1900—1909	10	172	2	30	204	20.40
1910—1919	10	351	..	153	504	50.40
1920—1929	. 10	846	4	142	992	99.20
1930—1939	. 10	1,999	3	122	2,124	212.40
1940—1949	. 10	1,180	10	183	1,371	137.10
1950	. 1	238	55	61	354	354
1951	. 1	245	136	24	405	405
1952	. 1	275	10	29	314	314
1953	. 1	267	29	27	323	323
1954	. 1	203	113	31	347	347
TOTAL	. 355	6,634	367	1,104	8,105	..
No. of references deleted		84	9	..	93	..
GRAND TOTAL	355	6,550	358	1,104	8,012	..

II—ERRATA AND ADDENDA TO MAIN BIBLIOGRAPHY AND FIRST AND SECOND SUPPLEMENTS

(*Rec. Indian Mus.*, 56 [1958], 1961, ix+611 pp.)

NOTE.—Except where otherwise stated, lines are counted from the top and include the page-heading.

P. viii, line 8 from below.—Add “7” under column for page (against “paranensis”).

P. 6, line 5.—For “aud”, read “and”.

P. 7, line 18.—After “(1775)”, add : “Desert Locust”.

P. 8, line 10 from below.—For “publie”, read “public”.

P. 8, line 9 from below.—For “huges”, read “huge”.

P. 9, line 30.—For “shrubby”, read “shrubbery”.

P. 15, line 25.—For “Lieberman”, read “Liebermann”.

P. 16, line 6 from below.—For “Spain”, read “Spanish”.

P. 18, lines 31-32 (Ref. No. 8).—The full reference is as follows :—

AD-DAMIRĪ, IMAL KAMAL AD DIN MOHAMMAD IBN ISA. (Born 1341 or 1349 A.D. ; died 1405 A.D.). *Hayāt al-Hayawān* (Life-history of Animals).

‘Ad-Damiri’s *Hayāt al-Hayawān*. (A Zoological Lexicon.) Translated from the Arabic into English by A.S.G. JAYAKAR” Vol. 1 (1906 xxx+875 pp. Vol. 2, Part 1 (1908), 2+604 pp.—Bombay (D.B. Taraporevala Sons & Co.) ; London (Luzac & Co.). (Locust, in Vol. 1, pp. 407—418 ; and 525.)

P. 19, line 29.—For “Algètie”, read “Algérie”.

P. 24, line 11 from below.—For “59, p. 233”, read “59 (5-7), pp. 233-236 283-288 and 345-349”.

P. 33, line 3 from below.—For “soxicities”, read “toxicities”

P. 37, line 2 from below.—For “perth”, read “Perth”.

P. 56, line 17.—For “influence of”, read “influence of moisture”.

P. 85, line 18 from below.—For “BURMEISTR, H.”, read “BURMEISTER, H.C.C”.

P. 85, lines 11-13 from below (Ref. No. 917) : The full reference should read as follows :—

BURMEISTER, H.C.C. 1840. Audinet-Serville, Histoire naturelle des Orthoptères. Paris, 1839. Verglichen mit H. Burmeister, Handbuch d. Entomologie, Bd. 2, abth. 2, halfte 1 (vulgo Orthoptera). Berlin, 1838. Vom Verfasser des letzteren.—*German’s Z. ent.*, Leipzig, 2, pp. 1-82.

- P. 86, lines 5-6 (Ref. No. 921) : The full reference should read as follows :—
 BURR, M. 1899. Essai sur les Eumastacides, tribu des Acridiodes. — *Anal. Soc. esp. Hist. nat.*, Madrid, 28, pp. 75-112 ; 253-304 ; 345-347 ; 3 pls. Also as separate, T. p.+94 pp., 3 pls., Madrid.
- P. 86, line 23.—For “pp. 417-475”, read “pp. 417-425”.
- P. 103, line 4.—For “pp. 145-159”, read “pp. 145-159 and 252-260”.
- P. 103, line 30.—For “CHIESA”, read “CHIESA”.
- P. 124, line 16 from below.—For “Locust invasion of 1874”, read “Notes on the locust invasion of 1874 in Manitoba and the North-West territories”.
- P. 124, line 13 from below.—For “DASON”, read “DAWSON”.
- P. 125, line 9.—For “p. 67” read “pp. 67-73”.
- P. 141, line 1.—For “58.]", read “1958”.]
- P. 150, line 24.—For “Synopsis der europäischen Orthoptera”, read “Synopsis der europäischen Orthopteren mit besonderer Rücksicht auf die in Böhmen vorkommenden Arten als Auszug aus dem zum Drucke vorliegenden Werke “Die europäischen Orthoptera”.
- P. 152, line 8.—For “p. 761”, read “pp. 761-767, 1 pl.”
- P. 156, line 9 from below.—For “Tananarive”, read “10 pp.—Tananarive”.
- P. 178, line 16.—For “1954”, read “1945”.
- P. 178, line 17.—For “p. 628”, read “pp. 628-629”.
- P. 191, line 22.—For “Iowa”, read “Iowa”.
- P. 192, line 12 from below.—For “Hexachloroxchlorhexane”, read “Hexachlorocyclohexane”.
- P. 195, line 4 from below.—For “pp. 183-202”, read “pp. 193-202”.
- P. 196, line 20.—For “S.H.”, read “A.H.”.
- P. 197, line 15 from below.—For “31-38” read “31-38, 1 pl.”
- P. 217, line 6.—For “pp. 40-186”, read “pp. 140-186”.
- P. 220, line 2.—For “JOLLY”, read “JOLY”.
- P. 220, lines 2-23 (References 2755-2763).—For “JOLLY, L.”, and “JOLLY, P.”, read “JOLY, L.” and “JOLY, P.” throughout.
- P. 221, line 17.—For “easter”, read “east”.
- P. 224, line 7.—For “21, pp. 328-335”, read “14, pp. 328-335 ; 340-346 and 355-361”.
- P. 230, line 11.—For “*KIMG”, read “*KING”.
- P. 234, line 4 from below.—For “KOEHER, P.”, read “KÖHLER, P.”. (Also, transfer the entire Reference No. 2962 to p. 235, as No. 2968a.
- P. 236, line 5 from below.—For “Wander-Heuschrecke”, read “Wanderheuschrecke”.

- P. 236, bottom line.—For “vom.”, read “von”.
- P. 239, line 1.—For “1985”., read “1958”.
- P. 239 line 19.—For “pp. 342-357”, read “pp. 344-357”.
- P. 240, line 10.—For “Mécanisme”, read “Mécánisme”.
- P. 241, line 4.—For “pigme s dans”, read “pigments dans”.
- P. 246, line 5.—For “(3)”., read “(3), p. 40”.
- P. 246, line 7.—For “(3).”, read “(3), pp. 3-5.”.
- P. 253, line 15.—For “pp. 372-381”, read “pp. 372-384”.
- P. 255, line 19.—For “1955”, read “1855”.
- P. 261, line 14.—For “322”, read “3322”.
- P. 266, line 10.—For “migrra-”, read “migra-”.
- P. 273, line 23.—For “Uma”, read “Una”.
- P. 274, line 8 from below.—For “maiz amarge”, read “maiz amargo”.
- P. 278, line 23 from below.—For “130”, read “1930”.
- P. 282, line 14 from below.—For “Tanganyi 1”, read “Tanganyika”.
- P. 283, line 11 from below.—For “Elegan”, read “Elegant”.
- P. 294, line 22.—For “Des”, read “Dos”.
- P. 294, line 23.—For “marrequi & revladas”, read “marroqui & reveladas”
- P. 294, line 13 from below.—For “MARITA”, read “MORITA”.
- P. 299, line 11 from below.—For “I.A.”, read “J.A.”.
- P. 306, line 17 from below.—For “pp. 190-208”, read “pp. 199-208”.
- P. 314, line 8 from below.—For “Washington”, read “Washington, pp. 223-242, 7 pls.”
- P. 315, line 18 from below.—For “PLAM” read “PALM.”
- P. 319, line 5.—Between “Agric.” and “Washington” add : “Bur. Ent. and pl. Quar.”.
- P. 319, line 6.—For “653 pp.”, read “653, 7 pp.”.
- P. 341, line 25.—For “(Eversmann)”, read “(Eversmann)”.
- P. 348, line 8 from below.—For “1913”, read “1923”.
- P. 358, line 17.—For “29”, read “27”
- P. 358, lines 23-24 (Reference No. 4651). The complete reference is as follows :—
- REMBOLD, I.I. 1731. *Historischer und physicalischer Tractat, von Heuschrecken. Oder Kurtze Beschreibung, von deren Benennung, Arten, Eigenschafften, Vermehrung, Wiederkinft, grossen Land-Schaden, vorbothen noch grössern Unglücks, verschiedenen Anschlägen, Vorthailen, auch in unterschiedlichen Provintzien angewandten Mitteln, selbige zu vertreiben und völlig auszurotten, Zurichtung zur Speise, nützlichen Gebrauch in der Artzney-Kunst, nebst andern curieusen Anmerkungen.* .64 pp., 1 pl.—Berlin & Leipzig. (Publ. by Author) [1730].
- P. 359, line 11 from below.—For “4+112+1 pp., 4 figs.”, read “4+182+1 pp., 4 pp. (figs.),.”.

- P. 365, line 22.—For “ROBLET”, read “ROBLOT”.
- P. 365, line 24.—For “*Schlstocerca*”, read “*Schistocerca*”.
- P. 367, line 10 from below.—For “See-”, read “—See”.
- P. 373, line 2.—For “1962c”, read “1952c”.
- P. 374, line 9.—For “on the Desert”, read “of the Desert”.
- P. 374, line 12.—For “1936-8950. Section VI”, read “1938-1950. Section VII”.
- P. 374, line 29.—For “evolutionery”, read “evolutionary”.
- P. 374, line 10 from below.—For “swarmi”, read “swarm in”.
- P. 374, line 9 from below.—For “swar”, read “swarm”.
- P. 376, line 12 from below.—For “1938”, read “1933”.
- P. 379, line 14.—For “pp. 141-261”, read “pp. 191-261”.
- P. 383, line 10.—For “En.”, read “Ent.”.
- P. 384, line 33-34 (Ref. No. 4985) : The full reference should read as follows :—

SAUSSURE, H. DE. 1859-1862. Orthoptera nova americana. (Diagnoses praeliminaries.) Series 1-3.—Ser. 1, *Rev. Mag. Zool.*, Paris, 1859, pp. 59-63, 201-212, 315-317, 390-394. Ser. 2, *Ibid.*, 1861, pp. 126-130, 156-164, 313-324, 397-402. Ser. 3, *Ibid.*, 1862, pp. 163-171, 227-234. Also as separate, Paris.

- P. 384, lines 35-36 (Ref. No. 4986) : The full reference should read as follows :—

SAUSSURE, H. DE. 1863-1878. Mélanges orthoptérologiques. Tomes 1-2. Geneve. 1, 460 pp., 7 pls., 1863-1871. 2, 834 pp., 29 pls., 1872-1878. *Extr. Mem. Soc. Hist. phys. nat.*, Geneve, xvii-xxv ; as follows :—Tome 1, fasc. 1, pp. (1-4), 1-44, pl. 1 (*Memoires*, 17, (1), pp. 129-170, 1863) ; fasc. 2, pp. 45-148, pls. 2-3 (*Memoires*, 20, pp. 227-326, 1869) ; fasc. 3, pp. (1-4), 149-362, pls. 4-6 (*Memoires*, 21, pp. 1-214, 1870) ; fasc. 3, suppl., pp. (1-2), 363-460, pl. 7 (*Memoires*, 21, pp. 239-336, 1871). Tome 2, fasc. 4, pp. (1-8), 1-164, pls. 8-10 (*Memoires*, 23, pp. 1-352, 1877) ; fasc. 6, pp. 505-837, pls. 11-19 (*Memoires*, 25, pp. 369-702, 1878).

- P. 387 lines 1 & 2 from below.—For “Orthoptera.—682.”, read “Orthoptera and related orders—*Ann. ent. Soc. Amer.*, Columbus (Ghia), 47(4), pp. 677-682, 3 pls.”.

- P. 416, line 4 from below.—For “pp. 297-298”, read “p. 298”.

- P. 421, line 9. After “Amsterdam.”, add the following :—

“Vol. 1. Spectres et mantes. 6+79 pp., 25 pls., 1787. Vol. 2. Sauterelles grillons et blattes. 6+42+8+8+14 pp., 13+23+4+5 pls., 1813.”

- P. 421, line 11.—For “1935”, read “1795”.
- P. 428, line 19.—For “pp. 39-40”, read “pp. 39-49”.
- P. 429, line 25.—For “2 pp.”, read “27 pp.”.
- P. 430, line 28.—For “pp. 31-34”, read “pp. 81-84”.

- P. 442, line 16 from below.—For “No. 11 & 12, pp. 179-180”, read “No. 11 & 12 (179-180), pp. 234-235”.
- P. 469, line 7.—For “5 (1861-1864)”, read “5 (1861-1864), pp. 497-499.”
- P. 472, line 6.—For “226”, read “6226”.
- P. 479, lines 15 and 16.—Replace existing lines by : “135-172, 3 pls. Also separate as *Inaugural Dissert. Philos. Facult. Leipzig*”, “Bonn (Univ. Buchdruckerei v. Carol Georgi), 1877, 41 pp.”
- P. 479, line 20.—For “Manhattan”, read “Manhattan, 13 (3)”.
- P. 479, line 17 from below.—For “Berlin, pp.”, read “pp.”.
- P. 493, line 6 from below.—For “1939a”, read “1930a”.
- P. 493, line 1 from below.—For “pp. 105-236”, read “pp. 185-236”.
- P. 495, line 29.—For “October”, read “Octobre”.
- P. 497, line 7 (right column).—For “ABITO, J.”, read “ABITOL, J.”
- P. 501, line 16 from below (right column).—For “BURMEISTER, H.”, read “BURMEISTER, H.C.C.”.
- P. 512, left column, lines 4 & 5 from below.—For “JOLLY, P.” and “JOLLY, L.” read “JOLY, P.” and “JOLY, L.” respectively.
- P. 513, line 20.—“KÖEHLER, P.” is the same author as “KÖHLER, P.” (*vide* erratum above, on p. 234, line 4 from below).
- P. 523, line 8 right hand column.—For “ROBLET”, read “ROBLOT”.
- P. 533, line 14.—For “(Includin gbiometry)”, read “(Including biometry.)”
- P. 552, line 4.—For “1944”, read “1954”.
- P. 552, line 19.—For “Bozcmarr”, read “Bozeman”.
- P. 552, line 14 from below.—For “(2)”, read “(11)”.
- P. 553, line 23.—For “study in”, read “study. pp. 130-139. In”.
- P. 553, line 25.—For “Acad. Sci.”, read “C.R. Acad. Sci. U.R.S.S.”
- P. 554, line 14.—For “pp. 82-88.”, read “-Ann. Epiphyt., Paris, (C) 5 (mean. hors. sér.), pp. 82-88.”.
- P. 554, line 16.—For “less orlhoptères, pp. 168-170.”, read “les Orthoptères.—Ann. Epiphyt., Paris, (C) 5 (mean. hors. sér.), pp. 168-170”.
- P. 554, line 18 from below.—For “de *Schistocerca cancellata* (Serv.)”, read “de la langosta *Schistocerca cancellata* (Serv.)”.
- P. 554, line 14 from below.—For “*Virginiai*”, read “*Virginia*”.
- P. 554, line 9 from below.—For “p. 107, read “107 pp.”.
- P. 554, line 1 from below.—For “ptrés, pp. 281-306”, read “ptrés.—Ann. Epiphyt., Paris, (C)5 (mean. hors. sér.), pp. 281-306”.
- P. 555, line 2.—For “Misc” and “d’um”, read “Mise” and “d’un” respectively.
- P. 555, line 8.—For “pp. 365-394”, read.—Ann. Epiphyt., Paris, (C)5 (mean. hors. sér.), pp. 365-394.”.
- P. 555, line 9.—For “1955d”, read “1955”.
- P. 555, line 15.—For “p. 8”, read “8 pp”.

- P. 556, line 2.—For "CHAUDHURI, S.P.R. and GUHA, A.", read "RAY-CHAUDHURI, S.P." and GUHA, A. (Transfer reference No. 6608 to p. 577 under "R", as No. 6958a after No. 6958.)
- P. 556, line 8.—For "p. 31", read "31 pp.".
- P. 556, line 20 from below.—For "pp. 305-315", read "pp. 315-353".
- P. 556, line 18 from below.—For "Osservazione", read "Osservazioni".
- P. 556, lines 10 and 11 from below.—For "octaclore di aldrin", read "octacloro, dialdrin".
- P. 556, line 9 from below.—For "p. 10", read "10 pp.".
- P. 557, line 8 from below.—For "Chari lainae" read "Charilainae".
- P. 557, line 17.—For "flourescenza", read "fluorescenza".
- P. 557, lines 20-21.—For "fluourescenza", read "fluorescenza".
- P. 558, line 29.—For "cines", read "eines".
- P. 558, line 17 from below.—For "Gottesanbeteriu", read "Gottesanbeterin".
- P. 558, Ref. No. 6640.—Transfer this Reference above No. 6642 (as No. 6641); and the present No. 6641 will then be re-numbered as 6640.
- P. 559, line 20.—For "Gregarine", read "Gregarina".
- P. 559, line 17 from below.—For p "32", read "32 pp.".
- P. 560, line 16.—For "brittaniques, pp. 154-167", read "britannique.—Ann. Epiphyt., Paris, (C)5 (mean. hors. sér.), pp. 154-167".
- P. 570, line 11 from below.—For "pp. 23-24", read "pp. 23-34".
- P. 571, line 8 from below.—For "pp. 103-141," read "—Ann. Epiphyt Paris, (C)5 (mean hors. sér.), pp. 103-141."
- P. 572, line 14.—For "iusektums-kulatur", read "insektmuskulatur".
- P. 573, lines 4-5.—For "(Acrididae), pp. 248-277", read "(Acrididae).—Ann. Epiphyt., Paris, (C)5 (mean. hors. sér.), pp. 248-277".
- P. 573, line 11.—For "Tronto", read "Toronto".
- P. 573, line 12 from below.—For "pp. 3-134", read "pp. 111-134".
- P. 574, line 6.—For "Port.", read "Prot.".
- P. 574, line 6.—For "p. 6", read "6 pp.".
- P. 574, lines 9 and 10 from below.—For "—Brit. Mus. (Nat. Hist.), London, 1, pp. 307-314", read "1, pp. 307-314.—London (Brit. Mus. Nat. Hist.)".
- P. 574, line 10.—For "p. 11", read "11 pp.".
- P. 574, line 7 from below.—For "Estaclos", read "Estados".
- P. 574, line 4 from below.—For "activity Fluctuation of adults of the egg", read "activity, fluctuation of adults and of the egg".
- P. 575, line 9.—For "Less Principaux", read "Les principaux".
- P. 575, line 21.—For "Chez", read "chez".
- P. 575, line 22.—For "coerule-scens", read "coerulescens".
- P. 575, line 7 from below.—For "pp. 97-101" read "—Ann. Epiphyt., Paris, (C)5 (mean. hors. ser.), pp. 97-101".

- P. 575, last line.—Delete the brackets in “(Orthoptera)”.
- P. 576, line 3 from below.—For “Comportement, pp. 320-327,” read “comportement.—*Ann. Epiphyt.*, Paris, (C)5 (mean. hors. sér.), pp. 320-327.”.
- P. 577, line 11.—For “Acrididae), pp. 171-174”, read “Acrididae).—*Ann. Epiphyt.*, Paris, (C)5 (mean. hors. sér.), pp. 171-174.”
- P. 577, line 1 from below.—For “l’Herault, pp. 91-96”, read “l’Herault.—*Ann. Epiphyt.*, Paris, (C)5 (mean. hors. sér.), pp. 91-96.”
- P. 579, line 5.—For “St-peter sb.”, read “St. Petersb.”.
- P. 579, line 18.—For “idence con”, read “evidence con.”.
- P. 579, line 19.—For “exp.”, read “J. exp.”.
- P. 579, line 24.—For “grasshop er”, read “grasshopper,”.
- P. 579, line 27.—For “31 7-9”, read “31 (7-9)”.
- P. 579, line 30.—For “Bio m.”, read “Biochem”.
- P. 579, line 9 from below.—For “sect”, read “insect”.
- P. 580, line 6.—For “Shahr”, read “shahr”.
- P. 580, line 17.—For “17”, read “27”.
- P. 581, line 8.—Delete “Trin.”
- P. 581, line 12.—For “(Aioplopus)”, read “(Aiolopus)”.
- P. 581, line 14.—For “Vieet Miliea”, read “Vie et Mileau”.
- P. 582, line 2 from below.—For “Yuriegatus”, read “variegatus”.
- P. 583, line 11.—For “united”, read “United”.
- P. 583, line 14.—For “Arthoptera”, read “Orthoptera”.
- P. 584, line 1 from below.—For “Chun”, read “Chim”.
- P. 584, line 1 from below.—For “pp. 305-309”, read “pp. 303-309”.
- P. 585, line 6.—For “pp. 497”, read “pp. 497-532”.
- P. 585, line 10 from below (right column).—For “ANIEL” read “DANIEL”
- P. 592, line 22.—For “nouveau-nees”, read “nouveau-nées”.
- P. 594, line 20 from below.—For “Sylaires”, read “solaires”.
- P. 596, line 11.—For “Acridoidae”, read “Acridoidea”.
- P. 596, line 14.—For “Uppasala”, read “Uppsala”.
- P. 596, line 17.—For “Stuidio”, read “Studio”.
- P. 596, line 14 from below.—For “locust”, read “locusts”.
- P. 598, line 2.—For “and”, read “und”.
- P. 598, line 9 from below.—For “(b)”, read “(B)”.
- P. 599, line 8.—For “embryo”, read “embryo-”.
- P. 600, line 12.—For “Tremit”, read “Tremiti”.
- P. 600, line 16.—For “plant”, read “F.A.O. Plant”.
- P. 600, line 6 from below.—For “Locust”, read “locust cuticle”.
- P. 601, line 10.—For “Pp. 105-284”, read “Pp. 105-184”.
- P. 603, line 10.—For “migratoriodes”, read “migratorioides”.
- P. 603, line 28.—For “Paläartische”, read “Paläarctische”.

- P. 603, line 4 from below.—For “43”, read “34”.
- P. 604, line 20.—For “Jb.”, read “Jh.”.
- P. 604, line 5 from below.—For “SRIVASTAVA, F.D.”, read “SRIVASTAVA, P.D.”
- P. 605, line 2.—For “SRIVASTAVA, V. S. and SRIVASTAVA, P. S.”, read “SRIVASTAVA, U. S. and SRIVASTAVA, P. D.”
- P. 605, line 10.—For “*migratoriodies*”, read “*migratorioides*”.
- P. 605, line 22 from below.—For “Bolemfontein”, read “Bloemfontein”.
- P. 605, line 6 from below.—For “porblem”, read “problem”.
- P. 609, line 10 right hand column.—For “SRIVASTAVA, F. D.”, read “SRIVASTAVA, P. D.”
- P. 609, line 11 right hand column.—Delete SRIVASTAVA, P. S.
- P. 609, line 12 right hand column.—For “SRIVASTAVA, V. S.”, read “SRIVASTAVA, U.S.”

III—THIRD SUPPLEMENT TO BIBLIOGRAPHIA ACRIDIDIORUM

1. LIST OF REFERENCES (3RD SUPPLEMENT)

(The Serial Numbers are continued from the Second Supplement, *Rec. Indian Mus.*, 56 [1958], 1961, p. 607.)

A

7249. ABRAHAMSON, P. E. R. 1950. It pays to kill grasshoppers early.—*Gleaner*, 4 (6), p. 5.
7250. ADAMOVIC, Z. R. 1949. Contribution à la connaissance de nos relictés glaciaux. (In Serbian, with Russian and French summaries.) *Glasnik Prirodnjackog muzeja srpske zemlje (Bull. Mus. Hist. nat. Pays Serbe)*, Belgrade, (B), Nos. 1-2.
7251. ADELUNG, N. VON. 1892. Beiträge zur kenntnis des tibialen Gehörapparates des Locustiden.—*Z. wiss. Zool.*, Leipzig, 54., pp. 316-349, 2 tables.
7252. ADRIANOV, A. P. 1921. Distribution of locusts injurious to agriculture during recent years. (In Russian.)—*Bull. Perm. Bur. All-Russ. Ent.-Phytopat. Conf.*, Petrograd, No. 3, pp. 19-23.
7253. [AFRICA] 1913. Insect notes.—*Agric. J. Un. S. Afr.*, Pretoria, 6 (1), pp. 87-92.
- . [AFRICA] 1924.—See BECHUANALAND, AFRICA. 1924.
- . [AFRICA] 1934.—See BELGIAN CONGO. 1934.
7254. AHMAD, T. 1949. The Department of Plant Protection.—*Agric. Pakist.*, Karachi, 1, pp. 49-51.
7255. AHMAD, T. 1950. Department of Plant Protection : its work on locust control.—*Agric. Pakist.*, Karachi, 1, pp. 133-135.
7256. AHMAD, T. AND KHAN, M. S. 1953. The new insecticide, aldrin, for locust control.—*Agric. Pakist.*, Karachi, 4, pp. 111-128, 6 photos.

7257. ALFARO, A. 1915. La invasion de langosta.—*Rev. Educ.*, San José (Costa Rica), 1915, 7 pp.
7258. ALFARO, A. 1922. Langosta migratoria.—*Bol. Camara Agric.*, San José (Costa Rica), 2 (1), pp. 33-41.
7259. ALKAN, B. 1948. The cereal pests of central Anatolia (harmful animals and insects). (In Turkish, with a summary in German.) —*Yayın. Ankara Univ. Zir. Fak.*, Ankara, No. 1, viii+132 pp.; 8 maps.
7260. ALLARD, H. A. 1911. Studying the stridulations of Orthoptera.—*Proc. ent. Soc. Washington*, Washington, 13, pp. 141-148.
7261. ALLEN, T. C. and BRUNN, L. K. 1945a. Increased toxicity of lime-treated sabadilla seed in dust suspensions.—*J. econ. Ent.*, Menasha, 38 (3), pp. 291-293.
7262. ALLEN, T. C., DEXHEIMER, F. J. and COLE, E. 1945b. Reduction of certain insects infesting alfalfa by use of sabadilla.—*J. econ. Ent.*, Menasha, 38 (3), pp. 389-390.
7263. ALLEN, T. C., LINK, K. P., IKAWA, M. and BRUNN, L. K. 1945c. The relative effectiveness of the principal alkaloids of sabadilla seed.—*J. econ. Ent.*, Menasha, 38 (3), pp. 293-296.
- . ALVES, J. 1951.—*See* LIMA, A.D.F., D'ARAUJO E SILVA, A.G., REINIGER, C. H., ALVES, J. and DA M. RIBEIRO, A. (Jr.). 1951.
- . ANDREWARTHA, H. G. 1941.—*See* BIRCH, L. C. and ANDREWARTHA, H.G. 1941.
7264. [ANONYMOUS.] 1907. La langosta y la agricultura.—*Circ. Com. Parasit. agric. Mex.*, Mexico, No. 74, 24 pp., 26 pls.
7265. [ANONYMOUS.] 1908. Praga de gafanhotos no Distrito Federal.—*Proc. Agric.*, Rio de Janeiro, 8, 43 pp., 1 map, 1 photo, 7 col. pls.
7266. [ANONYMOUS.] 1913a. La langosta.—*Bol. Fom.*, San José (Costa Rica), 3, pp. 830-831.
7267. [ANONYMOUS.] 1913b. Plagas de la agricultura.—*Bol. Minist. Agric.*, Buenos Aires, 15 (5), pp. 520-521.
7268. [ANONYMOUS.] 1913c. La langosta.—*Bol. Fom.*, San José (Costa Rica), 3 (11), pp. 830-831.
7269. [ANONYMOUS.] 1913d. Notes on insect pests. [In Russian.]—*Agric. Turkestan*, Tashkent, No. 6, pp. 585-590.
7270. [ANONYMOUS.] 1914a. Reports on insects of the year 1913 in Ontario.—*Rep. ent. Soc. Ont.*, Toronto, 44, pp. 15-25.
7271. [ANONYMOUS.] 1914b. Locusts.—*Agric. Gaz. Canada*, Ottawa, No. 8, p. 627.
7272. [ANONYMOUS.] 1914c. La lutte contre les sauterelles : résultat des expériences de 1913.—*Bull. bi-mens. Off. Gouv. Gén. Alger.*, Paris, 22 (2), p. 26.
7273. [ANONYMOUS.] 1915. "Locusts".—*Agric. News*, Barbados, 14 (343), p. 203.
7274. [ANONYMOUS.] 1916a. Los gases asfixiantes en la destrucción de la langosta.—*Gac. Rur.*, Buenos Aires, 9 (105), p. 543.

7275. [ANONYMOUS.] 1916b. Lutte contre les sauterelles.—*Rev. Hortic. l'Algerie*, Algiers, 20 (1-2), pp. 31-34.
7276. [ANONYMOUS.] 1916c. *Pachytylus migratorius* in the province of Semipalatinsk. (In Russian).—*Agric. Gaz.*, Petrograd, No. 4 (120), pp. 99-100.
7277. [ANONYMOUS.] 1916d. The biological method of controlling locusts. (In Russian).—*Agric. Trukestan*, Tashkent, 11 (6), pp. 573-576.
7278. [ANONYMOUS.] 1917a. Gafanhotos no Amazonas.—*Chacaras e Quint.*, São Paulo, 16, p. 117.
7279. [ANONYMOUS.] 1917b. The threatened plague of locusts.—*J. Bd. Agric. British Guiana*, Demarara, 10 (3-4), pp. 202-205.
7280. [ANONYMOUS.] 1918a. Locust extermination.—*Rev. Philipp. Agric.*, Manila, 11 (2), p. 65.
7281. [ANONYMOUS.] 1918b. *Defensa Agricola. Memoria correspondiente al año 1917*. 67 pp.—Montevideo (Minist. Indust.).
7282. [ANONYMOUS.] 1919a. L'utilization indistrielle des sauterelles comme engrais dans l'Uruguay.—*Bull. Agric. Alger.*, Algeria, 26, pp. 25-26.
7283. [ANONYMOUS.] 1919b. *Memoria de los Trabajos realizados contra la Langosta. Invasion del 1917-1918*. 89 pp.—Montevideo (Minist. Industr.).
7284. [ANONYMOUS.] 1921. The Locust (*Schistocerca peregrina*).—*Wellcome Trop. Res. Lab.*, Khartoum, 15, 1 p.
7285. [ANONYMOUS.] 1924a. La langosta en el Uruguay.—*Bol. Mens. Minist. Industr. Déf. Agric.*, Montevideo, 5 (7-8), pp. 121-22.
7286. [ANONYMOUS.] 1924b. *Decretos, circulares e instrucciones para el combate de la langosta en el estado de Veracruz, Mexico ; Junta Cent. Campana contra la Langosta*. 36 pp.—Veracruz.
7287. [ANONYMOUS.] 1924c. Locusts in Bulgaria during 1923.—*Int. Rev. Sci. and Pract. Agric.*, Rome, (N.S.) 2 (2), pp. 470-471.
7288. [ANONYMOUS.] 1925a. Conocimientos que debe poseer toda persona que aspire a ocupar un puesto en la defensa agricola.—*Dir. Gral. Agr., Min. Agr. (Publ.)*, Buenos Aires, No. 437, pp. 44-79.
7289. [ANONYMOUS.] 1925b. *Los cebos envenenados para combatir la Langosta*. 7 pp.—Tacubaya, Mexico (Secretaria Agric. y Fomento).
7290. [ANONYMOUS.] 1925c. *La Plaga de la Langosta en Mexico*. 171 pp.—Veracruz (Dept. Informacion y Propaganda).
7291. [ANONYMOUS.] 1926a. *Ley federal de Plagas y su reglamento en lo relativo a la Campaña contra la langosta*. 12 pp.—Veracruz (Junta Nac. Directora Campana contra Langosta).
7292. [ANONYMOUS.] 1926b. *Comision Científica Exploradora*. Veracruz (Mexico).
7293. [ANONYMOUS.] 1926c. Consejos sencillos para destruir la langosta.—*Bol. Junta Nac. Direct. Campaña Contra la Langosta Mexico*, Veracruz, (Mexico), No. 1, 8 pp. ; No. 2, 8 pp. and No. 3, 8 pp.

7294. [ANONYMOUS.] 1926d. Locusts.—*Res. Dev. Cyanogas Calcium Cyanide Sect.*, New York (N.Y.), 7, pp. 31-51. (The American Cyanamide Co.).
7295. [ANONYMOUS.] 1926e. Junta Nacional Directora de la Campaña Contra la Langosta, México.—*Junosta*, Veracruz, 1 (1-11), 8 pp. Ilust.
7296. [ANONYMOUS.] 1926f. Los trabajos científicos del laboratorio biológica.—*Bol. J. Nac. Dir. Campaña Contra la Langosta*, Veracruz, (México), No. 4, 8 pp., 2 figs.
7297. [ANONYMOUS.] 1926g. La langosta devastadora de México —*Bol. J. Wac. Campaña Contra Langosta*, Veracruz, No. 4, 8 pp.
7298. [ANONYMOUS.] 1926h. La campaña contra la langosta.—*Bol. Agric.*, Guatemala, 5, pp. 172-173.
7299. [ANONYMOUS.] 1928. Insect pests in Mexico, May-September, 1928.—*Bol. Mens. Déf. Agric. (Sec.-Agric. Fom.)*, S. Jacinto (Mexico), 11 (6-7), pp. 323-361 ; (8-9), pp. 488-583.
7300. [ANONYMOUS.] 1929. *Papers on Orthoptera and Dermaptera by Rehn and Hebard Individually or Jointly, for the Years 1919 to 1928 Inclusive*. 11 pp.—Philadelphia (Published privately by M. Hebard.)
7301. [ANONYMOUS.] 1931. La lucha contra la Langosta "*tucura*" (*Trigonophymus arrogans* Stål).—(Publ.) *Minist. Agric.*, Buenos Aires, No. 874, 17 pp.
7302. [ANONYMOUS.] 1932a. La langosta peregrina invade el territorio. —*Rev. Asoc. rur. Urug.*, Montevideo, 1932 (11), pp. 37-43.
7303. [ANONYMOUS.] 1932b. Insects of citrus.—*Ann. Rep. Plo. Agric. Expt. Sta.*, 1931-32, pp. 71-73.
7304. [ANONYMOUS.] 1932c. La langosta.—*Publ. Mens. Dir. Agron. Minist. Industr. Uruguay*, Montevideo, 5 (1-2), pp. 1-11.
7305. [ANONYMOUS.] 1933. Nuevos conceptos sobre moscas langosticidas.—*Rev. Med. vet.*, Montevideo, 15 (6), pp. 125-137.
7306. [ANONYMOUS.] 1934a. *Informes Balance General y Memoria de la Subcomisión Nacional Contra la Langosta "Mosquita"*. 394 pp. —La Plata.
7307. [ANONYMOUS.] 1934b. Conferencias de propaganda radiotelefónicas pronunciadas durante la campaña 1933-34. —*Com. nac. Déf. Langosta (Min. Agric.)*, Buenos Aires.
7308. [ANONYMOUS.] 1934c. *Lucha Nacional Contra la Langosta. Contribucion Cientifica de la Sociedad Entomologica Argentina*. 134 pp.—Buenos Aires (Minist. Agric.).
7309. [ANONYMOUS.] 1934d. Parásitos mas importantes de la Langosta en la Rep. Argentina. —*Mem. Com. Parásitol. (Min. Agric. Dir. Déf. Agr. San. Veg.)* Buenos Aires.
7310. [ANONYMOUS.] 1935a. *Conferencia Internacional de Expertos en la Lucha contra la Langosta ; realizada en Montevideo del 10-13 Nov., 1934*. 151 pp.—Montevideo. (Dir. Gral. Contr. Lucha Langosta).

7311. [ANONYMOUS.] 1935b. *Subcomision Central contra Langosta Mosquita. Memoria No. 2 Campaña 1934/5.* 29 pp.—Buenos Aires.
7312. [ANONYMOUS.] 1935c. *Destruccion de la Langosta o Chapulín.* 31 pp. —Guatemala.
7313. [ANONYMOUS.] 1936a. *Sporotrichum paranense* March.—*Mem. de la Com. Central de Investig. Sobre la Langosta*, Buenos Aires, pp. 87-90.
7314. [ANONYMOUS.] 1936b. Locust invasion during the season 1934-1935 (Argentina). —*Int. Bull. Pl. Prot.*, Rome, 9, pp. 150-151.
7315. [ANONYMOUS.] 1936c. Organisation de la lutte antiacridienne en Uruguay. —*Matér. Étude Calam.*, Geneva, No. 1, pp. 75-79.
7316. [ANONYMOUS.] 1936d. The problem of the South American Locust, *Schistocerca paranensis* (Burmeister).—*Proc. 4th Int. Locust Conf.*, Cairo, 1936, p. 74.
7317. [ANONYMOUS.] 1936e. La tucura ocasiona perjuicio considerables.—*Bol. Form. Rural (Min. Agr.)*, Buenos Aires, 1 (5).
7318. [ANONYMOUS.] 1936f. Lucha contra la langosta en la invasión actual.—*Bol. Form. Rural (Min. Agr.)*, Buenos Aires, 1 (8).
7319. [ANONYMOUS.] 1937. *Memoria de la Comision Central de Investigaciones sobre la langosta correspondiente al año de 1935.* 127 pp. —Buenos Aires (Minist. Agric.).
7320. [ANONYMOUS.] 1939a. La langosta en la Republica Argentina. —Buenos Aires (Minist. Agric.).
7321. [ANONYMOUS.] 1939b. Work of the Entomologist.—*Rep. Dept. Agric. Gold Coast, 1937-39*, Accra, 1939, pp. 10-11.
7322. [ANONYMOUS.] 1940. Entomological problems.—*Rep. Counc. sci. industr. Res. Aust. (1938-39)*, Canberra, pp. 15-22.
7323. [ANONYMOUS.] 1941. Locusts.—*Rep. Dept. Agric. Uganda. 1939-40*, Entebbe, 1941, p. 8.
7324. [ANONYMOUS.] 1944. *Dirección de Fiscalización y Lucha Contra las Plagas. La lucha moderna contra la langosta (Schistocerca paranensis Burm.). Division Ley 3708.* 11 pp.—Buenos Aires (Minist. Agric.).
7325. [ANONYMOUS.] 1945. Entomology.—*Rep. Dep. Agric. Sierra Leone, 1944*, Freetown, 1945, pp. 9-10.
7326. [ANONYMOUS.] 1946a. Instrucciones sobre la langosta.—*Publ. misc. Minist. Agric.*, Buenos Aires, No. 205, 120 pp.
7327. [ANONYMOUS.] 1946b. *Convenio Interamericano de lucha contra la Langosta.* 8 pp.—Montevideo (Minist. Relaciones Exteriores).
7328. [ANONYMOUS.] 1946c. Comunicación de la delegación de la Salvador.—*Conf. Int. Expertos en la lucha contra la Langosta*, Montevideo, p. 123.
7329. [ANONYMOUS.] 1946d. La langosta en México—*Conf. Int. Expertos en la Lucha Contra la Langosta*, Montevideo, pp. 124-134.

7330. [ANONYMOUS.] 1947. Destrucción de la langosta por medio de cebos toxicos.—*Publ. Misc. Minist. Agric.*, Buenos Aires, No. 265, 8 pp.
7331. [ANONYMOUS.] 1949. Informe de dieciseis meses de labor del Ministerio de Agricultura e Industrias del Gobierno de la Junta Fundadora de la Segunda República.—*Sec. Public y Bibliot.*, San Jose (Costa Rica).
7332. [ANONYMOUS.] 1952. Memoria y balance del ejercicio : lo de enero—31 de diciembre de 1951.—*Mém. Com. interamer. perm. Antiacrid.*, Buenos Aires, 1951, 10 pp.
7333. [ANONYMOUS.] 1954. La lutte contre les acridiens migrants en Afrique occidentale française.—*Dir. Gén. Serv. Econ.*, Dakar, 12 pp., 3 maps. (Mimeograph.)
7334. [ANONYMOUS.] 1955. *Resumen del Informe de Labores de la Secretaria de Agricultura y Ganaderia. Del 1 de Sept. de 1954 al 31 de Agosto de 1955.* Pp. 60-70—México (Talleres Graf. de la Nacion).
7335. ARANA, O. 1938. Informe sobre medidas para combatir la langosta.—*Rev. Agric., Guatemala*, Guatemala, 15 (4), pp. 210-212.
7336. [ARGENTINA.] 1915. Destrucción de plagas.—*Bol. Minist. Agric.*, Buenos Aires, 19 (3-4), pp. 141-143.
- ARMS, J. M. 1890. —See HYATT, A. and ARMS, J. M. 1890.
7337. ASHMEAD, W. H. 1887. Report on insects injurious to garden crops in Florida.—*Bull. Div. Ent. U. S. Dept. Agric.*, Washington, 14, pp. 9-29.
7338. ASHMEAD, W. H. 1894. Notes on cotton insects found in Mississippi.—*Insect Life*, Washington, 7, pp. 25-29.
7339. AUDOUIN, J. V and BRULÉ, A. 1835. *Histoire naturelle des insectes, traitant de leur organisation et de leurs mœurs en général ; et comprenant leur classification et la description des espèces.* (Orthoptera, Tome, 9, pp. 1-230).—Paris.
7340. [AUSTRALIA.] 1939. Recent work on *Austroicetes cruciate* Sauss., and *Chortoicetes terminifera* Wlk.—*Rept. Waite agric. Res. Inst. S. Austr. 1937-1938*, Adelaide, pp. 40-48.
7341. [AUSTRALIA.] 1942. Entomological investigation. —*15th Rep. Coun. sci. industr. Res. Aust.*, 1940-1941, Canberra, 1942, pp. 17-27.
7342. [AUSTRALIA.] 1946. Aeroplane spraying of locusts. Report on the Gunnedah trial.—*Agric. Gaz. N.S.W.*, Sydney, 57 (11), p. 577.
7343. AYARS, J. S. 1950. Now is the time to hit grasshoppers.—*Success. Fmg.*, Des Moines, 48 (5), pp. 140 ; and 142.
7344. AYRES, H. B. 1894. Grasshopper damage in Minnesota.—*Insect Life*, Washington, 6, p. 373.

B

7345. BAERG, W. J. and ISELY, D. 1938. Entomology.—*Bull. Arkansas agric. Exp. Sta.*, Fayetteville, No. 351, pp. 42-45.

7346. BALL, E. D. 1897. Notes on the Orthopterous fauna of Iowa.—*Proc. Iowa Acad. Sci.*, Des Moines, 7, pp. 234-241.
7347. BALL, E. D. 1915. Estimating the number of grasshoppers.—*J. econ. Ent.*, Concord, 8 (6), pp. 525-527.
7348. BALLOU, H. A. 1919. Insect pests in British Guiana.—*Agric. News*, Barbados, 18 (457), pp. 346-347.
7349. BARANOV, N. I. 1925. *Doclostaurus maroccanus* Thunb., in Montenegro. [In Russian.]—*Déf. des Plantes*, Leningrad, 1 (6), pp. 217-218.
7350. BARNEDA, J. J. 1934. La campaña oficial contra la langosta.—*Pampa Argentina*, Buenos Aires, 1934, p. 1.
7351. BARRAUD, M. 1947. Essais toxicologiques contre les criquets (*Locusta migratoria* L.).—*C. R. Acad. Agric. Fr.*, Paris, 33, pp. 346-351.
7352. BASSO STAJANO, C. and ESCALANTE ROSSI, R. 1947. Contribución al conocimiento del valor bromatológico de la langosta común (*Schistocerca cancellata*) y de sus huevos.—*Rev. Fac. Agron. Montevideo*, Montevideo, No. 44[1946], pp. 229-237.
7353. BATES, M. 1933. Insect parasites of citrus in Central America.—*Florida Ent.*, Gainesville (Fla.), 17 (2-3), pp. 29-32.
7354. BATHIASHVILI, I. D. 1941. The accumulation of *Doclostaurus maroccanus* Thub. on green patches in semi-desert conditions. [In Russian, with English summary.]—*Proc. Georg. Agr. Inst.*, 5(15).
7355. BEAMINT, J. W. L. 1954. Water transport in insects.—*Symp. Soc. exp. Biol.*, Cambridge, No. 8, pp. 94-117.
7356. [BECHUANALAND, AFRICA]. 1924a. Fighting the locust in the Bechuanaland Protectorate and South-West Africa (1923-24 Season).—*J. Dept. Agric. Un. S. Afr.*, Pretoria, 9 (4), pp. 324-328.
7357. [BECHUANALAND, AFRICA.] 1924b. Locust expedition to the Kalahari.—*Circ. Un. S. Afr. Dept. Agric.*, Pretoria, No. D. 6 of 1924, 10 pp., multigraph.
7358. BÉGUET, M. 1914. Essais de destruction du *Stauronotus maroccanus*, Thunb. en Algérie, au moyen du *Coccobacillus acridiorum*, d' Hérèlle.—*Bull. Soc. Path. Exot.*, Paris, 7 (8-9), pp. 651-653.
- . BEHURA, B. K. 1954.—See SENGUPTA, G. C. and BEHURA, B. K. 1954.
7359. BEI BIENKO, G. YA. 1940. The existence of permanent breeding areas of the Central Russian Migratory Locust in the Tartar ASSR. [In Russian.]—*Rept. sci. Mtgs. Leningrad inst. Agric.*, Leningrad, No. 5, 3 pp.
7360. BEI BIENKO, G. YA. 1950. Heuschrecken der Gattung *Sphingonotus* Fieb. und ihre nächsten Verwandten (Orthoptera, Acrididae).—*Ent. Umschau (Russ.)*, 31 (1-2).
7361. BEINGOLEA, O. G. 1947. Extracto de un informe sobre la plaga de langosta en el norceste del país.—*Estac. Exp. Agric.*, La Molina (Lima), 6 pp.

7362. BEKUZIN, A. A. 1953. Distribution of Orthopterous insects in the southern part of the Bedpak-dala desert and of the valley of the Tchu river in relation to vegetation and soils. [In Russian.]—*Trud. Muz. Priro.*, Tashkent, 1, pp. 33-48.
7363. [BELGIAN CONGO.] 1934. Declarations et voeux soumis par la délégation Belge.—*Proc. 3rd int. Locust. Conf. (London, 1934)*, London, Appendix 19, pp. 152-153.
7364. [BELGIAN DELEGATION]. 1938. Principes généraux de l'organisation permanente pour le contrôle des foyers d'origine du criquet nomade (*Nomadacris septemfasciata* Serv.) (Memorandum soumis par la délégation Belge.).—*C. R. 5e Conf. int. Res. Antiacridienne (Bruselles, 1938)*, Brussels, p. 265.
7365. BELIKOV, V. V. 1950. Grasshopper and Moroccan Locust in western Georgia. [In Russian.]—*Byull. vsesoyuz. nauch.-issled. Inst. Chaya subtrop. Kult.*, Makharadze, No. 4, p. 136.
7366. BENEDETTI, E. 1950. La percezione degli ultrasuoni in alcuni ortotteri rilevata mediante la registrazione oscillografica delle correnti bioelettriche.—*Ateneo parmense*, Parma, 21, pp. 105-116.
7367. BENLLOCH, M. 1947. Influencia de la humedad y la temperatura sobre la vitalidad y desarrollo de los huevos de langosta.—*Bol. Pta. veg. Ent. agric.*, Madrid, 15, pp. 271-274.
7368. BEREZHKOVA, R. P. 1925. The Acridodea of the Tomsk government. [In Russian.]—*Déf des Plantes*, Leningrad, 2 (4-5), pp. 212-217.
7369. BEREZHKOVA, A. A. 1935. A note on egg-parasites of Siberian Acrididae. [In Russian.]—*Bull. W. Siber. Plant Prot. Sta.*, Novosibirsk, 1 (9), pp. 141-143.
7370. BERG, C. 1881. Entomologisches aus dem Indianergebiet der Pampa.—*Stett. ent. Z.*, Stettin, 42, pp. 36-72.
- BERG, V. L. 1937.—See PAUL, L. C., KING, K. M. and BERG, V. L. 1937.
7371. BERNÈS, J. 1923. Sauterelles et criquets.—*Progr. agric. vitic.*, Toul, 80 (27), pp. 33-34.
7372. BERTONI, G. T. 1935. Resumen del Informe de la Comisión encargada en Junio de 1894 del estudio de la langosta en "El Castigo" (Colombia).—*Conf. Int. Expertos en la Lucha Contra la Langosta*, Montevideo, 1934, pp. 53-59.
7373. BESSEY, C. E. 1877. A preliminary catalogue of the Orthoptera of Iowa.—*Bienn. Rept. Iowa State agric. Coll., for 1876-77*, Des Moines, 7, pp. 205-210.
7374. BETHUNE, C. J. S. 1875. Insects of the northern parts of British America, compiled from Kirby's Fauna Boreali-Americana : Insecta. 2. Orthoptera.—*Canad. Ent.*, London (Ont.), 7, pp. 129-131.
7375. BETHUNE, C. J. S. 1884. *Insects of the northern parts of British America, compiled from Kirby's Fauna Boreali-Americana : Insecta*, 156+14 pp.—London.

7376. BEUTENMÜLLER, W. 1894. Descriptive catalogue of the Orthoptera found within fifty miles of New York City.—*Bull. Amer. Mus. nat. Hist.*, New York, 6, pp. 253-316.
7377. BIEZANKO, C. M. 1934a. Como combater os saltos dos gafanhotos.—*La chacra*, Buenos Aires, 4 [1933].
7378. BIEZANKO, C. M. 1934b. La langosta. Algunas nociones sobre la destruccion de la saltonas por la "espuela de caballero" (*Delp-hinium* sp.).—*La chacra*, Buenos Aires, 4 (44).
7379. BIEZANKO, C. M. 1935. Algunas nocoas historica e gerais sobre as invasoes de gafahantos, etc.—*O Campo*, Rio de Janeiro, 6.
7380. BIGI, F. 1953. Gli ambienti, i parassiti e le malattie del cotone in Africa orientale (Eritrea, Etiopia, Somalia Italiana).—*Riv. agric. subtrop.*, Florence, 47, pp. 162-176.
7381. BIGI, F. 1954. Gli ambienti, i parassiti e le malattie del cotone in Africa orientale (Eritrea, Etiopia, Somalia Italiana).—*Riv. agric. subtrop.*, Florence, 48, pp. 25-42 ; and 113-129.
7382. BILLBERG, G. J. 1820. *Enumeratio insectorum in museo Gust. Joh. Billberg.* 4 + 138 pp.—Holmiae.
- . BINDRA, O. S. 1953.—See PRADHAN, S. and BINDRA, O. S. 1953.
7383. BIOLLEY, P. 1900. Ortopteros recogidos en Costa Rica desde 1890 á 1900.—*Inf. Mus. nac. Costa Rica, 1899-1900*, San José, pp. 41-58, pl.
7384. BIRCH, L. C. and ANDREWARTHA, H. G. 1941. The influence of weather on grasshopper plagues in South Australia.—*J. Dep. Agric. S. Aust.*, Adelaide, 45 (9), pp. 95-100.
- . BJEGOVIĆ, P. 1951.—See STANKOVIĆ, A. and BJEGOVIĆ, P. 1951.
7385. BLACK, D. J. G., GETTY, J., JAMESON, H. R. and PIRIE, H. 1950. The effect of continuous ingestion by poultry of benzene hexachloride.—*Brit. vet. J.*, London, 56, pp. 386-391.
7386. BLAIR, W. F. and HUBBELL, T. H. 1938. The biotic districts of Oklahoma.—*Amer. Midland Nat.*, Notre Dame (Ind.), 20 (2), pp. 425-454.
7387. BLANCHARD, C. E. 1840. *Histoire naturelle des insects Orthoptères, Neuroptères, Hemiptères, Hymenoptères, Lepidoptères et Diptères ; avec une introduction par M. Brullé.*—Paris. [Orthoptera, vol. 3, pp. 1-44, 11 pls.]
7388. BLANCHARD, E.-E. 1937. Dipteros argentinos nuevos o poco conocidos.—*Rev. Soc. Ent. Argent.*, Buenos Aires, 9, pp. 35-58.
7389. BLATCHLEY, W. S. 1891. Some Indiana Acrididae. (I).—*Canad. Ent.*, London (Ont.), 23, pp. 98-100.
7390. BLATCHLEY, W. S. 1892. Some Indiana Acrididae. II.—*Canad. Ent.*, London (Ont.), 24, pp. 28-34.
7391. BLATCHLEY, W. S. 1893. An unusual appearance of *Schistocerca americana*.—*Psyche*, Cambridge (Mass.), 6, pp. 465-466.
7392. BLATCHLEY, W. S. 1894. Some Indiana Acrididae. III.—*Canad. Ent.*, London (Ont.), 26, pp. 217-223 ; and 241-245.

7393. BLATCHLEY, W. S. (1897). Insects in general and the Orthoptera of Indiana in particular. 23 pp.—Indianapolis. (*Extr. Trans. Indiana hort. Soc.*, 1896.)
7394. BLATCHLEY, W. S. 1898a. Some Indiana Acrididae. IV.—*Canad. Ent.*, London (Ont.), 30, pp. 54-64.
7395. BLATCHLEY, W. S. 1898b. Two new Melanopli from Les Cheneaux Islands, Michigan.—*Psyche*, Cambridge (Mass.), 8, pp. 195-197.
7396. BLATCHLEY, W. S. 1899. *Gleanings from Nature*. 348 pp., 15 pls., 100 figs.—Indianapolis.
7397. BLUNT, D. L. 1946. Campaign against *Schistocerca gregaria*, Forsk. Pp. 15-17. In Department of Agriculture (Kenya) Annual Report, 1945, 1+125 pp.—Nairobi.
7398. BODENHEIMER, F. S. 1951. *Citrus Entomology in the Middle East, with Special Reference to Egypt, Iran, Irak, Palestine, Syria and Turkey*. xii + 663 p., 43 pls., 154 figs.—The Hague (W. Junk.).
7399. BODKIN, G. E. 1913. Insects injurious to sugar cane in British Guiana and their natural enemies.—*J. Bd. Agric. Brit. Guiana*, Demarara, 7 (1), pp. 29-32.
7400. BODKIN, G. E. 1917. The destructive South American locust in British Guiana. An account of the recent locust infestation.—*J. Bd. Agric. Brit. Guiana*, Demarara, 11, pp. 3-10.
7401. BOERGER, A. 1949. Fortschritte in der bekämpfung der sud-amerikanischen Wanderheuschrecke.—*Anz. Schadlingsk.*, Berlin, 22, pp. 180-183.
7402. BOERGER, A. 1954. Las tucuras rioplatenses : enemigos da la producción agropecuaria : medidas de defensa.—*Pampas Argent.*, Buenos Aires, 27 (319), p. 6-7 and (320), pp. 10 ; 47-48.
7403. BOLÍVAR Y URRUTIA, I. 1884a. *Monografia de los Pirgomorfinos*. 154 pp., 4 pls.—Madrid.
7404. BOLÍVAR Y URRUTIA, I. 1884b. *Artrópodos del viaje al Pacifico verificado de 1862 á 1865 por una comision de naturalistas enviada por el gobierno español. Insectos Neurópteros y Ortopteros*. 114 pp., 3 pls.—Madrid.
7405. BOLÍVAR Y URRUTIA, I. 1887. Essai sur les acridiens de la tribu des Tettigidae.—*Ann. soc. ent. Belg.*, Brussels, 31, pp. 175-313, 2 pls. (Also as separate, Gano, 1887 ; 139 pp., 2 pls.)
7406. BOLÍVAR Y URRUTIA, I. 1888. Enumération des Orthoptères de l'île de Cuba.—*Mem. Soc. zool. France*, Paris, 1, pp. 116-164.
7407. BORDAS, L. 1898. Système nerveux sympathique des Orthoptères.—*C. R. Acad. Sci. Fr.*, Paris, 125 [1897], pp. 321-323.
7408. BORODIN, D. N. 1914. On the influence of *Coccobacillus acridiorum* d' Hérelle, on *Locusta (Pachytylus) migratoria* L.—*Ent. Messenger*, Kiev, 2 (1), 31 pp.
7409. BORODIN, D. N. 1913. On the question of the bacteriological method of controlling of locusts (In Russian.)—*Work 1st All-Russian Cong. econ. Ent.*, Kiev, pp. 37-46.

7410. BORODIN, D. N. 1922. The present status of Entomology and Entomologists in Russia. [In Russian.]—*J. econ. Ent.*, Geneva (N.Y.), 15 (2), pp. 172-176.
7411. BOTHELO GOSALVEZ, R. 1946. La geografia boliviana en relación con la langosta.—*Conf. Int. Expertos en la Lucha Contra la Langosta*, Montevideo, 1946, pp. 96-97.
7412. BRANDT, H. 1950. Geradflügler (Orthopteroidea).—*Naturw. Grundbegr. landb. Praxis (Zool.)*, München, 10, 4 pp.
- BRAUN, E. 1952.—See MACVICAR, R. M., BRAUN, E., GIBSON, D. R. and JAMIESON, C. A. 1952.
7413. BRÉDO, H. J. 1932. Les sauterelles au Congo Belge.—*Proc. verb. seance 2eme Conf. int. Res. Antiacridien*, (Paris, 1932), Paris, Annexe 6, pp. 24-25.
7414. BRÉDO, H. J. 1945a. The International Locust Control.—*E. Afr. agric. J.*, Nairobi, 11, pp. 12-16.
7415. BRÉDO, H. J. 1945b. La lutte internationale contre les sauterelles.—*Bull. agric. Congo belge*, Brussels, 36, pp. 3-15.
7416. BRÉDO, H. J. 1946. Le "Gammexane" dans la lutte contre les sauterelles.—*Rep. 1st. int. Congr. Plant Prot.*, Heverles, pp. 485-491.
7417. BRÉDO, H. J. 1947. La lutte contre les sauterelles sur le plan international.—*Parasitica*, Gembloux, 3, pp. 97-106.
7418. BRÉDO, H. J. 1952. Essais sur l'emploi du nouvel insecticide diathyl-p-nitrophenyl-thiophosphate (E 605 Forte) contre les larves du *Nomadacris septemfasciata*.—*Bull. agric. Congo belge*, Brussels, 43, pp. 556-567.
7419. BRENTZEL, W. E. and MUNRO, J. A. 1940. Bacterial ring rot of the potato. Investigation on possible dissemination by grasshoppers.—*Bull. N. Dak. agric. Exp. Sta.*, Fargo, No. 295, 8 pp.
7420. BRETT, C. H. 1950. Residual characteristics of the different insecticides for grasshopper control.—*Proc. amer. Assoc. econ. Ent. North Centr. States*, Br. 5, p. 55.
- [BRITISH COLUMBIA.]—See [DEPARTMENT OF AGRICULTURE, BRITISH COLUMBIA.]
7421. [BRITISH GUIANA.] 1917. The threatened plague of locusts.—*J. Bd. Agric. Brit. Guiana*, Demerara, 10 (3-4), pp. 203-205.
7422. BRONGNIART, C. J. E. 1894. *Recherches pour servir à l'histoire des insectes fossiles des temps primaires, précédées d'une étude sur la nervation des ailes des insectes*. 1 vol. text, 493 pp., 1 vol. atlas, 44 p., 37 pls.—St. Etienne [1893].
7423. BROWN, A. W. A. 1947a. Control of *Camnula pellucida* with DNOC emulsion from aircraft.—*J. econ. Ent.*, Menasha, 40 (4), p. 606.
7424. BROWN, A. W. A. 1947b. Control of *Melanoplus mexicanus* from aircraft with oil bait containing chlordane.—*J. econ. Ent.*, Menasha, 40 (4), p. 607.
7425. BROWN (JR.), W. L. 1947. Centrifugal speciation.—*Quart Rev. Biol.*, Washington, D. C., No. 32, pp. 247-277.

7426. BROWNÉ, P. 1789. *The Civil and Natural History of Jamaica, Containing : I. An Accurate Description of that Island ; its Situation and Soil ; with a Brief Account of its Former and Present State, Government, Revenues, Produce and Trade. II. An History of the Natural Productions, Including the Various Sorts of Native Fossils, Perfect and Imperfect Vegetables ; Quadrupeds, Birds, Fishes, Reptiles and Insects ; with their Properties and Uses in Machanics, Diet and Physic. Illustrated with Forty-Nine Copper plates in which the most Curious Productions are Represented of their Natural Sizes and Delineated Immediately from the Objects by George Dionysius Ehret. There are now added Complete Linnean Indexes and a Large and Accurate Map of the Island.* 2 + 8 + 503 + 46 pp., map, 49 pls.—London.
- . BRUCH, A. C. 1934.—See LAHILIE, F. and BRUCH, A. C., *et. al.* 1934.
- . BRULIÉ, A. 1835.—See AUDOUIN, J. V and BRULIÉ, A. 1835.
7427. BRUNER, L. 1876. New species of Nebraska Acrididae.—*Canad. Ent.*, London (Ont.), 8, pp. 123-125.
7428. BRUNER, L. 1877. List of Acrididae found in Nebraska.—*Canad. Ent.*, London (Ont.), 9, pp. 144-145.
7429. BRUNER, L. 1883a. The Rocky Mountain Locust in Montana in 1880.—*Rept. U. S. ent. Comm.*, Washington, 3, Chap. 2 (pp. 8-20).
7430. BRUNER, L. 1883b. The Rocky Mountain Locust in Wyoming, Montana, etc., in 1881.—*Rept. U. S. ent. Comm.*, Washington, 3, Chap. 3, (pp. 21-52.)
7431. BRUNER, L. 1883c. Notes on other locusts and on the western cricket.—*Rept. U. S. ent. Comm.*, Washington, 3, Chap. 4, (pp. 53-64).
7432. BRUNER, L. 1884. Observations on the Rocky Mountain Locust during the summer of 1883.—*Bull. Div. Ent. U. S. Dept. Agric.*, Washington, 4, pp. 51-62.
7433. BRUNER, L. 1885. First contribution to a knowledge of the Orthoptera of Kansas.—*Bull. Wash. Coll.*, Topeka, 1, pp. 125-139.
7434. BRUNER, L. 1886a. Contributions to the north trans-continental survey. Orthoptera.—*Canad. Ent.*, London (Ont.), 17, pp. 9-19.
7435. BRUNER, L. 1886b. Second contribution to a knowledge of the Orthoptera of Kansas.—*Bull. Wash. Coll.*, Topeka, 1, pp. 193-200.
7436. BRUNER, L. 1886c. Report on the abundance of the Rocky Mountain Locust in 1885.—*Rept. U. S. Ent. 1885*, Washington, pp. 303-307.
7437. BRUNER, L. 1887a. Report on locusts in Texas during the spring of 1886.—*Bull. Div. Ent. U. S. Dept. Agric.*, Washington, 13, pp. 9-19.
7438. BRUNER, L. 1887b. Report on Nebraska insects.—*Bull. Div. Ent. U. S. Dept. Agric.*, Washington, 13, pp. 33-37.

7439. BRUNER, L. 1888. Report of the Entomologist.—*Ann. Rept. Nebr. Bd. Agric.*, 1888, Lincoln, pp. 84-130.
7440. BRUNER, L. 1890a. New North American Acrididae found north of the Mexican boundary.—*Proc. U. S. nat. Mus.*, Washington, 12 [1889], pp. 47-82.
7441. BRUNER, L. 1890b. Report on Nebraska Insects.—*Bull. Div. Ent. U. S. Dept. Agric.*, Washington, 22, pp. 95-106.
7442. BRUNER, L. 1890c. Report on a local outbreak of grasshoppers in Idaho.—*Insect Life*, Washington, 3, pp. 135-141.
7443. BRUNER, L. 1891a. Report on Nebraska insects.—*Bull. Div. Ent. U. S. Dept. Agric.*, Washington, 23, pp. 9-18.
7444. BRUNER, L. 1891b. Report of the Entomologist.—*Ann. Rept. State Bd. Agric. Nebr. 1891*, Lincoln, pp. 240-309.
7445. BRUNER, L. 1891c. Grasshopper notes from Idaho.—*Insect Life*, Washington, 4, p. 146.
7446. BRUNER, L. 1892. Report on destructive locusts.—*Bull. Div. Ent. U. S. Dept. Agric.*, Washington, 27, pp. 9-33.
7447. BRUNER, L. 1893a. The more destructive locusts of America north of Mexico.—*Bull. Div. Ent. U. S. Dept. Agric.*, Washington, 28, 40 pp.
7448. BRUNER, L. 1893b. Notes on the wing color of North American locusts belonging to the subfamily Oedipodinae and its seeming relation to climatic conditions.—*Science*, New York, 21, p. 133.
7449. BRUNER, L. 1893c. A list of Nebraska Crthoptera.—*Publ. Nebr. Acad. Sci.*, Lincoln, 3, pp. 19-33.
7450. BRUNER, L. 1893d. The insect enemies of small grains.—*Rept. Nebr. State Bd. Agric.*, Lincoln, pp. 359-468.
7451. BRUNER, L. 1893e. Locusts in Colorado—another case.—*Insect Life*, Washington, 4, pp. 33-34.
7452. BRUNER, L. 1893f. Report upon insects injurious in Nebraska during the summer of 1892.—*Bull. Div. Ent. U. S. Dept. Agric.*, Washington, 30, pp. 34-41.
7453. BRUNER, L. 1894a. Report on injurious insects in Nebraska and adjoining districts.—*Bull. Div. Ent. U. S. Dept. Agric.*, Washington, 33, pp. 9-21.
7454. BRUNER, L. 1894b. A new species of *Pezotettix*.—*Insect Life*, Washington, 7, pp. 41-42.
7455. BRUNER, L. 1894c. Insect enemies of the apple tree and its fruit.—*Rept. Nebr. State hort. Soc.*, Lincoln, pp. 153-224.
7456. BRUNER, L. 1895a. Insect enemies of the grape-vin.—*Nebr. State hort. Rept.*, 1895, Lincoln, pp. 68-162, figs. 1-96.
7457. BRUNER, L. 1895b. Directions for collecting, preparing and preserving specimens of Orthoptera for the cabinet.—*Spl. Bull. Dept. Ent. Univ. Nebr.*, Lincoln, 2, 8 pp.
7458. BRUNER, L. 1895c. Nicaraguan Orthoptera.—*Bull. Lab, nat. Hist. Univ. Iowa*, Iowa City, 3 (3), pp. 58-69, 2 pls.

7459. BRUNER, L. 1897a. Grasshopper report for 1895.—*Bull. Div. Ent. U. S. Dept. Agric.*, Washington (N. S.), 7, pp. 31-35.
7460. BRUNER, L. 1897b. Grasshopper report for 1896.—*Bull. Div. Ent. U. S. Dept. Agric.*, Washington (N. S.), 7, pp. 36-39.
7461. BRUNER, L. 1897c. The grasshoppers that occur in Nebraska.—*Ann. Rept. Nebr. Bd. Agric. 1896*, Lincoln, pp. 105-138, 35 figs.
7462. BRUNER, L. 1899a. Insect enemies of the apple tree and its fruit.—*Ann. Rept. Nebr. State hort. Soc. 1899*, Lincoln, pp. 119-212, 108 figs.
7463. BRUNER, L. 1899b. Report of the Entomologist. A preliminary report on insect enemies of clover and alfalfa.—*Ann. Rept. Nebr. State Bd. Agric. 1899*, Lincoln, pp. 239-285, 67. figs.
7464. BRUNER, L. 1900-1909a. Orthoptera. Vol. 2. The Acrididae (by L. BRUNER) and the Phasmidae (by R. SHELFORD). pp. viii+1—412. In *Biologia Centrali-Americana*, 13 (2).—Lonn. [The Acrididae, pp. 1-343 (Truxalinae, pp. 3-25, by A. P. MORSE).
Dates of publication : Pp. 1-8, June 1900 ; 9-16, Aug. 1900 ; 17-24, Nov. 1901 ; 25-32, Jan. 1902 ; 33-72, Jan. 1904 ; 73-104, Apr. 1904 ; 105-112, Jan. 1905 ; 113-152, Mar. 1905 ; 153-160, June, 1905 ; 161-176, Oct. 1905 ; 177-192, Jan. 1906 ; 193-200, Aug. 1906 ; 201-207, Oct. 1906 ; 209-240, May 1907 ; 241-248, July 1907 ; 249-256, Feb. 1908 ; 257-288, May, 1908 ; 289-320, Sept. 1908 ; 321-378, Nov. 1908 ; 380-412, Feb. 1909.
7465. BRUNER, L. 1900-1909b. Fam. Acrididae. (Subfamily Tettiginae, pp. 3-25, A. P. MORSE, 1900-1902)—*Biologia Centrali-Americana* (Zool., Insecta, Orthoptera), London, Vol. 2, pp. i-viii+1—342+379-412 (Index), 4 pls.
[Dates of publication : Pp. 1-16, June 1900 ; 17-24, Nov. 1901 ; 25-40, Jan. 1902 ; 41-72, Jan. 1904 ; 73-104, Apr. 1904 ; 105-112, Jan. 1905 ; 113-152, Mar. 1905 ; 153-160, June, 1905 ; 161-176, Oct. 1905 ; 177-192, Jan. 1906 ; 193-200, Aug. 1906 ; 201-208, Oct. 1906 ; 206-248, May, 1907 ; 249-272, Feb. 1908 ; 273-288, May 1908 ; 289-320, Sept. 1908 ; 321-342, Nov. 1908 ; 379-412 (index), Feb. 1909.]
- . BRUNN, L. K. 1945a.—See ALLEN, T. C. and BRUNN, L. K. 1945a
- . BRUNN, L. K. 1945b.—See ALLEN, T. C., LINK, K. P. IKAWA, M. and BRUNN, L. K. 1945c.
7466. BRUNNER, L. 1902. Killing destructive locusts with fungous disease (*Sporotrichum* sp.).—*Bull. U. S. Bur. Ent.*, Washington, (N. S.) 38, pp. 50-61.
7467. BRUZZONE, R. M. 1934. Observaciones biológicas realizadas en el período invernal de 1933 en el valle de las canchas (Salta), cuenca norte del río Salado y chaco xerófilo.—*Lucha Nac. Contra la Langosta* (Minist. Agric.), Buenos Aires, pp. 119-132, 1 map, 14 photos, 1 graph.
7468. BRUZZONE, R. M. 1936. Informe de la Comisión Exploradora.—*Mem. Com. Centr. Investig. Langosta* (Minist. Agric.), Buenos Aires, No. 4, pp. 139-153.

7469. BRUZZONE, R. M. 1946. Necesidad de organizar una red de observadores e intercambio de informaciones.—*Conf. Int. Expertos de la Lucha Contra la Langosta*, Montevideo, pp. 150-152.
7470. BRUZZONE, R. M. 1952. Informe sobre una expedición al Chaco Boreal y Oriente Boliviano para investigar la formación de mangas de langostas *Schistocerca cancellata* Serville.—[*Sesion extraordinaria*] *Com. Interamer. Perm. Antacrid.* [CIPA], Buenos Aires, 1952, pp. 95-142, 1 map. [This is the full title of reference No. 876 in Main Bibliography, 1961, p. 82.]
7471. BRYANT, H. C. 1912. The numbers of insects destroyed by western Meadow Lark (*Sturnella neglecta*).—*Science*, New York, 36, pp. 873-874.
- . BRYSON, H. R. 1954.—See PAINTER, R. H., BRYSON, H. R. and WILBUR, D. A. 1954.
7472. BRZHEZITZKI, P. 1923. [An addition to the article "The locust, danger"]. [In Russian.]—*Cotton Indust.*, Moscow, 2 (1-2 pp. 94-95.
7473. BUCKELL, E. R. 1920. Life-history notes on some species of Acrididae (Orthoptera) found in British Columbia.—*50th Ann. Rept. ent. Soc., Ontario*, 1919, Toronto, 1920, pp. 53-61.
7474. BUCKELL, E. R. 1921a. Locust control.—*Brit. Columbia Dept. Agric.*, Victoria, No. 63. (New Hortic. Ser.), 12 pp.
7475. BUCKELL, E. R. 1921b. The locusts of British Columbia.—*Proc. ent. Soc., Brit. Columbia*, Victoria, Nos. 13 & 15 (Econ. Ser.), pp. 113-123.
7476. BUCKELL, E. R. 1922. Grasshopper situation in Nicola valley.—*Agric. J.*, Victoria, 7 (6), pp. 130-131, and 136.
7477. BUCKELL, E. R. 1945. The grasshopper outbreak of 1944 in British Columbia.—*Canad. Ent.*, Guelph, 77 (6), pp. 115-116.
7478. BUDASOFF, N. 1946. *La Langosta. Un mal nacional y Sud-Americano*. 30 pp.—Buenos Aires (Edit. Masaicos).
7479. BUDDENBROCK, W. VON. 1953. *Vergleichende Physiologie. II Nervenphysiologie*. 396 pp., 185 figs.—Basle (Birkhäuser and Co.),
7480. BURGESS, L. E., McNEIL, E. H. and ROLFE, D. T. 1952. Response of certain microorganisms to a pterine compound isolated from developing egg of grasshopper. (Abs.)—*Fed. Proc.*, Washington (D. C.), 11, p.20.
- . BURKHILL, I. H. 1916.—See COWLEY-BROWN, P. C. and BURKHILL, I. H. 1916.

C

7481. CALDERÓN, S. 1931. Insect conditions in El Salvador, Central America.—*Bull. U. S. Insect Pest Surv.* Washington (D. C.), 11 (10), pp. 686-688.
7482. CALDWELL, N. E. H. 1947. Recent locust outbreaks in South Queensland.—*Qd. agric. J.*, Brisbane, 64 (3), pp. 164-167.
- . CALLENBACH, J. A. 1945.—See MILLS, H. B., CALLENBACH, J. A. and REINHARDT, J. F. 1945.

7483. CALLOT, J. 1937. Sur les parasites des sauterelles à Richelieu (Indre-et-Loire). II.—*Ann. Parasit. hum. comp.*, Paris, 15 (3), p. 282.
7484. [CANADA.] 1920. Conference on grasshopper control.—*Agric-Gaz. Canada*, Ottawa, 7 (12), pp. 967-968.
7485. [CANADA.] 1937. Grasshopper menace serious for 1937.—*Press Cop. Dom. Dept. Agric.*, Ottawa, No. 71, 1 p.
- . CARBONELL, C. S. 1954—See RUFFINELLI, A. and CARBONELL, C. S. 1954.
7486. CARLE, G. 1915. La lutte contre les sauterelles.—*Bull. Econ. Madagascar et Dependances*, Tananarive, Nos. 3 and 4, pp. 243-246.
7487. CARLSON, J. G. 1954. Effects of monochromatic ultraviolet radiation on the spindle and mitosis.—*Proc. 1st. int. photobiol. Congr.*, Amsterdam, 1954, pp. 137-138.
7488. CARPENTER, G. H. 1899. *Insects ; their Structure and Life*. xi + 404 pp.—London (J. M. Dent and Co.).
7489. CARPENTER, J. R. 1940. Insect outbreak in Europe.—*J. Anim. Ecol.*, London, 9 (1), pp. 108-147.
7490. CASILDO, BOY. 1910. *Instruccoes practicas para destruicao dos gafanhotos organizadas para facilitar o ensuio do curso theorico-practico dado nos nucleos colonias e na Escola Agricola "Luiz de Queiros" em Piracicaba*. 36 pp., 27 pls., 11 figs.—São Paulo. (Duprat and Co.).
7491. CASTRO, E. R. 1947. La plaga de la langosta (*Schistocerca paranensis*) en Costa Rica.—*Bol. Pop. Dept. Agric. C. Rica*, San José, 70, 12 pp.
7492. CATANEI, A. 1944. Nouvelles observations sur des microbes de l'intestin de sauterelles pèlerines envahissant l'Afrique du Nord.—*Arch. Inst. Pasteur Algérie*, Algiers, 22 (3), pp. 166-170.
7493. CATESBY, M. 1731-1743. *The Natural History of Carolina, Florida and the Bahama islands, containing the Figures of Birds, Beasts, Fishes, Serpents, Insects and Plants, etc. Together with Observations on the Air, Soil and Waters, with Remarks upon Agriculture, Grain, Pulse, Root, etc.* 2 vols. Fol. 1, 12 + 100 pp., 100 pls., 1731. 2, 6 + 44 + 100 + 6 pp., map, 100 pls., 1743.—London. [2d ed., London, 1754. 1, 12 + 100 + 44 (4) pp., map, 100 pls. ; 2, 4 + 100 + 20 + (2) pp., 100 + 20 pls.]
7494. CAUDELL, ANDREW, N. 1900. Papers from the Harriman Alaska Expedition. XV Entomological results (9) : Orthoptera.—*Proc. Wash. Acad. Sci.*, Washington, 2, pp. 511-512.
7495. CAULFIELD, F. B. 1886. List of Orthoptera taken in the vicinity of Montreal, P. Q.—*Canad. Ent.*, London (Ont.), 18, pp. 211-212.
7496. CAULFIELD, F. B. 1887. Canadian Orthoptera.—*Canad. Rec. Sci.*, Montreal, 2, pp. 378-383 ; 393-404. Also as separate, 16 pp. [Montreal.]
7497. CAULFIELD, F. B. 1888. A sketch of Canadian Orthoptera—*Rep. ent. Soc. Ont.*, Toronto, 18, pp. 59-72.

7498. CAVALCANTI, M. P. 1908. Praga de gafanhotos.—*Prop. agric. Soc. nac. Agric.*, Rio de Janeiro, No. 8.
7499. CELLEGHINI, F. 1950. Let us control the locust.—*Agr. Polesinc*, 2, pp. 70-71.
7500. CHABOUSSOU, F. 1950. L'invasion du criquet migrateur (*Locusta migratoria gallica* Remaudière) dans les Landes de Gascogne.—*Déf. Vég.*, Paris, 5, pp. 29-33.
7501. CHAUVIN, R. 1952. Biologie de l'insectes : progrès récents de la physiologie de l'insectes.—*Rev. zool. agric.*, Talence, 51, pp. 102-106.
7502. CHAUVIN, R. 1953. Biologie de l'insectes : progrès récents de la physiologie de l'insectes.—*Rev. zool. agric.*, Talence, 52, pp. 14-19 ; 54-60 ; 83-90 and 131-148.
7503. CHAUVIN, R. 1954. Biologie de l'insectes : progrès récents de la physiologie de l'insectes.—*Rev. zool. agric.*, Talence, 53, pp. 131-137.
7504. CHEO, MING-TSANG. 1936. A preliminary list of the insect and Arachnids injurious to economic plants in China.—*Peking nat. Hist. Bull.*, Peking, 10 (3), pp. 167-182 ; (4), pp. 291-308.
- . CHETURKINA, I. A.—See CHETYRKINA, I. A.
7505. CHETYRKINA, I. A. 1950. Some certain data on the locust fauna of Acrididae (Orthoptera, Acridoidea) of Transcarpathian Ukraine. [In Russian].—*Dokl. Akad. Nauk URSS. (russ.) (C. R. Acad. Sci. USSR.)*, Moscow (N. S.), 70, pp. 729-732.
7506. CHEYSSIAL, M. A. 1922. Expérimentation de la méthode de d'Hérèlle en Guinée française pour la destruction des acridiens.—*Ann. Med. & Pharmacol.*, Paris, 20 (3), pp. 341-346.
7507. CHIAROMONTE, A. 1950a. Recent progress in control of locusts.—*Riv. Agric. subtropic.*, Florence, 44, pp. 127-130.
7508. CHIAROMONTE, A. 1950b. The Desert Locust Advisory Committee meeting at Nairobi.—*Riv. Agric. subtrop.*, Florence, 44, pp. 203-208.
7509. CHIAROMONTE, A. 1950c. More adequate control of locusts in Somalia.—*Riv. Agric. subtrop.*, Florence, 44, pp. 287-289.
7510. CHILABERT, J. B. 1916. Instrucciones para combatir la langosta.—*Bol. Dep. Fom.*, Asunción, 2 (8-9), pp. 61-66.
7511. [CHINA.] 1945. Entomology.—*Rep. nat. agric. Res. Bur. China 1932-44*, Peipeh (Szechuan), pp. 23-27.
7512. CHORLEY, J. K. 1939. Report of the Division of Entomology for the year ending 31st December, 1938.—*Rhod. agric. J.*, Salisbury, 36 (8), pp. 598-622. Also as *Bull. Minist. Agric. (S. Rhod.)*, Salisbury, No. 1121, 25 pp. (1939).
7513. CHORLEY, J. K. 1946. Report of the Division of Entomology for the year ending 31st December, 1945.—*Rhod. agric. J.*, Salisbury, 43 (6), pp. 547-562. Also as *Bull. Minist. Agric. (S. Rhod.)*, Salisbury, No. 1377, 17 pp. (1946).
7514. [C. I. P. A.] 1952. *Sesión Extraordinaria del CIPA, 15th Oct., 1951*. 179 pp.—Buenos Aires.

- . CLAASSEN, P. W. 1914.—See HUNTER, S. J. and CLAASSEN, P. 1914.
- . CODERQUE, F. 1923.—See FLORES, J. L. and CODERQUE, F. 1923.
- . COLE, E. 1945.—See ALLEN, T. C., DEXHEIMER, F. J. and COLE, E. 1945b.
- . COMSTOCK, A. B. 1895.—See COMSTOCK, J. H. and COMSTOCK, A. B. 1895.
7515. COMSTOCK, J. H. 1880. *Report of the Entomologist of the United States Department of Agriculture for the Year 1879*. Pp. [1-4], 185-262, 1, 6 pls. Washington. (Extr., Ann. Rept. U. S. Dept. Agric., Washington, 1879.)
7516. COMSTOCK, J. H. 1881. *Report of the Entomologist of the United States Department of Agriculture for the Year 1880*. Pp. 1-4, 235-273, 1-4, 24 pls. Washington. (Extr., Ann. Rept. U. S. Dept. Agric., Washington, 1880.)
7517. COMSTOCK, J. H. 1888. *An Introduction to Entomology*. [Part 1]. 4+234 pp.—Ithaca.
7518. COMSTOCK, J. H. 1897-1901. *Insect Life*. vi+349 pp., 18 pls.—New York (D. Appleton & Co.).
7519. COMSTOCK, J. H. and COMSTOCK, A. B. 1895. *A Manual for the Study of Insects*. 12+701 pp., 6 pls.—Ithaca.
7520. COMSTOCK, J. H. and NEEDHAM, J. G. 1898-1899. The wings of insects.—*Amer. nat.*, Ithaca (N. Y.), 32, pp. 43-48 ; 81-89 ; 231-257 ; 335-340 ; 413-424 ; 561-565 ; 769-777 ; and 903-911 ; 33, pp. 117-126 ; 573-582 ; and 845-860.
7521. COMSTOCK, J. H. and SLINGERLAND, M. V. 1890. Insects injurious to fruits.—*Bull. exp. Sta. Corn. Univ. Ent. Div.*, Ithaca, 23, pp. 103-126.
- . CONNIN, R. V. 1953.—See KUITERT, L. C. and CONNIN, R. V. 1953.
7522. COOK, A. J. 1887. Insects injurious to grasses and clovers. In : BEAL's "Grasses of North America", 1, pp. 370-413.—Lansing.
7523. COOK, A. J. 1914. Alfalfa.—*Mthly. Bull. State Comm. Hortic.*, Sacramento, 3 (1), p. 47.
7524. COOK, W. C. 1929. A bioclimatic zonation for studying the distribution of injurious insects.—*Ecology*, Brooklyn, 10 (3), pp. 282-293.
7525. COOLEY, R. A. 1914. Eleventh Annual Report of the State Entomologist of Montana.—*Bull. Mta. Agric. Expt. Sta.*, Bozeman, No. 98, pp. 123-136.
7526. COOLEY, R. A. 1918. Fifteenth Annual Report of the State Entomologist of Montana.—*Bull. Univ. Mta. Agric. Expt. Sta.*, Bozeman, No. 124, pp. 195-208.
7527. COOLEY, R. A. 1919. Seventeenth Annual Report of the State Entomologist of Montana.—*Bull. Mta. Agric. Expt. Sta.*, Bozeman, 133, 15 pp.

7528. COOLEY, R. A., PARKER, J. R. and SEAMANS, H. L. 1918. Grasshopper control in Montana.—*Circ. Univ. Mta. Agric. Expt. Sta.*, Bozeman, No. 76, pp. 119-147.
7529. COQUILLET, D. W. 1886. Report on the locusts of the San Joaquin Valley, California.—*Rept. U. S. Ent. for 1885*, Washington, pp. 289-303.
7530. COQUILLET, D. W. 1889. Notes on Acrididae in Los Angeles, Cal.—*Insect Life*, Washington, 1, pp. 227-228.
7531. COQUILLET, D. W. 1892a. Report on the locust invasion of California in 1891.—*Bull. Div. Ent. U. S. Dept. Agric.*, Washington, 27, pp. 34-57.
7532. COQUILLET, D. W. 1892b. The dipterous parasite of *Melanoplus devastator* in California.—*Insect Life*, Washington, 5, pp. 22-24.
7533. CORKINS, C. L. 1922. Grasshoppers.—*Cir. Off. St. Ent. Colorado*, Fort Collins, No. 36, pp. 39-41.
7534. CORKINS, C. L. 1923. Grasshopper control.—*Cir. Off. St. Ent. Colorado*, Fort Collins, No. 38, pp. 28-31.
7535. CORKINS, J. P. 1950. Two hopper control campaigns planned. *Mta. Fmr. Stockman*, Bozeman, 37 (9), p. 10.
7536. COSTA, J. J., SANTA MARIA, H. C. and LAMDAN, S. 1947. Contribución al estudio del hexacloro-ciclohexano ó 666. Su química y su poder insecticida.—*Publ. Inst. Sanid. Veg.*, Buenos Aires, (A) 3 (26), 35 pp.
7537. COSTA LIMA, A. DA. 1941. Uma nova especie de Propedies. (Orthoptera-Cyrtacanthacridae).—*Acad. Brasil. Cienc.*, Rio de Janeiro, 13 (4), pp. 323-325, 1 pl.
7538. COSTA LIMA, A. DA. 1942. Sobre alguns gafanhotos do grupo Copiocerae (Acrididae, Cyrtacanthacrinae).—*Rev. Brasil. Biol.* Rio de Janeiro, 2 (1), pp. 57-65.
7539. COWLEY-BROWN, P. C. and BURKHILL, I. H. 1916. Locusts in Malacca ; July 1914 to October 1915.—*Gardens Bull. Straits Settlements*, Singapore, 1 (10), pp. 335-349.
7540. CRAIGHEAD, F. C. et. al. 1950. Insect enemies of eastern forest.—*Misc. Publ. U. S. Dept. Agric.*, Washington (D. C.), No. 657, ii+679 pp.
7541. CRIDDLE, M. 1913. Insect pests of southern Manitoba during 1912.—*Ann. Rep. ent. Soc. Ont.*, Toronto, 1913, pp. 97-100.
7542. CRIDDLE, N. 1920. Locust control in Prairie Provinces.—*Canada Dept. Agric.*, Ottawa, No. 13, 20 pp.
7543. CRIDDLE, N. 1921. Locusts in Manitoba with special reference to the outbreak of 1919.—*50th Ann. Rept. ent. Soc. Ontario*, 1919, Toronto, 1920, pp. 49-53.
7544. CRIDDLE, N. 1925. Field crickets in Manitoba.—*Canad. Ent.*, Guelph (Ont.), 57, pp. 79-84.

D

- . DA M. RIBEIRO (JR.), A. 1947-1951.—See LIMA, A. D. F., D'ARAUJO E SILVA, A. G., REINIGER, C. H., ALVES, J. and DA M. RIBEIRO (JR.), 1947-1951.
7545. DAGUERRE, J. B. 1936. Informe de la Comisión Exploradora No. 3.—*Com. Centr. de Invest. sobre la langosta, correspondiente al año 1934*, Buenos Aires, pp. 125-144.
7546. DALE, W. T. 1953. The transmission of plant viruses by biting insects, with particular reference to cowpea mosaic.—*Ann. appl. Biol.*, London, **40**, pp. 384-392.
7547. DALMAN, J. W. 1823. *Analecta Entomologica*. T p., 8+104+(4) pp., 4 pls.—Holmiae.
- . D'ARAUJO E SILVA, A. G. 1947-1951.—See LIMA, A. D. F., D'ARAUJO E SILVA, A. G., REINIGER, C. H., ALVES, J. and DA M. RIBEIRO (JR.), A. 1947-1951.
7548. DARLING, H. S. 1946. Annual Report of the Agricultural Entomologist.—*Rep. Dept. Agric. Uganda, 1944-45*, Entebbe, Pt. 2, pp. 25-30.
7549. DAVATCHI, A. 1947. *Locusta migratoria* L. attaquant les régions nord de l'Iran. [In Persian.]—*Ent. & Phytopath. appl.*, Teheran, No. 5, pp. 52-57.
7550. DEVENPORT, C. B. 1900 [1901.] Variation and correlation in the tibial spines of *Melanoplus*.—*Proc. Amer. Ass. Adv. Sci.*, Boston, **49**, p. 225.
- . DAVIES, D. E. 1952.—See GUNN, D. L., HUNTER-JONES, P. and DAVIES, D. E. 1952.
7551. DAVIS, W. T. 1924. *Melanoplus differentialis* (Thomas), a new grasshopper to the State of New York.—*J. N. Y. ent. Soc.*, New York, **32** (4), p. 215.
7552. DAVIS, W. T. 1925. The grasshopper, *Melanoplus differentialis*, on Staten Island, N. Y.—*Bull. Brooklyn ent. Soc.*, Lancaster (Pa.), **20** (5), p. 199.
7553. DAWSON, G. M. 1877. Notes on the appearance and migrations of the locust in Manitoba and the North-West territories, summer of 1875.—*Canad. Nat.*, Montreal (N. S.), **8**, pp. 207-226.
7554. DAWSON, G. M. 1878. Notes on the locust in the North-West in 1876.—*Canad. Nat.*, Montreal (N. S.), **8**, pp. 411-417.
7555. DAY, M. F. 1951. Studies on the digestion of wool by insects. III. A comparison between the tracheation of the midgut of *Tineola* larvae and that of other insect tissues.—*Aust. J. sci. Res.*, Melbourne (B), **4** (1), pp. 64-74.
7556. DEAN, G. A. and KELLY, E. G. 1920. Organization for grasshopper control.—*J. econ. Ent.*, Concord, **13** (2), pp. 237-242.
7557. DEAN, G. A., KELLY, E. G. and FORD, A. L. 1919. Grasshopper control in Kansas.—*J. econ. Ent.*, Concord, **12** (2), pp. 213-217.
- . DEAN, H. A. 1950.—See GAINES, J. C. and DEAN, H. A. 1950.

7558. DECARY, R. 1925. Les invasions de criquets à Madagascar (*Pachytilus migratoroides* Reich).—*Bull. Soc. ent. Fr.*, Paris, No. 17, pp. 290-292.
7559. DECKER, G. C. 1950. Grasshopper control with some of the newer insecticides.—*Proc. amer. Assoc. econ. Ent. North Centr. States Br.*, 5, p. 55.
- . DE GEER, K. 1752-1778.—*See* GEER, K. DE, 1752-1778.
7560. DEKHTIAREV, N. S. 1925. A new parasite of the Italian Locust. [In Russian].—*Prot. Plants Ukraine*, Kharkov, 1925, pp. 60-62.
7561. DEL VALLE, R. G. 1950. The red locust (*Nomadacris septemfasciata*).—*Gaz. Agric.*, Beziers, 2, pp. 150-155.
7562. DENIER, P. C. L. 1934. Informe de la Comisión Exploradora No. 1.—*Com. Centr. de Invest. sobre la Langosta*, Buenos Aires, pp. 51-66.
7563. DE ONG, E. R. 1918. Flies associated with a grasshopper outbreak.—*J. econ. Ent.*, Concord, 11 (6), p. 480.
7564. [DEPARTMENT OF AGRICULTURE, BRITISH COLUMBIA.] 1945. *Thirty-ninth Annual Report of the Department of Agriculture (British Columbia) for the year 1944*. 176 pp., 1 pl.—Victoria, B. C.
7565. [DEPARTMENT OF AGRICULTURE, BRITISH COLUMBIA.] 1946. *Fortieth Annual Report for the year 1945*. 186 pp.—Victoria, B. C.
7566. [DEPARTMENT OF AGRICULTURE, BRITISH COLUMBIA.] 1947. *Forty-first Annual Report for the year 1946*. 198 pp.—Victoria, B. C.
7567. [DEPARTMENT OF AGRICULTURE, BRITISH COLUMBIA.] 1948. *Forty-second Annual Report for the year 1947*. 189 pp.—Victoria, B. C.
7568. [DEPARTMENT OF AGRICULTURE, BRITISH COLUMBIA.] 1949. *Forty-third Annual Report for the year 1948*. 228 pp.—Victoria, B. C.
- . DEXHEIMER, F. J. 1945.—*See* ALLEN, T. C., DEXHEIMER, F. J. and COLE, E. 1945b.
7569. DICK, J. 1950. A third series of insecticide tests against the elegant grasshopper (*Zonocerus elegans*).—*Proc. S. Afr. Sug (Tech. Ass.)*, Durban, 24, pp. 95-98.
7570. DIETZ, R. A. 1953. Field notes on *Neorhynchocephalus sackenii* (Williston) in Missouri.—*Bull. Brooklyn ent. Soc.*, Lancaster (Pa.), 48, pp. 38-39.
7571. DIRSH, V. M. 1951. A new biometrical phase character in locusts.—*Nature*, London, 167, p. 281.
- . DOBROMUSILOV, D. 1937.—*See* KOKINA, E. and DOBROMUSILOV, D. 1937.
7572. DODGE, G. M. 1876. New species of Acridini from Nebraska.—*Canad. Ent.*, London (Ont.), 8, pp. 9-12.

7573. DODONOV, B. A. 1936. On the comparative resistance of some species of insects to the arsenic and fluorine insecticides, [In Russian, with Summary in English.]—*Bull. Plant Prot.*, Leningrad, (3) 7, pp. 55-77.
7574. DOMENICHINI, G. 1947. Apparizione di cavallette in Lombardia.—*Bull. Zool. agr. Bachic.*, Turin, 14 (3), pp. 27-43.
- . DRENOWSKI, A. K.—See DRYENOVSKI, A. K.
7575. DRURY, D. 1770-1782. *Illustrations of Natural History, wherein are Exhibited upwards of Two Hundred and Forty Figures of Exotic Insects, according to their Different Genera ; very Few of which have Hitherto been Figured by any Author, being Engraved and Coloured from Nature, with the Greatest Accuracy, and Under the Author's own Inspection ; with a Particular Description of each Insect.*—3 Vols., 1, 28+130 pp., 50 pls.; 2, 7+92 pp., 50 pls.; 3, 26+76 pp., 50 pls.—London. [See also PANZER, G. W. F., 1785-1788.]
7576. DRYENOVSKI, A. K. 1925a. An outbreak of locusts in Sofia in 1919. [In Bulgarian.]—*Sp. Zem. Izpit. Inst. Bulg.*, Sofia, 3 (2-3), pp. 251-262. Abstract in *Déf. des plantes*, Leningrad, 2 (6), pp. 379-380.
7577. DRYENOVSKI, A. K. [DRENOWSKI, A. K.] 1925b. Eine neue Methode der Heuschreckenbekämpfung in Bulgarien.—*Zeit. angew. Ent.*, Berlin, 11 (3), pp. 452-455.
7578. DUNCAN, J. 1840. *Introduction to Entomology : Comprehending, a General View of the Metamorphoses, Internal Structure, Anatomy, Physiology, and Systematic Arrangement of the various Orders, and a Tabular view of the whole Class of Insects.*—331 pp., 38 pls.—London (Jardine's Naturalists' Library, 29).
- . DUTTA, D. K. 1952.—See KAPUR, A. P. and DUTTA, D. K. 1952.

E

7579. EBELING, W. 1950. *Subtropical Entomology.* ix [+1]+747 pp., 575 figs, 20 maps.—San Francisco (Lithotype Process Co.).
7580. EGO-AGUIRRE, A. 1946. Las langostas de Jaén. Informe del viaje efectuado a la zona infestada por la langosta.—*Inf. Estac. Exp. Agric. La Molina*, Lima, No. 61, 25 pp., 1 map.
7581. ELLIS, P. E. 1950. Marching in locust hoppers (*Locusta migratoria migratorioides*) of the solitary phase.—*Nature*, London, 166, p. 151.
7582. ENDREDUY, S. R. 1924. *Decretos, circulares e instrucciones para el combate de la langosta en el estado de Veracruz.* —Veracruz (Junta Centr. Camp. Langosta).
- . ESCALANTE ROSSI, R. 1947.—See BASSO STAJANO, C. and ESCALANTE ROSSI, R. 1947.
7583. EVANS, POLE, J. B. 1916. The causes of the failure of locust fungus.—*S. Afr. J. Sci.*, Cape Town, 13 (3), p. 100.

7584. EVESTROPOF, E. 1946. Note sur quelques Orthopteres del Iran, [In French and Persian.]—*Ent. & Phytopath. appl.*, Teheran, No. 1, pp. 12-14.

F

7585. FABRICIUS, J. C. 1775. *Systema entomologiae, sistens insectorum classes, ordines, genera, species, adjectis synonymis, locis, descriptionibus, observationibus*. 32+832 pp.—Fiensburgi et Lipsiae.
7586. FABRICIUS, J. C. 1781. *Species insectorum exhibentes eorum differentias specificas, synonyma auctorum, loca natalia, metamorphosin adjectis observationibus, adumbrationibus*. 2 vols. 1, 8+552 pp.; 2, 2+494 pp.—Hamburgi et Kiloniæ.
7587. FABRICIUS, J. C. 1787. *Mantissa Insectorum stens eorum species nuper detectas adjectis characteribus genericis, differentiis specificis, emendationibus, observationibus*. 2 vols. 1, 20+348 pp.; 2, 2+382 pp.—Hafniae.
7588. FABRICIUS, J. C. 1792-1794. *Entomologia systematica emendata et aucta, secundum classes, ordines, genera, species, adjectis synonymis, locis, observationibus, descriptionibus*. 4 vols. in 7.—Hafniae. (Ulonata [Orthoptera], 2, pp. 1-62, 1793.)
7589. FABRICIUS, J. C. 1797. *Epitome entomologiae Fabricianae siva Nomenclator entomologicus emendatus sistens Fabricianæ systematis cum Linneano comparationem adjectis characteribus ordinum et generum, speciebus novis aliorum entomologorum insectorum habitationibus nominibus germanorum francogallorum anglorum cum indicibus et bibliotheca fabricana*. 16+224 pp.—Lipsiae. (The same. Editio novo, 1810, 16+224 pp.—Lipsiae.)
7590. FABRICIUS, J. C. 1798. *Supplementum Entomologiae systematicae*. [4]+572 pp.—Hafniae.
7591. FAURE, J. C. 1923. The life-history of the Brown Locust, *Locustana pardalina* (Walker).—*Bull. Transvaal Univ. Coll.*, Pretoria, 4, 30 pp., 2 pls.
7592. FELT, E. P. 1915. Grasshopper control in New York State.—*J. econ. Ent.*, Concord, No. 2, pp. 227-230.
7593. FELTON, S. 1764. An account of a singular species of wasp and locust.—*Philos. Trans. R. Soc. Lond.*, London, 54, pp. 53-57.
7594. FENTON, F. A. 1941. The insect pest record for Oklahoma, 1940.—*Proc. Okla. Acad. Sci.*, Guthrie, 21, pp. 25-28.
7595. FENTON, F. A. 1942. The insect pest record for Oklahoma, 1941.—*Proc. Okla. Acad. Sci.*, Edmond, 22, pp. 45-51.
7596. FERNALD, C. H. 1888. The Orthoptera of New England.—*Ann. Rept. Mass. Agric. Coll.*, Boston, 25 (Pub. Doc., 1888, No. 31), pp. 89-145. Also as separate, 61 pp., Boston.
7597. FERNALD, H. T. 1921. *Applied Entomology. An Introductory Text-book of Insects in their relation to Man*. xiv + 386 pp., 388 figs.—New York and London (McGraw Hill Book Co.).

7598. FERNÁNDEZ, F. J. 1936. Procedimientos de lucha contra la langosta tucura on su estado de mosquita.—*Bol. Form. Rural. Min. Agric.*, Buenos Aires, 1 (30).
7599. FERREIRA GUERRERO, R. 1946. El problema de la langosta en la Paraguay.—*Conf. Int. Expertos en la Lucha Contra la Langosta*, Montevideo, pp. 98-100.
7600. FERREIRA LIMA, A. D. 1946. La langosta en el Brasil.—*Conf. Int. Expertos en la Lucha Contra Langosta*, Montevideo, pp. 93-95.
7601. FIELITZ, F. 1935. Contribución a la lucha biológica contra la langosta por medio de bacterias.—*Conf. Int. Expertos en la Lucha contra la Langosta*, Montevideo, 1934, pp. 71-75.
7602. FILATOV, K. N. 1940. The decrease of the norm of sodium arsenite as a control measure against the Siberian grasshopper (*Gomphocerus sibiricus* Linn.) [In Russian.]—*Bull. Plant Prot.*, Leningrad, Nos. 1-2, pp. 202-203.
7603. FISCHER, G. 1935a. Plan de experimentacion de metodos langosticidas.—*Conf. Int. Expertos en la Lucha contra la Langosta*, Montevideo, 1934, pp. 82-85.
7604. FISCHER, G. 1935b. La utilizacion del aeroplano contra la langosta, —*Conf. Int. Expertos en la Lucha contra la Langosta*, Montevideo, 1934, pp. 101-104.
7605. FISCHER VON WALDHEIM, G. 1839. Locustarum quaedam genera aptera novo examini submissa.—*Bull. Soc. imp. nat. Moscou*, Moscow, 12, pp. 99-114, 1 pl.
7606. FISCHER VON WALDHEIM, G. 1846. Index Orthopterorum societati traditorum.—*Bull. Soc. imp. nat. Moscou*, Moscow, 19, pp. 468-482, 1 pl.
7607. FITZGERALD, L. R. 1949. The alkaline phosphatase of the developing grasshopper egg.—*J. exp. Zool.*, Philadelphia, 110, pp. 461-487.
7608. FLETCHER, J. 1885. *Report of the Entomologist (to the Department of Agriculture) for 1885*. 56 pp.—Ottawa.
7609. FLETCHER, T. B. 1913. Note on insects attacking the paddy plant in southern India.—*Madras Dept. Agric. Bull.*, Madras, 3 (67), 10 pp., 2 pls.
7610. FLINT, W. P. 1918. The more important insecticides and repellents.—*Illinois Dept. Regis. & Educ. (Nat. Hist. Surv.)*, Springfield, No. 1, 6 pp.
7611. FLORES, J. L. and CODERQUE, F. 1923. Estudios sobre el "Coccobacillus acridiorum" de d'Herelle.—*Bol. Agric. téc. econ.*, Madrid, 15 (170), pp. 176-179.
- . FLUKE, C. L. 1925.—See PAINTER, H. R., FLUKE, C. L. and GRANOVSKY, A. A. 1925.
7612. FORBES, S. A. 1884. *Report of the State Entomologist on the Noxious and Beneficial Insects of the State of Illinois*. No. 13,203 + 21 pp.—Springfield.

7613. FORBES, S. A. 1885. *Report of the State Entomologist on the Noxious and Beneficial Insects of the state of Illinois*. No. 14, 7+136 pp.—Springfield.
- . FORD, A. L. 1919.—See DEAN, G. A., KELLY, E. G. and FORD, A. L. 1919.
- . FORD, A. L. 1922.—See LARRIMER, W. H. and FORD, A. L. 1922.
7614. FRAPPA, C. 1939. Madagascar : Behaviour of the Red Locust (*Nomadacris septemfasciata*) from 1935 to 1938.—*Int. Rev. Agric.*, Rome, 30 (8), pp. M 177—M 179.
7615. FRAPPA, C. 1947. La question acridienne a Madagascar.—*Agron. trop.*, Nogent-sur-Marne, 2 (3-4), pp. 125-149.
7616. FREEMAN, W. G. 1915. Report on locusts in Venezuela.—*Bull. Dept. Agric. Trinidad & Tobago*, Port of Spain, 14 (6), pp. 191-194.
- . FRITZ, R. F. 1942.—See WILBUR, D. A., FRITZ, R. F. and PAINTER, R. H. 1942.
7617. FROGGATT, W. W. 1922. Arsenite of soda, the best defence against grasshoppers.—*Agric. Gaz. N. S. W.*, Sydney, 33 (2), p. 87.
7618. FULLER, C. 1914. Locust campaign, Cape Midlands, 1913.—*Agric. J. Un. S. Afr.*, Pretoria, 7 (1), pp. 30-34.
7619. FUSCHINI, C. 1914. Di un fattore non sufficientemente studiato nella utilizzazione dei microorganismi parassiti d'insetti nocivi.—*Rev. Vitic. Agrar.*, Conegliano, (5) 20 (4), pp. 74-76.

G

- . GAINES, J. C. 1950.—See MAGEE, W. J. and GAINES, J. C. 1950.
7620. GAINES, J. C. and DEAN, H. A. 1950. Grasshopper control.—*Progr. Rept. Tex. agric. Exp. Sta.*, College Station, No. 1235, 2 pp.
7621. GARCÍA SOLORZANO, A. 1947. La plaga de langosta invasoras en Loja.—*Bol. Cãm. Agric.*, Ecuador (Segunda Zone), 1 (4), pp. 11-14.
7622. GARMAN, H. 1894a. The Orthoptera of Kentucky.—*Ann. Rept. Kent. Agric. exp. Sta.*, Frankfort, 1894, 6, pp. 23-30. Also as separate, 10 pp. [Lexington, 1894].
7623. GARMAN, H. 1894b. Destructive locusts in Kentucky.—*Bull. Kent. agric. Exp. Sta.*, Lexington, No. 49, pp. 7-22.
7624. GAULDEN, M. E. and TOTTER, J. R. 1954. Effect of X-rays on nucleic acid synthesis and on mitosis.—*9th Int. Congr. Genet.*, Bellagio (1953), p. 1095 (Caryologia Suppl.).
7625. GEER, K. DE. 1752-1778. *Memoires pour servir a l'histoire de insectes*. 7 vols. Stockholm. [Orthoptera, vol. 3, pp. 399-554, 5 pls., 1773.] See also GOEZE, J. A. E. and STÅL, C., *Rec. Orth.*
- . GETTY, J. 1950.—See BLACK, D. J. G., GETTY, J., JAMESON, H. R. and PIRIE, H. 1950.

7626. GIBSON, A. 1915a. Experiments with poisoned bran baits for locust control in Eastern Canada.—*45th Ann. Rept. ent. Soc. Ontario*, Toronto, pp. 97-102.
7627. GIBSON, A. 1915b. Locust control work in Eastern Canada in 1915.—*Agric. Gaz. Canada*, Ottawa, 2 (10), pp. 937-940.
- GIBSON, D. R. 1952.—See MACVICAR, R. M., BRAUN, E., GIBSON, D. R. and JAMIESON, C. A. 1952.
7628. GIGLIO-TOS, E. 1897. Ortotteri raccolti nel Darien dal Dr. E. Festa. III. Acrididae-Gryllidae.—*Boll. Mus. Zool. Univ. Torino* Torino, 12 (301), pp. 1-10.
7629. GIL, M. 1933a. Las dos amenazas.—*La Nación*, Buenos Aires, 1933 (Aug. 23), p. 1.
7630. GIL, M. 1933b. Para 1939-40 debemos esperar otra gran invasión.—*Pampa Argent.*, Buenos Aires, 7, p. 69.
7631. GILBERT, H. A. and THOMPSON, R. W. 1937. The grasshopper outbreak in Ontario in 1936.—*Rept. ent. Soc. Ont.*, Toronto, 67, [1936], pp. 65-68.
7632. GIMENEZ, A. J. B. 1950. Breve reseña de los trabajos efectuados por el servicio técnico de lucha contra la langosta en el Paraguay desde el año 1947.—*Reunion Comité Interamericano permanente Artiacridiano [CIPA]*, Asunción, 1950, pp. 35-50.
7633. GIRARD, M. 1873-1885. *Les Insectes : Traité Elementaire d'Entomologie*. 3 vols. and atlas.—Paris. (Orthoptera, 2, pp. 1-259, pls. 61-63, 1879.)
7634. GMELIN, J. F. 1788-1793. *Caroli a Linné Systema naturae per regna tria naturae secundum classes, ordines, genera, species cum characteribus, differentiis, synonymis, locis. Editio decima tertia, aucta, reformata*. III tomi in 10 vol.—Lipsiae. (Orthoptera, 1, paras. iv, pp. 2338-2088, 1788.)
- 7635.—GMELIN, J. F. 1789-1796. *Caroli a Linné Systema naturae per regnatia naturae secundum classes, ordines, genera, species cum characteribus, differentiis, synonymis, locis. Editio decima tertia, aucta, reformata*. X tomi.—Lugduni Batavorum. (Orthoptera, 4, pp. 2038-2088, 1789.)
- 7635a. GOETSCH, W. 1947. Der Einfluss von Vitamin T auf Gestalt und auf Gewohnheiten von Insekten.—*Osterr. zool. Z.*, Vienna, 1 (3-4), pp. 193-274.
7636. GOEZE, J. A. E. 1777-1781. *Entomologische Beiträge zu des Ritter Linné zwölften Ausgabe des Natursystems*. 3 vols. in 5.—(Leipzig.—Orthoptera, 2 pp. 1-116, 1778).
7637. GOEXE, J. A. E. 1778-1783. *Des Herrn Baron Karl de Geer Abhandlungen zur Geschichte der Insekten aus dem französischen übersetzt und mit anmerkungen herausgegeben von J. A. E. GÖAZE*. 7 vols. in 8.—Nürnberg. (Orthoptera, 3, pp. 260—358, pls. 21-25, 1780).
7638. GOMEX, M. P. 1934. Informe de la Comisión Exploradora. No. 9.—*Com. Centr. de Invest. sobre la langosta*, Buenos Aires, p. 207.

7639. GONZALEZ, B. 1915. Informes sobre destrucción de la langosta.—*Rev. Agric.*, Bogotá, 1 (4), pp. 210-211.
7640. GOODERHAM, C. B. 1916. Three injurious Acridians of Nova Scotia.—*8th Ann. Rept. Quebec. Soc. Plant Prot. insect and fungus diseases.*, (1915-1916), Quebec, pp. 89-91.
7641. GOODERHAM, C. B. 1917. The Acrididae of Nova Scotia.—*Proc. Ent. Soc. Nova Scotia*, 1916, Truro, No 2, pp. 21-30, 1 pl.
7642. Goss, R. W. 1928. Transmission of potato spindle-tuber by grasshoppers (Locustidae).—*Phytopath.*, Lancaster (Pa.), 18 (5), pp. 445-448.
- . GOSSARD, H. A. 1891a.—See OSBORN, H. and GOSSARD, H. A. 1891a.
- . GOSSARD, H. A. 1891b. —See OSBORN, H. and GOSSARD, H. A. 1891b.
7643. GOUGH, H. C. 1945. *A Review of the Literature on Soil Insecticides*. 161 pp.—London (Imp. Inst. Ent.).
7644. GRABER, V. 1877-1879. *Die Insekten*. 2 vols, viii+1008 pp.—Münich.
7645. GRADOJEVI, M. 1933. *The Moroccan Locust in Vojvodina and its control*. [In Serbian.] 23 pp.—Novi Sad.
7646. GRADOJEVIC M. 1948. Control of locusts in Montenegro in 1946. [In Serbian, with a summary in Russian.]—*Ochr. Rost.*, Prague, 19-20, pp. 46-49.
- . GRANOVSKY, A. A. 1925.—See PAINTER, H. R., FLUKE, C. L. and GRANOVSKY, A. A. 1925.
7647. GRANOVSKY, A. A. 1925. The organised cooperative campaign against grasshopper in Wisconsin.—*J. econ. Ent.*, Genev (N. Y.), 18 (1), pp. 73-83.
7648. GRASSÉ, P. P. 1927. Notes sur les Orthoptères français. IV Orthopterès observés dans le département de la Dordogne.—*Feuill. Nat.*, Paris, 46 [1925] pp. 20-25.
7649. GRASSÉ, P. P. and TUZET, O. 1928. Supplément au catalogue des Orthoptères de la Dordogne.—*Bull. Soc. Ent. Fr.*, Paris, 1928, pp. 165-168.
7650. GRATCHEV, A. 1917. A new method of destroying locusts (the bacteriological method). [In Russian.]—*Agric. Turkestan*, Tashkent, 12 (2), pp. 110-116.
7651. GRATCHOV, A. V. 1914. On the question of bacterial method of controlling locusts. [In Russian.]—*J. Microbiol.*, Petrograd. Nos. 1-2, p. 175.
7652. GRAYSON, J. M. 1951. Acidity-alkalinity in the alimentary canal of twenty insect species.—*Virginia J. Sci.*, Richmond, Va, (N. S.), 2, pp. 46-59.
7653. [GREAT BRITAIN.] 1950. International co-operation against the locust.—*Centr. Off. Inform. (Ref. Div.)*, London, 9 pp.
7654. GREBENŠČIKOV, O. 1947. The occurrence of *Acrotylus longipes* (Charpentier, 1845) in Yugoslavia (Orthoptera, Acrididae).—*Proc. R. ent. Soc. Lond.*, London, (A) 22, pp. 10-12.

7655. GREBENSIKOV, O. 1949. Les Orthoptères des environs de Beograd. [In Serbian, with Russian and French summaries.]—*Glasnik Prirodnjackog muzeja srpske zemlje*, (Bull. Mus. Hist. nat. Pays Serbe), Belgrade (B), Nos. 1-2, pp. 243-273.
7656. GRESTAECKER, C. E. A. 1873, *Acridiodea nonnulla nova insigniora*.—*Stett. ent. Z.*, Stettin, 34, pp. 185-197.
7657. GRIFFITHS (JR.), J. T. and THOMPSON, W. L. 1948. Grasshopper (*Schistocerca americana*) prospects for the fall of 1948.—*Citrus Ind.*, Tampa, 29 (9), pp. 7 and 18.
7658. GROFF, C. G. 1923. Grasshopper control in Alberta.—*Agric. Gaz. Canada*, Ottawa, 10 (5), pp. 436-440.
7659. GUEDES, G. 1919. Estinccao dos gafanhotos. Quadro Synoptico.—*Bol. Agric.*, São Paulo, 20 (9), p. 434.
7660. GUÉRIN-MÉNEVILLE, F. E. 1829-1844. *Iconographie du règne animal de G. Cuvier, ou Representations d'après nature de l'une des espèces les plus remarquables et souvent non encore figurées de chaque genre d'animaux ; pouvant servir d'atlas à tous les traités de zoologie. Insectes.* 576 pp., 104 pls.—Paris.
7661. GUÉRIN-MÉNEVILLE, F. E. 1857. Animaux articulés a pieds articulés. In SAGRA, RAMON DE LA, "Histoire physique, politique et naturelle de l'île de Cuba?" Text ; planches, fol.—Paris (Orthoptera, pp. 328-358 ; pl. 12.)
7662. GUICE, O. T. and LYLE, C. 1940. The response of the American Grasshopper (*Schistocerca americana*) to several baits and attractants.—*J. Missi. Acad. Sci.*, 2, pp. 43-44.
7663. GUILDO, A. S. 1947. La langosta *Schistocerca cancellata* y su control—*Rev. Fac. de Agron.*, Montevideo, No. 44.
7664. GUNDLACH, J. 1890-1891. Contribucion a la entomologia cubana. Tomo 2.—Habana, [1886 —1891] (Parte cuarta, Orthopteros, pp. 287-396, issued in 1890 and 1891.)
7665. GUNN, D. L. and KENNEDY, J. S. 1936. An apparatus for investigating the reactions of land arthropods to humidity.—*J. exp. Biol.*, Cambridge, 13, pp. 450-459.
7666. GUNN, D. L., HUNTER-JONES, P. and DAVIES, D. E., 1952. Laboratory experiments on phase differences in locusts : Statistical analysis of data on selection experiments.—*Anti-Locust Bull.*, London, No. 12, 37 pp.
7667. GUPTA, P. D. 1950. On the structure, development and homology of the female reproductive organs in orthopteroid insects.—*Indian J. Ent.*, New Delhi, 10, pp. 75-123.
7668. GYRISCO, G. G. and MARSHALL, D. S. 1951. Further studies of the control of insects of red clover in New York—*J. econ. Ent.*, Menasha, 44, pp. 785-791.

H

7669. HAGIWARA, S. 1953. Neuro-muscular transmission in insects.—*Jap. J. Physiol.*, Nagoya, 3, pp. 284-296.

7670. HALDEMAN, S. S. 1852. Appendix C. Insects. In Stansbury Howard, Exploration and Survey of the Valley of the Great Salt Lake of Utah, including a Reconnoissance of a New Route through the Rocky Mountains. Printed by order of the Senate of the United States. 366-379 pp., pls. 9-10.—Washington. [Another edition with same title and pagination "printed by order of the House of Representatives of the United States".—Washington, 1853.]
7671. HAMBLETON, E. J. 1947. Comentarios acerca de la situación actual de la langosta y sugerencias para mejorar los métodos de control.—*Bol. Cám. Agric.*, Ecuador, Segunda Zona, 1 (4), pp. 5-8.
7672. HAMBLETON, E. J. 1949. El problema de la langosta en El Ecuador, con explicaciones y consejos para su resolución. *Dir. Tec. Agr. Min. Econ.*, Quito (Ecuador).
7673. HANCOCK, J. L. 1895. A new *Tettix*.—*Amer. Nat.*, Philadelphia, 29, pp. 761-762.
7674. HANCOCK, J. L. 1896. On Illinois grouse locusts - -*Trans. Amer. ent. Soc.*, Philadelphia, 23, pp. 235-244, 4 pls.
7675. HANCOCK, J. L. 1898. The species of the new genus *Neotettix*, with a key to the genera of North America Tettigidae.—*Ent. News*, Philadelphia, 9, pp. 137-141, 1 pl.
7676. HANCOCK, J. L. 1899. A new species of *Nomotettix* from Kansas. —*Ent. News*, Philadelphia, 10, p. 8.
7677. HANN, W. DE. 1842. Bijdragen tot de kennis der Orthoptera In Verhandelingen over de natuurlijke geschiedenis der nederlandsche overzeesche bezittingen door de leden der natuurkundige commissie in Indie en andere schrijvers. Utgegeven door Koenraad Jacob Temminck. Leiden. (1842-1844). (Orthoptera, pp. 45-248 and pls. 10-23, issued in 1842.)
7678. HANSEN, H. J. 1886. (?). En nordamerikansk vandregreaes. hoppe.—*Tidsskr. pop. fremst. Naturw.*, Copenhagen, 1886, 32 pp.
- . HARDAS, M. G. [1953]—See MUKERJI, S. and HARDAS, M. G. (1953).
- . HARMSTON, F. C. 1940.—See KNOWLTON, G. F. and HARMSTON, F. C. 1940.
- . HAROON KHAN, M.—See KHAN, M. HAROON.
7679. HARRIS, T. W. 1835. Locust.—In *Encycl. Amer.*, Philadelphia, 8, pp. 40-43.
7680. HARRIS, T. W. 1841. *A Report on the Insects of Massachusetts Injurious to Vegetation. Published agreeably to an Order of the Legislature, by the Commissioners on the Zoological Survey of the the State.* 8+459 pp.—Cambridge. [Another impression of same, printed at the charge of the Author, entitled : *A Treatise on some of the Insects of New England which are Injurious to Vegetation.* Cambridge, 1842.]
7681. HARRIS, T. W. 1852. *A Treatise on Some of the Insects of New England which are Injurious to vegetation.* (2nd ed.) (Title on cover : *Report on Insects Injurious to Vegetation. Published by Order of the Legislature of Massachusetts.*) 8+513 pp.—Baston

7682. HARRIS, T. W. 1862. *A Treatise on Some of the Insects Injurious to Vegetation*. (2nd ed.) (Edited by Charles Louis Flint.) 12+640 pp., 8 pls., 278 cuts.—Boston.
7683. HARRIS, W. V. 1943. *Annual Report of the Entomologist for the year 1942*. 7 pp., typescript.—Morogoro (Dept. Agric. Tanganyika) [Summary in *Rev. appl. Ent.*, (A), London, 31, pp. 358-359, 1943.]
7684. HAYWARD, K. J. 1934. Informe de la Comisión exploradora. No. 8.—*Com. Centr. Invest. sobre la langosta*, Buenos Aires, pp. 183-204.
- . HEBARD, M. (1919-1929).—See ANONYMOUS. 1929.
7685. HEBARD, M. 1919a. Remarks on the species assigned to *Cavotettix*, Hancock, a synonym of *Neotettix* Hancock (Orthoptera, Acrididae, Acrydiinae).—*Ent. News*, Philadelphia, 30 (3), pp. 78-82.
7686. HEBARD, M. 1919b. New genera and species of Melanopli found within the United States (Orthoptera, Acrididae). Part II.—*Trans. Amer. ent. Soc.*, Philadelphia, 45, pp. 257-298, 3 pls.
7687. HEBARD, M. 1920a. New genera and species of Melanopli found within the United States (Orthoptera, Acrididae). Part III.—*Trans. Amer. ent. Soc.*, Philadelphia, 46, pp. 355-403, 18 pls.
7688. HEBARD, M. 1920b. The Santa Marta Region of Colombia from an Orthopterological viewpoint, with deductions relative to tropical American collecting.—*Ent. News*, Philadelphia (Pa.), 31 (10), pp. 281-285.
7689. HEBARD, M. 1920c. A new genus and species of grasshopper from California.—*Proc. Cal. Acad. Sci.*, San Francisco, (4) 10 (9), pp. 71-75.
7690. HEBARD, M. 1920d. Expedition of the California Academy of Sciences to the Galapagos Islands, 1905-1906. XVII. Dermaptera and Orthoptera.—*Proc. Cal. Acad. Sci.*, San Francisco, (4) 2 (2), pp. 311-346.
7691. HEBARD, M. 1922a. The Dermaptera and Orthoptera of Hawaii.—*Occas. Papers Bishop Mus.*, Honolulu, 7 (14), pp. 305-378, 2 pls.
7692. HEBARD, M. 1922b. New genera and species of Melanopli found within the United States and Canada (Orthoptera, Acrididae). Part IV.—*Trans. Amer. ent. Soc.*, Philadelphia, 48, pp. 49-66, 2 pls.
7693. HEBARD, M. 1922c. North American Acrididae (Orthoptera). Paper 1. A study of the group Achuri, as found in the United States.—*Trans. Amer. ent. Soc.*, Philadelphia, 48, pp. 89-102.
7694. HEBARD, M. 1922d. North American Acrididae (Orthoptera). Paper 2. The Group Hyalopteryges as found in the United States and Canada.—*Trans. Amer. ent. Soc.*, Philadelphia, 48, pp. 103-108, 1 pl.
7695. HEBARD, M. 1923a. Expedition of the California Academy of Sciences to the Gulf of California in 1921. The Dermaptera and Orthoptera.—*Proc. Cal. Acad. Sci.*, San Francisco, (4) 12 (15), pp. 319-340.

7696. HEBARD, M. 1923b. An interesting new species of the genus *Melanoplus* from central Georgia (Orthoptera, Acrididae).—*Ent. News*, Philadelphia, 34 (9), pp. 260-262.
7697. HEBARD, M. 1923c. Studies in the Dermaptera and Orthoptera of Colombia. Third Paper. Orthopterous Family Acrididae.—*Trans. Amer. ent. Soc.*, Philadelphia, 49, pp. 165-313, 8 pls.
7698. HEBARD, M. 1923d. The Philippine genus *Misythus* (Orthoptera, Acrididae, Acrydiinae).—*Proc. Acad. nat. Sci. Philad.*, Philadelphia, 75, pp. 323-357, 5 pls.
7699. HEBARD, M. 1924a. Studies in the Acrididae of Panama (Orthoptera).—*Trans. Amer. ent. Soc.*, Philadelphia, 50, pp. 75-140, 3 pls.
7700. HEBARD, M. 1924b. The Group Scyllinae (Orthoptera, Acrididae, Acridinae) as found in North America, with records and data on its occurrence in the United States.—*Trans. Amer. ent. Soc.*, Philadelphia, 50, pp. 157-162, 1 pl.
7701. HEBARD, M. 1924c. Studies in Japanese Acrididae (Orthoptera).—*Trans. Amer. ent. Soc.*, Philadelphia 50, pp. 209-224.
7702. HEBARD, M. 1924d. Studies in the Dermaptera and Orthoptera of Ecuador.—*Proc. Acad. nat. Sci. Phila.*, Philadelphia, 76, pp. 109-248.
7703. HEBARD, M. 1925a. A revision of the Genus *Taeniopoda* (Orthoptera, Acrididae, Cyrtacanthacrinae).—*Trans. Amer. ent. Soc.*, Philadelphia, 50, pp. 253-274.
7704. HEBARD, M. 1925b. Records of European Acrididae, Tettigoniidae and Gryllidae (Orthoptera).—*Trans. Amer. ent. Soc.*, Philadelphia, 51, pp. 35-55.
7705. HEBARD, M. 1925c. The Orthoptera of South Dakota.—*Proc. Acad. nat. Sci. Phila.*, Philadelphia, 77, pp. 33-155.
7706. HEBARD, M. 1925d. Dermaptera and Orthoptera from the State of Sinaloa, Mexico. Part II. Saltatorial Orthoptera.—*Trans. Amer. ent. Soc.*, Philadelphia, 51, pp. 265-310, 2 pls.
7707. HEBARD, M. 1926. A key to the North American genera of the Acridinae which occur north of Mexico. Orthoptera (Acrididae).—*Trans. Amer. ent. Soc.*, Philadelphia, 52, pp. 47-59.
7708. HEBARD, M. 1928. The Orthoptera of Montana.—*Proc. Acad. nat. Sci. Phila.*, Philadelphia, 80, pp. 211-306, 2 pls.
7709. HEBARD, M. 1936. *Dendrotettix hesperus*.—*Trans. Amer. ent. Soc.* Philadelphia, 62, p. 186, 2 pls.
7710. HECKE, G.H. 1920. The grasshopper outlook for 1920.—*Monthly Bull. Cal. State Dept. Agric.*, Sacramento, 9 (3), pp. 53-54.
7711. HEER, O. 1849. Die Insektenfauna der Tertiärgebilde von Oeningen und von Radoboj in Croatien. Zweiter Theil: Heuschrecken, Florfliegen, Aderflügler Schmetterlinge und Fliegen. 264+5 pp., 17 pls.—Leipzig. (Also in *Neue Denkschr. allg. schweiz. Gesellsch. Wissensch.*, 11, Zurich, 1850.)
7712. HEINZE, K. 1951. Die überträger pflanzlicher Viruskrankheiten (eine tabellarische Übersicht).—*Mitt. biol. Zent. Anst. Berl.*, Berlin, 71, 126 pp.

7713. HENDERSON, W.W. 1924. A taxonomic and ecological study of the subfamily Oedipodinae (Orthoptera—Acrididae) found in Utah, with a summary of world distribution and a list of Orthoptera recorded for the state.—*Bull. Utah. Agric. Expt. Sta.*, Logan, No. 191, 150 pp., 6 pls.
7714. HENDERSON, W.W. 1944. Four devastating *Melanopli* found in Utah (Orthoptera, Cyrtacanthacrinae).—*Great Basin Naturalist*, Provo, Utah, 5 (1-2), pp. 1-22.
7715. HENSEN, V. 1866. Ueber des Gehörorgan von *Locusta*.—*Z. wiss. Zool.*, Leipzig, 16, pp. 190-207, 1 table.
7716. HENSHAW, S. 1900. New England Orthoptera.—*Psyche*, Cambridge 9, p. 119.
7717. HESSE, A.J. 1938. A revision of the Bombyliidae (Diptera) of Southern Africa. Part I.—*Ann. S. Afr. Mus.*, Cape Town, 34, pp. 1-105.
7718. HIBRAOUI, H. 1940. La bette contre les ennemis des cultures depuis mil ans en Andalousie et en Arabie.—*Proc. 6th int. ent. Cyng.* (Madrid 1935,) Madrid, 2, pp. 803-810.
7719. HOGAN, T.W. 1949. The Australian Plague Locust. Aerial spraying campaign.—*J. Dept. Agric. Vict.*, Melbourne, 47 (8), pp. 369-375.
7720. HOLMAN-HUNT, C.B. 1913. Notes on insect pests.—*Agric. Bull. F.M.S.*, Kuala Lumpur, 1 (10), pp. 368-369.
7721. HORNER, W.H. 1950. The grasshopper campaign in Saskatchewan.—*Rev. agric. Inst.*, 5 (3), pp. 31 ; and 33-34.
7722. HOUSER, J.S. 1913. Grasshoppers.—*Ohio. Agric. Expt. Sta.*, Wooster, Ohio, No. 137, pp. 127-134.
7723. HOWARD, L.O. 1895a. Damage by the American Locust.—*Insect Life*, Washington, 7, pp. 220-229.
7724. HOWARD, L.O. 1895b. Destructive grasshoppers in New York.—*Insect Life*, Washington, 7, p. 274.
7725. HOWARD, L.O. 1895c. The American Locust in Illinois.—*Insect Life*, Washington, 7, p. 429.
7726. HOWARD, L.O. 1900. Nocturnal flight of grasshoppers.—*Bull. Div. Ent. U.S. Dept. Agric.*, Washington, (N.S.) 22, p. 106.
7727. HOWARD, L.O. 1901. *The Insect Book*. 27+429 pp. 48 pls.—New York (Doubleday, Page and Co.).
7728. HOWARD, L.O. 1920. Report (1919-1920) of the Entomologist.—*U.S. Dept. Agric., Bur. Ent.*, Washington, 36 pp.
7729. HUBBELL, T.H. 1922a. Notes on the Orthoptera of North Dakota.—*Occ. Papers Mus. Zool. Univ. Michigan*, Ann Arbor, No. 113, 56 pp.
7730. HUBBELL, T.H. 1922b. The Dermaptera and Orthoptera of Berrien County, Michigan.—*Occ. Papers Mus. Zool. Univ. Michigan*, Ann Arbor, No. 116, 77 pp.
7731. HUBBELL, T.H. 1937. A new apterous grouse-locust from Western Florida (Orthoptera, Acrididae).—*Occ. Papers Mus. Zool. Univ. Michigan*, Ann Arbor, No. 350, pp. 1-9, 1 pl.

- . HUBBELL, T.H. 1938.—See BLAIR, W.F. and HUBBELL, T.H. 1938.
7732. HUBBELL, T.H. 1954. The naming of geographically variant populations, or what is all the shooting about ?—*Syst. Zool.*, Washington, 3 (3), pp. 113-121.
7733. HUNT, T.F. 1886. Partial economic bibliography of Indian corn insects.—*Misc. ess. econ. Ent. Ill.*, Springfield, pp. 57-126.
7734. HUNTER, S.J. 1898a. Parasitic influences on *Melanoplus*.—*Kans. Univ. Quart.*, Lawrence, 7, pp. 205-210.
7735. HUNTER, S. J. 1898b. On the occurrence of *Dissosoteira longipennis* Thomas.—*Psyche*, Cambridge, 8, pp. 291-292.
7736. HUNTER, S. J. 1898c. *Dissosoteria* in Colorado.—*Psyche*, Cambridge, 8, p. 299.
7737. HUNTER, S. J. 1899. Alfalfa, grasshoppers, bees : Their relationship.—*Contr. ent. Lab. Univ. Kans.*, Topeka, No. 65, pp. 12+152, 12 pls.
7738. HUNTER, S. J. 1902. *Elementary studies in Insect life*. 18+344 pp.—Topeka (Crane and Co.).
7739. HUNTER, S. J. and CLAASSEN, P. W. 1914. Grasshopper control in the Southern Division of Kansas.—*J. econ. Ent.*, Concord, 7 (1), pp. 73-83, 3 pls.
7740. HUNTER, S. J. and SUTTON, W. S. 1900. The *Melanopli* of Kansas —*Psyche*, Cambridge, 9, pp. 63-64 ; 76-78 ; 88-90.
7741. HUNTER, W. D. 1898. Destructive locusts in 1897.—*Bull. Div. Ent. U.S. Dept. Agric.*, Washington, (N.S.) 10, pp. 40-53.
7742. HUNTER, W. D. 1900. An investigation to determine whether *Melanoplus spretus* breeds permanently in the Turtle Mountains in North Dakota.—*Bull. Div. Ent. U.S. Dept. Agric.*, Washington, (N.S.) 22, pp. 30-37.
- . HUNTER-JONES, P. 1952.—See GUNN, D. L., HUNTER-JONES, P. and DAVIS, D. E. 1952.
7743. HUTCHINS, R. E. and LYLE, C. 1938. Cotton seed hull bran in grasshopper bait.—*J. econ. Ent.*, Menasha, 31 (2), p. 319.
7744. HYATT, A. and ARMS, J. M. 1890. *Insecta*. 23+300 pp., 13 pls. — Boston (D. C. Heath and Co.).

I

- . IKAWA, M. 1945.—See ALLEN, T. C., LINK, K. P., IKAWA, M. and BRUNN, L. K. 1945c.
7745. IMMS, A. D. 1944. Locust invasions and their control.—*Assam Rev. and Tea News.*, Calcutta, 31, (1), pp. 5-8.
7746. [INDIA.] 1950. A new locust cycle.—*Indian Fmg.*, Delhi, 11, pp. 497-498.
7747. [INDIA.] 1952. Brief review of plant protection work in Mysore State for 1951-52.—*Plant Prot. Bull.*, New Delhi, 4 (3), pp. 70-73.
- . [INTERNATIONAL.] 1938.—See BELGIAN DELEGATION. 1938.
- . [INTERNATIONAL.] 1950.—See GREAT BRITAIN. 1950.

7748. [INTERNATIONAL.] 1953. Protocol modifying the International Convention of the 22nd of February, 1949 for the permanent control of outbreak areas of the Red Locust. London, October 29, 1953. (In English and French.) *Treaty Ser.*, No. 81 (Cmd 9002), 3 pp.—London (H.M.S.O.).
7749. [INTERNATIONAL CONVENTION FOR THE PERMANENT CONTROL OF OUTBREAK AREA OF THE RED LOCUST, LONDON, 22nd FEBRUARY.] 1949. (In English and French.) *Treaty Ser.*, No. 53, 9 pp.—London (H. M. S. O.).
7750. [IRAN.] 1951. Iranian locust control.—*J. econ. Ent.*, Menasha (Wis.), 44 (4), p. 597.
- ISELY, D. 1938.—*See* BAERG, W. J. AND ISELY, D. 1938.
7751. ISELY, D. 1942. Insect problems resulting from changes in agriculture in Arkansas.—*J. econ. Ent.*, Menasha, 35 (4), pp. 473-477.

J

7752. JABLONOWSKI, J. 1924. Injuries caused by locusts in Hungary during the year 1913-1923.—*Int. Rev. Sci. & Pract. Agric.*, Rome, (N. S.) 2 (2), pp. 464-470.
7753. JABLONOWSKI, J. 1925. Locusts in Hungary during 1924.—*Int. Rev. Sci. & Pract. Agric.*, Rome, (N. S.) 3 (2), pp. 468-482.
7754. JACHIMOVICH, L. A. 1950. Change of needs of ecological condition during embryonic development of *Locusta migratoria migratoria*.—*Doklady [Trans.] Acad. Sci. U.S.S.R.*, Moscow, 73 (5), pp. 1105-1108.
7755. JACK, R. W. 1924. The coming campaign against locusts. Locusts as food for stock.—*Rhod. Agric. J.*, Salisbury, 21 (5), pp. 596-600, 630-632.
7756. JACK, R. W. 1937. Division of Entomology, Annual report for the year 1936. Agriculture.—*Rhod. Agric. J.*, Salisbury, 34 (7), pp. 570-576. Also in *Bull. Minist. Agric.* (S. Rhodesia), Salisbury, No. 1037, pp. 1-7.
7757. JACK, R. W. 1938. Annual report of the Division of Entomology for the year ended 31st December, 1937. Agriculture.—*Rhod. Agric. J.*, Salisbury, 35 (8), pp. 652-659. Also in *Bull. Minist. Agric.* (S. Rhodesia), Salisbury, No. 1080, pp. 1-8.
7758. JACK, R. W. 1940. *Report of the Division of Entomology (Southern Rhodesia) for the year ending 31st December, 1939.* 35 pp., typescript.—Salisbury. [Summary in *Rev. appl. Ent.*, London, (A), 30, p. 47, 1942.]
7759. JACK, R. W. 1941. *Report of the Division of Entomology (Southern Rhodesia) for the year ending 31st December, 1940.* 15 pp., multigraph.—Salisbury. [Summary in *Rev. appl. Ent.*, London, (A), 30, p. 160, 1942.]
7760. JACK, R. W. 1942. *Report of the Division of Entomology (Southern Rhodesia) for the year 1941.* 19 pp. Typescript.—Salisbury. [Summary in *Rev. appl. Ent.* London, (A), 31, pp. 86-87, 1943.]

7761. JAEGER, B. 1854. *The Life of North American Insects ; Illustrated by Numerous Colored Engravings and Narratives.* 4+204 pp., 6 pls.—Providence.
7762. JAEGER, B. 1859. *The Life of North American Insects. Assisted by Henry Canfield Preston, M. D., with numerous Illustrations from Specimens in the Cabinet of the Author.* 319 pp.—New York.
7763. JAKOVLEV, L. N. 1915. Locusts in the Zmeinogorsk district the Govt. of Tomsk and methods of their control [In Russian].—*Agric. Siberia*, Tomsk, Nos. 17-18, pp. 532-535 ; and 564-566.
- . JAMESON H. R. 1950.—See BLACK, D. J. G., GETTY, J., JAMESON, H. R. and PIRIE, H. 1950.
- . JAMIESON, C. A. 1952.—See MACVICAR, R. M., BRAUN, E., GIBSON, D. R. and JAMIESON, C. A. 1952.
7764. JANNONE, G. 1947. Studie ricerche de entomologia agraria in Eritrea e in Etiopia. II. Ovide posizione, sviluppo e costumi delle prime larve di *Stomatorrhina (Idia) lunata* Fab. (Diptera, Muscidae), oofago della *Schistocerca gregaria* (Forsk.).—*Boll. Lab. Ent. agr. Portici*, Naples, 7, pp. 316-325.
- . JATZENTKOVSKY, E. V.—See YATZENTKOVH, E. V.
7765. JAYAKAR, A. S. G. 1906-1908. *Ad-Damiri's Hayât al-Hayawân (A Zoological Lexicon.) Translated from the Arabic [into English by A. S. G. JAYAKAR . . .]* Vol. 1. (1906), xxx+875 pp. ; Vol. 2, Part 1 (1908), 2+604 pp.—Bombay (D. B. Taraporevala Sons and Co.) ; London (Luzac and Co.). [Locusts in Vol. 1, pp. 407-418, and 525.] Also See under AD-DIMI.
7766. JEFFS, H. B. 1937. Emploi de l'arsenic pour la destruction des sauterelles au Canada.—*Bull. Off. int. Hyg. Publ.*, Paris, 29, (5), pp. 963-965.
7767. JENKINS, C. F. H. 1945. Entomological problems of the Ord river irrigation area.—*J. Dept. Agric. W. Aust.*, Perth, (2) 22 (2), pp. 131-145.
7768. JENKINS, C. F. H. 1950 Aerial baiting for the control of the little plague grasshopper (*Austroicetes cruciata* Sauss.).—*J. Dept. Agric. W. Aust.*, Perth, (2) 27 (2), pp. 164-170.
- . JOHNSTONE, H. F. 1946.—See RICE, R. I., JOHNSTONE, H. F. and KEARNS, C. W. 1946.
7769. JOLLY, D. W. 1952. The toxicity of DDT and BHC for domestic animals.—*Vet. Rec.*, London, 64, pp. 76-81.
7770. JONES, B. M. 1953. Activity of the incretory centres of *Locustana pardalina* during embryogenesis : Function of the prothoracic glands.—*Nature*. London, 172, p. 551.
7771. JONES, C. R. 1917. Grasshopper control.—*Bull. Colorado Agric. Expt. Sta.*, Fort Collins, No. 233, 27 pp.
7772. JONES, J. M. 1859. *The Naturalist in Bermuda. A Sketch of the Geology, Zoology and Botany of that Remarkable Group of Islands*, 12+200 pp. map.—London.
7773. JONES, J. M. 1876. *The Visitor's Guide to Bermuda, with a Sketch of its Natural History.* 156 pp.—London (Orthoptera, p. 144, by S. B. SCUDDER).

K

7774. KALMBACH, E. R. 1918. The crow and its relation to man.—*Bull. U.S. Dept. Agric.*, Washington, No. 621, 92 pp.
7775. KAPUR, A. P. and DUTTA, D. K. 1952. Studies on the bionomics of the semi-aquatic grasshopper *Gesonula punctiformis* Stål.—*Proc. Indian Sci. Congr.* 1952, Abstracts, Calcutta, Pt. 3. p. 339.
7776. KATO, M., MATSUDA, T. and YAMASITA, Z. 1952. Associative ecology of insects found in the paddy field cultivated by various planting forms.—*Sci. Rep. Tohoku Univ.*, Sendai, (4) 19, pp. 291-301.
- . KEARNS, C. W. 1946.—See RICE, R. I., JOHNSTONE, H. F. and KEARNS, C. W. 1946.
- . KEARNS, C. W. 1952.—See STERNBURG, J. and KEARNS, C. W. 1952.
7777. KELLOGG, V. L. 1892. *Common Injurious Insects of Kansas*. X+126 pp.—Lawrence.
7778. KELLOGG, V. L. 1905. *American Insects*. 7+674 pp., 13 pls.—New York (Henry Holt and Co.).
- . KELLY, E. G. 1919.—See DEAN, G. A., KELLY, E. G. and FORD, A. L. 1919.
- . KELLY, E. G. 1920.—See DEAN, G. A. and KELLY, E. G. 1920.
- . KENNEDY, J. S. 1936.—See GUNN, D. L. and KENNEDY, J. S. 1936.
7779. KENNEDY, J. S. 1949. A preliminary analysis of oviposition behaviour by *Locusta* (Orthoptera, Acrididae) in relation to moisture.—*Proc. R. ent. Soc. Lond.*, London, (A) 24 (7-9), pp. 83-89.
7780. [KENYA.] 1946. *Department of Agriculture (Kenya) Annual Report, 1945*. [1+125 pp.]—Nairobi.
7781. KEVAN, D. K. McE. 1949. Notes on East African bush locusts with special reference to *Phymateus aegrotus* (Gerstaecker, 1869). (Orth., Acrid., Pyrgomorphinae).—*Bull. ent. Res.*, London, 40 (3), pp. 359-369.
7782. KEVAN, D. K. McE. 1950. The grasshopper fauna of a small East African swamp.—*Ent. mon. Mag.*, London, 86, pp. 316-319.
7783. KEVAN, D. K. McE. 1954. A small collection of Acridoidea from the Agricultural Department, Bangkok, Thailand.—*Nat. Hist. Bull. Siam. Soc.*, Bangkok, 16, pp. 45-47.
7784. KEY, K. H. L. 1942. Investigations on the locust (grasshopper) problem [in Australia].—*J. Coun. Sci. Industr. Res. Aust.*, Melbourne, 15 (1), pp. 72-77.
7785. KHAN, M. HAROON. 1945. Driving hopper-bands of Desert Locust to the trenches.—*Indian Fmg.*, Delhi, 6 (7), pp. 296-299.
7786. KHAN, M. H. 1953. A note on the breeding of Desert Locust (*Schistocerca gregaria*) in Sind during spring 1951.—*Agric. Pakist.*, Karachi, 4, pp. 23-24.
- . KHAN, M. S. 1953.—See AHMAD, T. and KHAN, M. S. 1953..
- . KING, K. M. 1937.—See PAUL, L. C., KING, K. M. and BERG, V. L. 1937.

- . KING, K. M. 1944.—See PAUL, L. C. and KING, K. M. 1944.
7787. KIRBY, W. 1837. *Fauna Boreali-americana. Or the Zoology of the Northern Parts of British America, containing Descriptions of the Objects of Natural History, collected by John Richardson on the late Northern Land Expeditions under Command of Captain Sir John Franklin.* 4 vols. Part the fourth and last. The insects. 39+325 pp., 8 pls.—London. See also BETHUNE, C. J. S., *Insects Brit. America.*
7788. KIRBY, W. and SPENCE, W. 1818-1826. *An Introduction to Entomology, or Elements of the Natural History of Insects.* 4 vols. 3rd edition. London. 1, 24+519 pp., 3 pls., 1818. 2, 4+530 pp., 2 pls. 1818. 3, 8+732 pp., 14 pls., 1826. 4, 4+634 pp., 10 pls., 1826. (7th ed., 28+608 pp., London, 1856.)
7789. KIRBY, W. F. 1892. *Elementary Text-Book of Entomology.* 2nd Edition. 8+281 pp., 87 pls.—London (Swan Sonnenschein & Co.).
7790. KIR'YANOVA, E. S. 1950. Biology of parasitic worms (Nematoda and Gordiacea) limiting mass multiplication of insects. [In Russian.]—*2nd Ecol. Conf.*, Kiev, Part I, pp. 85-88.
7791. KLEMM, M. 1950. Wanderheuschrecke in Mitteldeutschland. [*Locusta migratoria*].—*Anz. Schädlingsk.*, Berlin, 23, pp. 6-7.
7792. KNOWLTON, G. F. 1946. Grasshoppers eaten by Utah birds.—*J. Kansas ent. Soc.*, Manhattan, 19 (2), pp. 71-72.
7793. KNOWLTON, G. F. and HARMSTON, F. C. 1940. Food habits of sparrow hawks in Utah.—*J. econ. Ent.*, Menasha, 33 (3), p. 583.
7794. KNOWLTON, G. F. and SORENSON, C. J. 1938, Utah grasshopper of 1937.—*Proc. Utah Acad. Sci.*, Provo, 15, pp. 81-87.
7795. KOBAKHIDZE, D. N. 1951. Qualitative and quantitative relations of the more important invertebrates of the Samgor steppe plains. [In Georgian, with Russian summary.]—*Trud. Zool. Inst. Acad. Sci. Georgian SSR*, Tiflis, 10, pp. 4-43.
7796. KOBAKHIDZE, D. N. 1952. On the formation of the injurious fauna of eucalyptus plantations in the Georgian SSR. [In Russian.]—*Trud. Tbilisi gos. pedagog. Inst.*, Tibilis, 9, pp. 397-401.
7797. KOBAKHIDZE, D. N. 1954. *Insect Pests of Tea Plantations in the USSR.* [In Russian.] 100 pp., 19 figs.—Moscow (Academy of Science U.S.S.R.).
7798. KÖHLER, P. 1936a. Informe de la segunda comisión exploradora —*Mem. Com. Centre. Invest. sobre Langosta*, Buenos Aires, 1934, pp. 69-95.
7799. KÖHLER, P. 1936b. Informe general. Resumen lucha expedicion No. 2.—*Com. Centr. de Invest. sobre langosta*, Buenos Aires, pp. 73-97.
7800. KÖHLER, P. 1939a. Die Bekämpfung der Argentinischen Schwärmeheuschrecken and neue Studien zur verbesserung der vernichtungs Methoden.—*Proc. 7th. Int. Cong. Ent.* 1938, Berlin, 4, pp. 3004-3012, 1 pl.

7801. KOHLER, P. 1939b. Informe de la comisi3n del oeste.—*Com. Centr. Invest. sobre Langosta*, Buenos Aires, pp. 19-91.
7802. KOKINA, E. and DOBRCHUISLOV, D. 1937. Results of investigations on the insecticidal properties of magnesium arsenite. [In Russian.]—*Plant Prot.*, Leningrad, 13, p. 97.
7803. KOLOSOV, YU. 1925. A fungus disease of locusts observed in the Southern Ural. [In Russian.]—*Bull. ent. and Phytopath. Bur. Ural Soc. nat.*, Sverdlovsk, No. 2, p. 5.
7804. KOZHANCHIKOV, I. V. 1947. On the specific resistance of the metabolism of insects to dichlorodiphenyltrichloro methylethane. [In Russian.]—*Dokl. Akad. Nauk SSSR.*, Moscow, (N.S.) 58 (2), pp. 345-348, 2 graphs.
7805. KRASNYANSKI, A. I. 1922. Bionomics and control of the Migratory Locust. [In Russian.]—*Publ. Kuban Black Sea Div. Anti-locust Org.*, Krasnodar, 20 pp.
7806. KUITERT, L. C. and CONNIN, R. V. 1953. Grasshoppers and their control.—*Bull. Fla. agric. Exp. Sta.*, Gainesville, No. 516, 30 pp.
7807. KURDJUMOV, N. V. 1913. The more important insects injurious to grain-crops in Middle and South Russian. [In Russian.]—*Agric. Expt. Sta.*, Poltava (*Dept. of Agric. and Ent.*, Poltava), 1913, 119 pp., 7 col. pls.
7808. KUZIN, B. S. 1953. Blister beetles of Kazakhstan. [In Russian.]—*Trud. Respubl. Stants. Zashch. Rast.*, Alma-Ata, 1, pp. 72-152.

L

- . LACROIX, D. S. 1938. —See MORRILL, A. W. and LACROIX, D. S. 1938.
7809. LAFON, M. 1951. Quelques documents sur l'appetit et la consommation alimentaire chez des insectes.—*Ann. Nutr.*, Paris, 5, pp. 485-504.
7810. LAGRECA, M. 1951a. Osservazioni sulla costituzione della fauna ortotterologica degli Appennini.—*Boll. Zool.*, Turin, 18, pp. 197-202.
7811. LAGRECA, M. 1951b. Influenza delle variazioni climatiche del Quarternario sul popolamento entomologico d'alta montagna.—*Boll. Zool.*, Turin, 22, pp. 489-562.
7812. LAHILIE, F. BRUCH, A. C., et. al. 1934. Campa1a invernal contra la langosta.—*Mem. Com. Contr. Invest. sobre Langosta*, Buenos Aires, 1933, pp. 3-47.
7813. LAINES, M. 1915. The most effective scientific means of combating the grasshopper.—*Rev. econ.*, Honduras, 5 (5), pp. 268-270.
7814. LAL, K. B. 1950. The fight against locusts [India].—*Agric. anim. Husb. Uttar Pradesh*, Lucknow, 1 (3), pp. 65-68.
7815. LAL, K. B. 1952. Locust control.—*Agric. anim. Husb. Uttar Pradesh*, Lucknow, 2 (3), pp. 15-19.
7816. LAMARCK, J. B. P. A. DE M. DE. 1815-1822. Histoire naturelle des animaux sans vertebres, pr3sentant les caractères g3n3raux et particuliers de ces animaux, leur distribution, leurs classes, leurs

- familles leurs genres, et la citation des principales espèces quis'y rapportent ; précédée d'une introduction offrant la détermination des caractères essentiels de l'animal, sa distinction du végétal et des autres corps naturels ; enfin l'exposition des principes fondamentaux de la zoologie. 7 vols.—Paris. (Orthoptera, vol. 4, pp. 229-266, 1817.)
- . LAMDAM, S. 1947.—See COSTA, J. J., SANTA MARÍA, H. C. and LAMDAM, S. 1947.
- 7817 LAPAZARÁN, J. C. 1922. Una campaña de langosta en Zaragoza.—*Bol. Agric. Tec. Econ.*, Madrid, **14** (163), pp. 599-608 ; (164), pp. 693-698.
7818. LAPAZARÁN, J. C. 1923a. La plaga de la langosta en la región Aragonesa.—*Bol. Soc. ent. España*, Saragossa, **6** (5-6), pp. 78-82.
7819. LAPAZARÁN, J. C. 1923b. La langosta en la región Aragonesa.—*Hoja Agric. Popular*, Barcelona, **5** (47), pp. 299-300.
7820. LARRIMER, W. H. and FORD, A. L. 1922. The daily maximum feeding period of *Melanoplus femur-rubrum*.—*Canad. Ent.*, Orillia, **6**, pp. 141-143.
- 7821 LASAROFF, A. W. 1940. The Moroccan Locust, *Doclostaurus maroccanus*, Thnb., in Bulgaria in 1939. [In Bulgarian, with a summary in German.].—*Mitt. bulg. ent. Ges.*, Sofia, **11**, pp. 65-74. Summary in *Z. Pflkrankh.*, Stuttgart, **52** (7-8), p. 424 (1942).
7822. LATASTE, F. 1892. La question du criquet voyageur signale l'an dernier dans les provinces austr. du Chili.—*Acta. Soc. Cient. Chil.*, Chili, **2**, pp. 200-209.
7823. LATREILLE, P. A. 1805. In HUMBOLDT, Alexandre de, et BONPLAND, Aime : Recueil d'observations de zcologie et d'anatomie comparée, faites dans un voyage aux tropiques dans les années 1799-1800, 1801, 1802, 1803. 8+352 pp., 30 pls.—Paris.
7824. LATREILLE, P. A. 1802-1805. Histoire naturelle, générale et particulière des crustacés et des insectes. Ouvrge faisant suite aux-oeuvres de Leclerc de Buffon et partie du cours complet d'histoire naturelle, rédige par Charles Sigisbert Sonnini de Manoncourt. 14 vols. (Orthoptera, **12**, pp. 81-164, pls. 94-95, 1804.)
7825. LATREILLE, P. A. 1806-1809. Genera crustaceorum et nsectorum. secundum ordinem naturalem in familias disposita, iconibu exemplisque plurimis explicata. 4 vols.—Parisiis et Argentoratis. (Orthoptera, **3**, pp. 78-108, 1807.)
7826. LATREILLE, P. A. 1817. (Orthoptera, **3**, pp. 365-384.). In Cuvier, Georges : Le règne animal distribué d'après son organisation, pour servir de base à l'histoire naturelle des animaux et d'introduction à l'anatomie comparée. 4 vols.—Paris.
7827. LATREILLE, P. A. 1829. In the same, 2 ed. 5 vols.—Paris. (Orthopteres, **5**, pp. 167-189.)
7828. LATREILLE, P. A. 1831. In the same, American edition, translated from the French, with notes and additions by Henry M'Murtrie. 4 vols.—New York. (Orthoptera, **4**, pp. 1-18.)
7829. LATREILLE, P. A. 1849. In the same, Édition accompagnée de planches gravées, représentant les types de tous les genres, les

- caracteres distinctifs des divers groupes et les modifications de structure sur lesquelles repose cette classification, par une réunion de disciples de Cuvier, MM. Audouin, Blanchard, Deshayes, Alcide D'Orbigny, Doyère, Duges, Duvernoy, Laurillard, Milne-Edwards, Roulin et Valenciennes. Insects. Tome 3 (Orthoptères, pp. 1-26, pls. 76-86).—Paris.
7830. LEA, A. 1949. Laboratory tests with baits containing benzene hexachloride against locust hoppers.—*Sci. Bull. Dept. Agric. S. Afr.*, Pretoria, No. 300 (Locust Res. Ser. No. 11), 16 pp.
7831. LEACH, W. E. 1816. Entomology. In New Edinburgh Encyclopaedia (American Ed.), 8, pp. 646-758.—Philadelphia.
7832. LEACH, W. E. 1830. Entomology. In New Edinburgh Encyclopaedia, 9, pp. 57-172.—Edinburgh.
7833. LE BARON, W. 1872. Second Annual Report on the Noxious Insects of the State of Illinois. pp. 1-4 ; and 97-167.—Springfield. Also as *App. to Trans. Ill. State hort. Soc.*, 1871, Chicago, 1872. [The pagination is in continuation of the First Report.]
7834. LE BERRE, J. R. 1951a. Hétérogénéité biologique des populations du criquet migrateur des Landes : *Locusta migratoria gallica* Rem. (phasis transiens).—*Rev. Zool. agric.*, Bordeaux, No. 10-12 [1950], pp. 57-62.
7835. LE PELLEY, R. 1952. Note on damage to grazing by grasshoppers in Kenya.—*Bull. ent. Res.*, London, 43, pp. 79-81.
7836. LEWIN, C. J. 1941. *Annual Report for the year 1940*. 8 pp.—Lusaka (N. Rhodesia Dept. Agric.).
- L'HÉRITIER, A. 1914.—See SERGENT, E. and L'HÉRITIER, A. 1914.
7837. LIBONATI, V. J. 1928. *La langosta, su historia en la Argentina*. 159 pp., 30 maps, 2 pls., 42 figs.—Buenos Aires (Casartelli y Fiol.).
7838. LIEBERMANN, J. 1933a. La lucha contra el azote de los agricultores.—*Pampa Argentina*, Buenos Aires, June 1933, pp. 12-13 ; and 70.
7839. LIEBERMANN, J. 1933b. Palabras definitivas sobre el problema de la langosta.—*Pampa Argentina*, Buenos Aires, Oct. 1933, pp. 14 ; and 73.
7840. LIEBERMANN, J. 1933c. Un año de langosta en la República.—*Pampa Argentina*, Buenos Aires, 7 (76), pp. 1-2 ; and 31.
7841. LIEBERMANN, J. 1942. Las langostas de Chile.—*Cartill. Minist. Agric.*, Chile, Santiago, No. 48, 30 pp.
7842. LIEBERMANN, J. 1945. Los Acridoideos de Chile.—*Rev. chil. Hist. nat.*, Santiago, 48, pp. 161-316.
7843. LIEBERMANN, J. 1946. Langostas y tucuras.—*Pampa Argentina*, Buenos Aires, 20 (232), pp. 1 and 3.
7844. LIEBERMANN, J. 1947a. La generación estival de *Schistocerca cancellata* Serville, la langosta migradora sudamericana.—*Not. Minist. Agric.*, Buenos Aires, pp. 203-204.
7845. LIEBERMANN, J. 1947b. Sobre la generación otoñal de la langosta.—*Rev. B.A.P.*, Buenos Aires, 30 (360), pp. 12-13 and 42-44.

7846. LIEBERMANN, J. 1948. Revisión del género *Eurotettix* Bruner 1906, con la descripción de una nueva especie Argentina *Eurotettix lilloanus*.—*Acta zool. Lilloana*, Tucuman, 5, pp. 39-46, 1 pl.
7847. LIEBERMANN, J. 1949a. Los Acridios de la zona subandina de Neuquen, Rio Negro y chubut (Orthop., Acrid.).—*Rev. Inst., nac. Invest. Cienc. nat.*, Buenos Aires, (Zool.) 1, pp. 127-166, 1 col. pl.
7848. LIEBERMANN, J. 1949b. Sobre una colección de acridios argentinos del Nat. Museum de Viena.—*Min. Agr.*, Buenos Aires, (A) 5 (46), 5 pp.
7849. LIEBERMANN, J. 1950a. Síntesis de *Sinipta* Stål, 1873, con descripción de una nueva especie Argentina, *S. hectorisperonii* (Orth. Acrid. Acridinae).—*Publ. Inst. Sanid. veg. (Minist. Agric. Argent.)*, Buenos Aires, (A) 6 (52), pp. 3-16.
7850. LIEBERMANN, J. 1950b. Sobre una colección de Acridoideos neotropicales del Dr. Richard Ebner, con la descripción del alotipo de *Diponathus bilineatus* Rehn (Orthoptera, Acridoidea).—*Rev. brasil. Biol.*, Rio de Janeiro, 10, pp. 133-139.
7851. LIEBERMANN, J. 1950c. Los acridios de San Juan.—*Publ. Inst. Sanid. veg.*, Buenos Aires, (A) 6 (50), 16 pp.
7852. LIEBERMANN, J. 1951a. Una nueva especie de *Sinipta* Stål, de Bolivia con algunas observaciones acerca de la ubicación de género dentro de la subfamilie Acridinae (Orth., Caelifera, Acrid.).—*Ann. Soc. ci. Argent.*, Santa Fe, 152, pp. 3-17.
7853. LIEBERMANN, J. 1951b. Tres notas Ortopterológicas sudamericanas.—*Rev. Soc. ent. argent.*, Buenos Aires, 15, pp. 121-140.
7854. LIEBERMANN, J. 1951c. Sobre una nueva forma de oviposición en un Acridios sudamericano.—*Rev. Invest. agric.*, Buenos Aires, 5 [1951], pp. 235-280, 6 pls.
7855. LIEBERMANN, J. 1954. Notes de Ortopterología chilena, con la description de una nueva especie de *Philippiacris* Lieb., ph. *wagenknechti*.—*Rev. Univ.*, Santiago, 39, pp. 173-184, 1 pl.
7856. LIMA, A. D. F., D'ARAUJO E SILVA, A. G., REINIGER, C. H., ALVES, J. and DA M. RIBEIRO (Jr.), A. 1947-1951. Locusts of southern Brazil.—*Dept. Nac. Prod. Veg. (Div. Déf. Sanit. Veg.)*, Bol. Fitossanit., Brazil, 4, pp. 1-113.
- . LINK, K. P. 1945.—See ALLEN, T. C., LINK, K. P., IKAWA, M. and BRUNN, L. K. 1945c.
- . LINNAEUS, CARL V. C.—See LINNÉ, C. VON.
7857. LINNÉ, C. VON: 1754. *Museum Adolphi Frederici regis Suecorum etc. in quo animalia rariora imprimis et exotica : quadrupedia, aves, amphibia, pisces, insecta, vermes, describuntur et determinantur latine et sueice cum iconibus*. 96 pp., 33 pls.—Holmiae.
7858. LINNÉ, C. VON. 1758-1759. *Systema naturae per regna tria naturae, secundum classes, ordines, genera, species, cum characteribus differentiis, synonymis, locis. Editio decima reformata*. 2 tom.—Holmiae. (Orthoptera, 1, pp. 423-433, 1758.)
7859. LINNÉ, C. VON. 1763. *Centuria insectorum rariorum*. 6+32 pp.—Upsaliae. (Also in *Amoen. Acad.*, Holmiae, 6, pp. 384-415, 1763.)

7860. LINNÉ, C. VON. 1764. *Museum S. R. M. Ludovicae Ulrica reginae etc., in quo animalia rariora, exotica, imprimis insecta et conchylia describuntur et determinantur, prodromi instar editum*. 8+722. pp. —Holmiae.
7861. LINNÉ, C. VON. 1766-1767. *Systema naturae*. (Editio duodecima reformata.) 3 tom.—Holmae. (Orthoptera, 2, pp. 686-703, 1767.)
7862. LINNÉ, C. VON. 1767-1770. *Systema naturae*. (Editio decima tertia ad editionem duodecimam reformatam Holmiensem.) 3 tom. in 4 vols.—Vindobonae. (Orthoptera, 1, pp. 686-703, 1767.)
- . LINNÉ, C. VON.—See also GMELIN, J. F., GCEZE, J. A. E., MÜLLER, P. L. S., STAL, C., *Res. Orth.*, TURTON, W., and VILLERS, C. DE.
7863. LINTNER, J. A. 1882-1896. [Annual] Report on the Injurious and other Insects of the State of New York. No. 1, 22+384 pp. Albany, 1882. No. 4, 240 pp. Albany, 1888. (Also in *Rept. N. Y. State Mus. nat. Hist.*, 12, pp. 123-358, Albany, 1888.) No. 6, pp. 97+203+errata. Albany 1890. No. 7, pp. 197-404+errata, 2 pls. Albany, 1891. (Also in *Rept. N. Y. State Mus. nat. Hist.*, 44, pp. 197-405, Albany, 1895.) No. 11, pp. 85-325, 16 pls., Albany, 1896. (Also in *Rept. N. Y. State Mus. nat. Hist.*, 49, pp. 85-325, 16 pls., Albany, 1896.)
7864. LISTER, C. A. 1953. Aldrin for locust control. Jordan campaign, 1953.—*Shell agric. Bull.*, London, No. A.D.B. 246, 9 pp., mimeograph.
7865. LIZER, C. 1919. Expedición al Chaco Boliviano, con objeto de hacer investigaciones acerca de la zona permanente de refugio invernal de la *Schistocerca paranensis* (langosta voladora).—*Bull. Minist. Agric. Nac.*, Buenos Aires, 24(1).
7866. LIZER Y TRELLES, C. A. 1935a. Resultado de las investigaciones realizadas en la República Argentina en las supuestas zonas de refugio invernal en los años 1933 y 1934.—*Conf. Int. Expertos en la Lucha contra la Langosta*, Montevideo, 1934, pp. 41-53.
7867. LIZER Y TRELLES, C. A. 1935b. Comportamiento de la langosta en cautividad.—*Conf. Int. Expertos en la Lucha contra la Langosta*, Montevideo, 1934, pp. 67-71.
7868. LIZER Y TRELLES, C. A. 1935c. El arsenito de sodio (fluido defensa agrícola) para destruir la langosta.—*Conf. Int. Expertos en la Lucha contra la Lengosta*, Montevideo, 1934, pp. 75-78.
7869. LOCKWOOD, S. 1939. The grasshopper outbreak in 1939.—*Bull. Dept. Agric. Calif.*, Sacramento, 28 (6), pp. 393-411.
7870. LOGOTHETIS, C. 1950. Paruebas preliminares del control de la langosta con aldrin.—*Suelo tico*, San Jose, 4, pp. 382-392.
7871. LOPÉZ, A. 1917. Comentarios estadísticos.—*1st Congr. Mejoras Nac.*, Bogotá, pp. 123-134.
7872. LOPÉZ, A. 1919. La langosta.—*Rev. Agric.*, Bogotá, 5 (7), pp. 419-422.
7873. LOTTERMOSER, W. 1952. Aufnahme und Analyse von Insektenlauten.—*Akust. Beih.*, Zurich, Nos. 1-2, pp. 66-71.

7874. LOWNE, B. T. 1878. On the modifications of the simple and compound eyes of insects.—*Philos. Trans. R. Soc. Lond.*, London, **169**, pp. 577-602, 3 pls.
7875. LOWNE, B. T. 1884. On the compound vision and the morphology of the eye in insects.—*Trans. Linn. Soc. Lond. (Zool.)*, London, **2**, pp. 389-420, 4 pls.
7876. LU, C. C. 1951-52. Chromosome-study in the spermatogenesis of *Oedaleus infernalis*.—*Peking nat. Hist. Bull.*, Peking, **20**, pp. 117-123, 2 pls.
7877. LUGGER, O. 1889a. Notes on the Rocky Mountain Locust in Ottertail county, Minnesota, in 1888.—*Rept. Agric. exp. Sta. Minn.*, St. Paul, pp. 305-349.
7878. LUGGER, O. 1889b. The Rocky Mountain Locust in Ottertail county, Minnesota, in 1889.—*Bull. agric. exp. Sta. Minn.*, St. Anthony Park, No. 8, pp. 17-36.
7879. LUGGER, O. 1898. *The Orthoptera of Minnesota. (Third Annual Report of the Entomologist of the State Experiment Station of the University of Minnesota to the Governor, for the Year 1897.)* 11+296 pp., 187 figs.—St. Paul.
7880. LUH, P. W. and WOO, F. C. 1947. A general investigation of the locust outbreaks in China during the year 1946. [In Chinese.]—*Spec. Publ. nat. agric. Res. Bull.*, Nanking, No. 31, 1+16 pp., 1 map., 2 fldg. tables.
7881. LUNAU, C. 1950. Zur Heuschreckenfauna Schleswig-Holsteins.—*Naturwiss. Ver. Schleswig-Holstein Schr.*, Berlin, **24**, (2), pp. 51-56.
- . LYLE, C. 1938.—See HUTCHINS, R. E. and LYLE, C. 1938.
- . LYLE, C. 1940.—See GUICE, O. T. and LYLE, C. 1940.

M

7882. MACKIE, D. B. 1913. The Philippine Locust (*Pachytylus* [Locusta] *migratorioides* R. & F.) : Natural influences affecting its propagation and distribution.—*Philippine Agric. Rev.*, Manila, **6**(11), pp. 538-547.
7883. MACKIE, D. B. 1937. Entomological Service.—*Bull. Dept. Agric. Calif.*, Sacramento, **25** (4) [1936], pp. 455-481.
7884. MACKIE, J. R. 1944. *Annual report on the Agricultural Department (Nigeria) for the year 1943.* 34 pp.—Lagos.
7885. MACLEOD, D. M. 1954. Investigations on the genera *Beauveria* Vuill. and *Tritirachium* Limber.—*Canad. J. Bot.*, Ottawa, **32**, pp. 818-890, 3 pls.
7886. MACVICAR, R. M., BRAUN, F., GIBSON, D. R. and JAMIESON, C. A. 1952. Studies in red clover seed production.—*Sci. Agric.* Ottawa, **32** (2), pp. 67-80.
887. MAGEE, W. J. and GAINES, J. C. 1950. Toxicity of phosphorus compounds to various insects.—*J. econ. Ent.*, Menasha, **43** (3), pp. 281-286.

7888. [MALAYA.] 1915. Summarising report on locust work for the Second Quarter—April 1st to June 30th 1915.—*Agric. Bull. F. M. S.*, Kuala Lumpur, 4 (1), pp. 13-20, 2 tables.
7889. MALDONADO BRUZZONE, R. 1948. Informe sobre una gira al oriente boliviano en procura de datos sobre la formación de mangas de *Schistocerca cancellata* (Serville).—[*Publ.*] *Inst. Sanid. veg.*, Buenos Aires, A4 (38), pp. 22., 1 fldg. map.
7890. MALENOTTI, E. 1921. La lotta contro le cavallette nel Bacino del Fucino nel 1920.—*Nuovi. Ann. Minist. Agric.*, Rome, 1 (1), pp. 63-84.
7891. MALENOTTI, E. 1923. Le cavallette e la tccria delle fasi.—*Il Coltivatore*, Castle Monferrato, No. 28, 6 pp.
7892. MANCHERON, P. 1914. La lutte contre les criquets dans la commune mixte du Djebel Nador.—*Rev. Agric. Vitic. Afr. Nord.*, Algiers, 3 (114), pp. 460-461.
7893. MARCHIONATTO, J. B. 1935a. Los enemigos naturales de la langosta. (Aplicación del "Hongo Verde").—*Conf. Int. Expertos en la Lucha contra la Langosta*, Montevideo, 1934, pp. 63-66.
7894. MARCHIONATTO, J. B. 1935b. Las emulsiones de jabón en la lucha contra la langosta mosquita y saltona.—*Conf. Int. Expertos en la Lucha contra la Langosta*, Montevideo, 1934, pp. 78-81.
7895. MARCHIONATTO, J. B. 1944. Nota sobre "Muscardina Verde" (*Metarrhizium anisopliae*).—*Rev. Chil. Hist. nat.*, Santiago, 46-47, pp. 12-14.
7896. MARCHIONATTO, J. B. 1946a. Resultados de los estudios realizados por la Comisión Central de Investigaciones sobre la Langosta 1933-1937).—*Conf. Int. Expertos en la Lucha contra la Langosta*, Montevideo, pp. 28-32.
- , MARCHIONATTO, J. B. 1946b.—See PORTILLO, G. A. and MARCHIONATTO, J. B. 1946.
7897. MARCO MOLL, H. 1953. Application de la orceina y de la 8-oxiquinoleina en el estudio de los cromosomas animales.—*Rev. Acad. Cienc. Zaragoza*, (2) 8 (2), pp. 109-111, 5 pls.
7898. MARINI, T. L. 1934. Informe de la Comisión exploradora. No. 6.—*Com. Centr. de Invest. sobre la Langosta*, Buenos Aires, pp. 163-169.
7899. MARLATT, C. L. 1889. A report on the lesser migratory locust.—*Insect Life*, Washington, 2, pp. 66-70.
7900. MARRAS, F. M. 1918. Lotta contro le cavallette mediante il *Coccobacillus acridiorum*.—*Minist. Agric.*, Rome, 1918, 1 p.
- , MARSHALL, D. S. 1951.—See GYRISCO, G. G. and MARSHALL, D. S. 1951.
7901. MARTEN, J. 1883. Report on the Rocky Mountain Locust in 1880.—*Rept. U. S. ent. Comm.*, Washington, 3, App., pp. 50-54.
7902. MARTIN, E. M. 1935. Marcha y costumbres de la langosta en Guatemala.—*Conf. Int. Expertos en la Lucha Contra la Langosta*, Montevideo, 1934, pp. 121-122.

- . MATSUDA, T. 1952.—See KATO, M., MATSUDA, T. and YAMASHITA, Z. 1952.
7903. MAZAEV, L. D. 1948. Some details on the part played by *Pastor roseus* (L.) in fight against locusts in Macedonia. [In Serbian, with English and Russian summary.] *Larus*, Zagreb, 2.
7904. M'CLUNG, G. I. 1900. The spermatocyte divisions of the Acrididae.—*Kans. Univ. Quart.*, Lawrence, 9, pp. 73-100, 3 pls.
- . MCNEIL, E. H. 1952.—See BURGESS, L. E., MCNEIL, E. H. and ROLFE, D. T. 1952.
7905. MCNEILL, J. 1887. *Dissosteira carolina*.—*Canad. Ent.*, London (Ont.), 19, pp. 58-59.
7906. MCNEILL, J. 1891. A list of the Orthoptera of Illinois.—*Psyche*, Cambridge (Mass.), 7, pp. 3-9 ; 21-27 ; 62-66 ; 73-78.
7907. MCNEILL, J. 1897. Revision of the Truxalinae of North America, —*Proc. Davenport Acad. nat. Sci.*, Davenport, 6, pp. 179-274, 6 pls.
7908. MCNEILL, J. 1899a. Notes on Arkansas Truxalinae.—*Canad. Ent.*, London (Ont.), 31, pp. 53-55.
7909. MCNEILL, J. 1899b. Arkansas Melanopli.—*Psyche*, Cambridge, 7, pp. 332-334 ; 343-346 ; and 366-371.
7910. MEGALOV, V. A. 1954. *Vasili Fedorovich Boldyrev*. (In Russian.) 26 pp., 1 photo.—Moscow.
7911. MELIS, A. 1949. Elenco delle principali specie di insetti che hanno prodotto infestazioni degne di nota in Italia durante l'anno 1949.—*Redia*, Florence, 34 (Appendix), pp. xix-xxii.
7912. MELIS, A. 1951. Elenco delle principali specie animali che hanno prodotto infestazioni degne di nota in Italia durante l'anno 1950.—*Redia*, Florence, 36 (Appendix), pp. iii-xviii.
7913. MELIS, A. 1952. Elenco delle principali specie animali che hanno prodotto infestazioni degne di nota in Italia durante l'anno 1951.—*Redia*, Florence, 37 (Appendix), pp. xvii-xxxiv.
7914. MELIS, A. 1953. Elenco delle principali specie animali che hanno prodotto infestazioni degne di nota in Italia durante l'anno 1952.—*Redia*, Florence, 38 (Appendix), pp. xxvii-xxxiii.
7915. MELIS, A. 1954. Elenco delle principali specie animali che hanno prodotto infestazioni degne di nota in Italia durante l'anno 1953.—*Redia*, Florence, 39 (Appendix), pp. iii-x.
7916. MENDIZÁBAL, M. and MORALES AGACINO, E. 1945. Algunos datos sobre una invasión ocasional de *Schistocerca gregaria* (Forsk.) en la provincia de Almería.—*Bol. Pat. y Ag. Ent. agric.*, Madrid, 13 [1944], pp. 377-384, 1 fldg. graph.
7917. MERRILL, D. E. 1916. Grasshopper control.—*Bull. Agric. Expt Sta. New Mexico*, Las Cruces, 102, 32 pp.
7918. MICHEL BACHER, A. E., SMITH, R. F. and SMITH, G. L. 1945. Control of *Lygus* bugs on alfalfa seed crop with D.D.T. Pp. 4-6 In Investigation with D.D.T. in California, 1944. 2+ 33 pp.—Berkeley.

7919. MIERS COX, N. 1890. La langosta.—*Bol. Soc. nac. Agric.*, Santiago, **22**, pp. 767-768.
7920. MILLIKEN, F. B. 1920. Grasshoppers and their control on sugar beets and truck crops.—*Fmr. Bull. U.S. Dept. Agric.*, Washington, No. 691, 20 pp.
7921. MILLS, H. B. 1941. The effect of tillage on grasshopper eggs.—*J. econ. Ent.*, Menasha, **34** (4), p. 589.
7922. MILLS, H. B., CALLENBACH, J. A. and REINHARDT, J. F. 1945. Montana insect pests, 1943 and 1944. Thirtieth report of the State Entomologist.—*Bull. Montana agric. exp. Sta.*, Bozeman, No. 425, 30 pp.
- MINOT, C. S. 1878.—See PACKARD, A. S. and MINOT, C. S. 1878
7923. MINOT, C. S. 1881. Histology of the locust (*Caloptenus*) and the cricket (*Anabrus*).—*Rept. U.S. ent. Ccm.m.*, Washington, **2**, pp. 183-222, 7 pls.
7924. MISHCHENKO, L. L. 1950. New species of locusts (Saltatoria-Orthoptera, Acrididae) from Middle Asia and Kashmir. (In Paraconophyma and Conophyma.)—*Dokl. Akad. Nauk U.S.S.R.*, (*C.R. Acad. Sci. U.S.S.R.*), Moscow, (N.S.) **72**, pp. 213-215.
- MISTSHENKO, L.—See MISHCHENKO, L. L.
7925. MITCHENER, A. V. 1921. The Manitoba grasshopper campaign of 1920.—*51st Ann. Rept. Ent. Soc. Ontario, 1920*, Toronto, **1921**, pp. 16-19.
7926. MITCHENER, A. V. 1937. A note on the grasshopper situation in Manitoba in 1936.—*Rep. ent. Soc. Ont.*, Toronto, **67** [1936], pp. 68-69.
7927. MITCHENER, A. V. 1938. A note on the grasshopper situation in 1937.—*Rep. ent. Soc. Ont.*, Toronto, **68** [1937], p. 70.
7928. MOFFAT, J. A., 1895.—*Acridium americanum*.—*Canad. Ent.*, London (Ont.), **27**, p. 52.
- MORALES AGACINO, E. 1945.—See MENDIZÁBAL, M. and MORALES AGACINO, E. 1945.
7929. MORALES AGACINO, E. 1946. Presencia accidental de la langosta del desierto, *Schistocerca gregaria* (Forsk.), en el. noroeste de la Peninsula Iberica.—*Bol. Pat. veg. Ent. agric.*, Madrid, **14**, pp. 385-392. 1 map, 1 graph.
7930. MOREIRA, C. 1925. "*Schistocerca paranensis*".—*Bol. Minist. Agric. Com. e Ind.*, Rio de Janeiro, (2) **14** (2), pp. 189-190.
7931. MOREIRA, C. 1931. Brazil : Principal pests of crops.—*Int. Bull. Plant Prot.*, Rome, **5**, pp. 157-158.
7932. MORENO MÁRQUEZ, V. 1940. Seis fórmulas de cebo contra la langosta —*Bol. Pat. veg. Ent. agric.*, Madrid, **9**, pp. 154-161. Also as *Trab. (Ser. Fitopat.) Inst. nac. Invest. agron.* No. 27. Also as *Publ. Serv. Lucha contra la Langosta*, No. 6.
7933. MORENO MÁRQUEZ, V. 1945. Zonas permanentes del angosta, en España : boceto ecológico de la serena.—*Bol. Pat. veg. Ent. agric.*, Madrid, **13** [1944], pp. 335-376, 1 fldg. map.

7934. MORENO MÁRQUEZ, V. 1946. Orientaciones para la localizacion de focos gregarigenos del *Dociostaurus maroccanus*.—*Bol. Pat. veg. Ent. agric.*, Madrid, **14**, pp. 237-252.
7935. MORETON, B. D. 1950. *Guide to British Insects. An Aid to Identification*. vii+188 pp.—London (Macmillan & Co. Ltd.).
7936. MORITZ, L. 1920a. *Locusta migratoria* L., and its control. [In Russian.].—*Contol. Agric. Pests (Stavropol. Govt. Div.)*, Stavropol, **1920**, 11 pp.
7937. MORITZ, L. 1920b. Field pests and their control. [In Russian.].—*Control Agric. Pests (Stavropol Govt. Div.)*, Stavropol, **1920**, 18 pp.
7938. MORITZ L. 1922. Report on the control of *Locusta migratoria* L. in the Stavropol Government during 1917-1921.—*Proc. 3rd All-Russian Entomo-Phytopath Meeting in Petrograd, 18th-25th, Dec. 1921*, Petrograd, pp. 104-114.
7939. (MOROCCO.) 1920. La lutte contre les insectes.—*La Progres Agric. et. Vitic.*, Montpellier, **74** (26), pp. 614-615.
7940. MORRILL, A. W. 1918. Experiments with grasshopper baits with incidental observations on the habits and destructiveness of the Differential Grasshopper (*Melanoplus differentialis*).—*J. econ. Ent.*, Concord, **11** (2), pp. 175-186.
7941. MORRILL, A. W. and LACROIX, D. S. 1938. Report on the insect investigation for the 1937 session.—*Bull. Conn. agric. Exp. Sta.* New Haven, No. 410, pp. 444-449.
7942. MORRIS, H. M. 1934. Annual report of the Entomologist for 1933.—*Rep. Dep. Agric. Cyprus, 1933*, Nicosia, pp. 43-47.
7943. MORRIS, H. M. 1937. Annual report of the Entomologist for 1936.—*Rep. Dep. Agric. Cyprus, 1936*, Nicosia, pp. 40-49.
7944. MORRIS, H. M. 1938. Annual report of the Entomologist for 1937.—*Rep. Dep. Agric. Cyprus, 1937*, Nicosia, pp. 42-47.
7945. MORRIS, H. M. 1939. Annual report of the Entomologist for 1938.—*Rep. Dep. Agric. Cyprus, 1938*, Nicosia, repr. 5 pp.
7946. MORSE, A. P. 1893a. A melanistic locust.—*Psyche*, Cambridge (Mass.), **6**, pp. 401-402.
7947. MORSE, A. P. 1893b. A new species of *Stenobothrus* from Connecticut, with remarks on other New England species.—*Psyche*, Cambridge (Mass.), **6**, pp. 477-479.
7948. MORSE, A. P. 1894a. Wing-length in some New England Acrididae.—*Psyche*, Cambridge (Mass.), **7**, pp. 13-14 ; and 53-55.
7949. MORSE, A. P. 1894b. A preliminary list of the Acrididae of New England.—*Psyche*, Cambridge (Mass.), **7**, pp. 102-108.
7950. MORSE, A. P. 1894c. *Shpharagemon* : A study of the New England species.—*Proc. Bost. Soc. nat. Hist.*, Boston, **26**, pp. 220-240.
7951. MORSE, A. P. 1894-1898. Notes on the Acrididae of New England I. (Tettginae).—*Psyche*, Cambridge (Mass.), **7**, pp. 147-154, 163-167, 1 pl., 1894. II. Tryxalinae. *Ibid.*, **7**, pp. 323-327, 342-344-382-384, 402-403, 407-411, 419-422, 443-445, 1 pl., 1896. III.

- Oedipodinae. *Ibid.*, 8, pp. 6-8, 35-37, 50-51, 64-66, 80-82, 87-89, 111-114, 1 pl., 1897. IV Acridiinae. *Ibid.*, 8, pp. 247-248, 255-260, 269-273, 279-282, 292-296, 1 pl., 1889. [This reference replaces Reference No. 3792 on p. 296 of Roonwal's main Bibliographia Acrididiorum, 1961].
7952. MORSE, A. P. 1895. New North American Tettiginae. I.—*J. N. Y. ent. Soc.*, New York, 3, pp. 14-16. II, *Ibid.*, 3, pp. 107-109, 1895.
7953. MORSE, A. P. 1899a. The distribution of the New England locusts.—*Psyche*, Cambridge (Mass.), 8, pp. 315-323, 1 pl.
7954. MORSE, A. P. 1899b. New North American Tettiginae. III.—*J. N. Y. ent. Soc.*, New York, 7, pp. 198-201.
7955. MOSSERI, V. M. 1915. Les sauterelles en Egypte.—*Bull. l'Union des Agric. d'Egypte*, , Cairo, No. 110, pp. 4-29.
7956. MUKERJI, S. and HARDAS, M. G. [1953]. Studies on the histopathological changes of the alimentary canal of second instar hoppers of *Schistocerca gregaria*, Forsk., as a result of ingestion of various synthetic insecticides.—*Proc. 41st Indian Sci. Congr. Hyderabad (Deccan)*, Calcutta, pt. 3, Abstracts, p. 259.
7957. MÜLLER, P. L. S. 1773-1776. *Des Ritters Carl von Linné vollständiges Natursystem nach der zwölften lateinischen Ausgabe and nach Anleitung des holländischen Houttuynischen Werks mit einer ausführlichen Erklärung*. 6 Theilen in 9 vols.—Nurnberg. (Orthoptera, 5 Theil, pp. 396-446, 1774.)
7958. MÜNGOMERY, R. W. 1945. Report of the Division of Entomology and Pathology.—*45th Rep. Bur. Sug. Exp. Sta. Qd.*, 1944-45, Brishbane, 1945, pp. 20-22.
7959. MÜNRO, J. A. 1939a. Grasshopper eggs and their larval predators show high degree of survival.—*Bi-m. Bull. N. Dak. agric. Exp. Sta.*, Fargo, 1 (3), pp. 3-4.
7960. MÜNRO, J. A. 1939b. Tillage operations as affecting grasshoppers.—*Bi-m. Bull. N. Dak. agric. Exp. Sta.*, Fargo, 2 (1) pp. 3-5.
- . MÜNRO, J. A. 1940.—See BRENTZEL, W. E. and MÜNRO, J. A. 1940.
7961. MÜNRO, J. A. and TELFORD, H. S. 1942. Grasshopper control aided by tillage methods.—*Bull. N. Dak. agric. Exp. Sta.*, Fargo, No. 309, 14 pp.

N

7962. NAGY, B. 1953. [The Saltatoria fauna of Batorliget.] [In Magyar.] *In* Szekessy, V (Ed.) [The Batorliget nature reserve] Budapest, Akademiai Kiado, pp. 187-193.
7963. NASUROV, K. S. 1925. Anti-locust measures in the Tcheliabinsk region in 1924. [In Russian.]—*Bull. Ent. Phytopath. Bur. Ural Soc. nat.*, Sverdlovsk, No. 3, pp. 9-10.
7964. NAVARRO, L. 1926. *Plagas de Langosta*. 62 pp., 12 figs.—Madrid.
- . NEEDHAM, J. G. 1898-1899.—See COMSTOCK, J. H. and NEEDHAM, J. G. 1898-1899.

7965. NEETHLING, J. B. 1952. Aldrin, endrin, isodrin and BHC for the control of the Brown Swarm Locust (*Locustana pardalina*).—*Shell agric. Bull.*, London, No. ADB 231, 4 pp., mimeograph.
7966. NEWMAN, L. H. 1950. Crickets and grasshoppers.—*Nat. Lover*, London, 7, pp. 120-123.
7967. NIKOLSKII, V V 1922a. The Asiatic Locust, *L. migratoria* L. [In Russian.]—*Petrograd Sta. Plant Prot. Pests*, Petrograd, 23 pp.
7968. NIKOLSKII, V V 1922b. The locust danger. [In Russian.]—*Cotton Indust.*, Moscow, 1 (5-6), pp. 16-19.
7969. NIKOLSKII, V V 1923. On the gravestone of the cotton industry as a result of locust danger, on the locust bacillus and foreign entomologists. [In Russian.]—*Cotton Indust.*, Moscow, 2 (3-4), pp. 37-41.
7970. NIKOLSKII, V V 1924a. A discovery in the bionomics of locusts. [In Russian.]—*Cotton Indust.*, Moscow, 3 (3-4), pp. 71-78.
7971. NIKOLSKII, V V 1924b. A new method of locust control. [In Russian.]—*Cotton Indust.*, Moscow, 3 (9-10), pp. 77-88.
- . NODDER, R. P. 1790-1813.—See SHAW, G. and NODDER, R. P. 1790-1813.
7972. NORRIS, F. DE LA MARE. 1913.—Locust work in Selangor; Progress report for October.—*Agric. Bull. F. M. S.*, Kuala Lumpur, 2 (5), pp. 124-125.
7973. NORRIS, F. DE LA MARE. 1914. Locust work in December.—*Agric. Bull. F. M. S.*, Kuala Lumpur, 2 (7), p. 186.
7974. NORRIS, F. DE LA MARE. 1915. Report on locust work—January, February, March, 1915.—*Agric. Bull. F. M. S.*, Kuala Lumpur, 3 (8), pp. 291-293.
- . NORTON, L.B. 1948.—See SUN, YUN-PEI., RAWLINS, and W A. NORTON, L.B. 1948.
7975. NOVÁK, V J. A. 1954. Growth of the corpora allata during post-embryonal development in insects.—*Mém. Soc. zool. tchécosl.*, Prague, 18, pp. 98-133.
7976. NOVITSKII, V YA. 1953. The Asiatic Locust in the delta of Amu-Darya and methods of its control. [In Russian.]—*Nukus* (Karakalpak State Publication Office), 36 pp.
7977. NOWELL, W. and URICH, F. W 1922. Plant diseases and pests.—*Bull. Dept. Agric. Trinidad & Tobago*, Port of Spain, 19 (4), pp. 169-187.
7978. NOWICKI, S. 1937. Nouveaux courants dans l'ecologie des insectes nuisibles. [In Polish.]—*Las Polski*, Warsaw, 12 (1), pp. 24-37.

O

7979. OGLOBLIN, A. 1942. El problema de los acridios en la Republica Agrentina.—*2nd Conf. Int. Agric.*, Mexico, 14 pp. (mimeogr.)
7980. OGLOBLIN, A. 1946. Sobre las posibilidades de la lucha biológica contra los acridios.—*Conf. Int. Expertos de la Lucha Contra la Langosta*, Montevideo, 1934, pp. 33-38.

7981. OGLOBLIN, A. 1950. Preparación de los cebos tóxicos [for grasshoppers and locusts].—*Rev. Bolsa Com.*, Rasorio, **38** (931), pp. 11-14.
7982. O'KANE, W. C. 1942. Results with benzene hexachloride.—*J. econ. Ent.*, Menasha, **40** (1), pp. 133-134.
7983. OKEN [OCKENFUSS], L. 1813-1826. *Lehrbuch der Naturgeschichte*. 3 vols. in 6.—Leipzig. (Orthoptera, **3**, pt. 1, pp. 444-453, 1815.)
7984. OLALQUIAGA FAURÁ, G. 1946. Apostillas al conocimiento de las langostas.—*Simiente*, Santiago, **16**, pp. 6-15.
7985. OMURA, T. 1952. On the sexual dimorphism of the spermatids in four species of the Orthoptera. [In Japanese, with English summary.]—*Coord. Comm. Res. Gen.*, Tokyo, **3**, pp. 171-177.
7986. OSBORN, H. 1884. Notes on locust parasites.—*Bull. Iowa agric. Coll. Dept. Ent.*, Cedar Rapids, **2**, pp. 83-86.
7987. OSBORN, H. 1891. Report of a trip to Kansas to investigate reported damages from grasshoppers.—*Insect Life*, Washington, **4**, pp. 49-56. Also in *Rept. ent. Soc. Ont.*, Toronto, **22**, pp. 69-74, 1891; and in *Bull. Div. Ent. U.S. Dept. Agric.*, Washington, **27**, pp. 58-64, 1892.
7988. OSBORN, H. 1892. On the Orthopterous fauna of Iowa.—*Proc. Iowa Acad. Sci.*, Des Moines, **1** (2), pp. 116-120.
7989. OSBORN, H. and GOSSARD, H. A. 1891a. Report on entomological work.—*Bull. Iowa exp. Sta.*, Des Moines, **14**, pp. 166-180.
7990. OSBORN, H. and GOSSARD, H. A. 1891b. Reports on injurious insects.—*Bull. Iowa exp. Sta.*, Des Moines, **15**, pp. 255-273.
7991. OTANES, F. Q. 1941. Locust outbreak probable between 1941 and 1944.—*Naric.*, Manila, **1** (4), pp. 281-286.
7992. OTANES, F. Q. 1953. Tobacco pests and diseases in the Philippines and their control.—*Pl. Ind. Dig.*, Manila, **16**, pp. 14-27, mimeograph. Also in *Proc. 2nd Tobacco Conf. 1953*, pp. 19-38, (published by the Bureau of Plant Industry).

P

7993. PACKARD, A. S. 1869. *Guide to the Study of Insects and a Treatise on those Injurious and Beneficial to Crops. For the use of Colleges, Farmschools, and Agriculturists*. 8+702 pp.—Salem. (Orthoptera, pp. 556-577.) The later editions, practically the same for the Orthoptera, are not here recorded.
7994. PACKARD, A. S. 1873. *Our Common Insects*. 225 pp.—Boston (Eastes & Lauriat).
7995. PACKARD, A. S. 1878. Metamorphoses [of locusts].—*1st Rept. U. S. Ent. Comm.*, Washington, pp. 279-284, 3 pls.
7996. PACKARD, A. S. 1881. Insects injurious to forest and shade trees.—*Bull. U. S. Ent. Comm.*, Washington, **7**, 275 pp.
7997. PACKARD, A. S. 1883. The systematic position of the Orthoptera in relation to other orders of insects.—*3rd Rept. U. S. Ent. Comm.*, Washington, pp. 286-304.

7998. PACKARD, A. S. 1889. *Guide to the Study of Insects*. 9th Edition. 12+715 pp., 15 pls.—New York (Henry Holt & Co.).
7999. PACKARD, A. S. 1899. *Entomology for Beginners*. 3rd Edition. 16+367 pp.—New York (Henry Holt & Co.).
8000. PACKARD, A. S. and MINOT, C. S. 1878. Anatomy and embryology [of the locust].—*1st Rept. U. S. Ent. Comm.*, Washington, pp. 257-279.
8001. PAINTER, H. R., FLUKE, C. L. and GRANOVSKY, A. A. 1925. Attractant and poisoned bait experiments on the Pellucid Grasshopper.—*J. econ. Ent.*, Geneva (N. Y.), 18 (6), pp. 818-823.
- . PAINTER, R. H. 1942.—See WILBUR, D. A., FRITZ, R. F. and PAINTER, R. H. 1942.
8002. PAINTER, R. H., BRYSON, H. R. and WILEUR, D. A. 1954. Insects that attack wheat.—*Bull. Kansas agric. Exp. Sta.*, Manhattan, No. 367, 47 pp.
8003. PAIROA, E. H. 1944. Estudios sobre un Pentatómido útil, e *Apateticus (Podisus) nigro-limbatus* Porter.—*Agricultura téc.* Santiago, 4 (1), pp. 26-37.
8004. [PAKISTAN.] 1950. Food and agriculture in Pakistan.—*Agric. Pakist.*, Karachi, 1, pp. 257, 268.
8005. [PAKISTAN.] 1953a. News about ourselves. [The Department of Agriculture.]—*Agric. Pakist.*, Karachi, 2 [1951], pp. 151-152.
8006. [PAKISTAN.] 1953b. News about ourselves. (The Department of Agriculture.)—*Agric. Pakist.*, Karachi, 3 [1952], pp. 171-186.
8007. PALISOT DE BEAUVOIS, A. M. F. J. 1805-1821. *Insects recueillis en Afrique et en Amérique dans les royaumes d'Oware à Saint-Domingue et dans les États-unis pendant les années 1786-1797*. 2t. p., 16+276 pp., 90 pls.—Paris.
8008. PALLAS, P. S. 1767-1779. *Speicelegia zoologica quibus noaev imprimis et obscurae animalium species iconibus, descriptionibus atque commentariis illustrantur*. Tom. 1, fasc. 1-10.—Berolin Tom. 2, fasc. 11-13. 1776-1779. (Tom. 1 is also entitled : *Speicelegia zoologica*, Tomus 1. *Continens quadrupedum, avium, amphibiorum, piscium, insectorum, molluscorum, aliorumque marinorum fasciculos decem.*). (Orthoptera, fasc. 9, 87 pp., 5 pls. 1772).
8009. PANZER, G. W. F. 1785-1788. *Rob Drurys Abblildungen und-Beschreibungen exotischen Insecten mit fein illuminierten Kupfertafeln. Aus dem english übersetzt mit völlstandiger Synonymie und erläutern den Bemerkungen versehen*.—Nürnberg.
8010. PARIS, P. 1937. Pullulation d'acridiens en un point de la vallée de la Saône.—*Bull. Sci. Bourgogne*, Dijon, 6 [1936], pp. 87-89.
- . PARKER, J. R. 1918.—See COOLEY, R. A., PARKER, J. R. and SEAMANS, H. L. 1918.
- . PARKER, J. R. 1924.—See RUGGLES, A. G. and PARKER, J. R. 1924.
8011. PARKER, J. R. 1947. Comments and suggestions on locust control in Argentina.—*U. S. Dep. Agric. Bur. Ent.* Washington, No. B-734, 14 pp. (mimeogr.).

8012. PARKER, J. R. 1950. Grasshopper control with some of the newer insecticides.—*Proc. amer. Assoc. econ. Ent. (North Centr. States Br.)*, 5, p. 54.
8013. PARSONS, F. W. 1889. Another note on the retarded development of *Caloptenus spretus* at Manhattan, Kans.—*Insect Life*, Washington, 1, p. 380.
8014. PASQUIER, R. 1952. Quelques propositions de terminologie acridologique. Première note. Terminologie concernant le comportement et l' aspect des Acrididae grégariaptes.—*Ann. Inst. agric. Algér.*, Algiers, 6 (6), pp. 1-16.
8015. PAUL, L. C. 1940. Appraisal of grasshopper control methods in Saskatchewan.—*Iowa St. Coll. J. Sci.*, Ames, 15 (1), pp. 95-97.
8016. PAUL, L. C. 1942. A dry bait for grasshopper control.—*Canad. Ent.*, Guelph, 74 (5), pp. 77-78.
8017. PAUL, L. C. and KING, K. M. 1944. Flour, a substitute for bran in grasshopper bait.—*Sci. Agric.*, Ottawa, 24 (7), pp. 332-340.
8018. PAUL, L. C., KING, K. M. and BERG, V. L. 1937. Summary of Saskatchewan grasshopper infestations, autumn 1937. and ratings of probable outbreaks 1938.—*Saskatoon Leaflet. Dep. Agric. Canada*, Ottawa, No. 52, 95 pp., 2 col. fldg. pls., multigraph.
8019. PEIRCE, J. D. 1891. Rocky Mountain Locust in North Dakota.—*Insect Life*, Washington, 4, pp. 79-80.
8020. PERTY, J. A. M. 1830-1834. *De insectorum in America meridionali habitantium vitae genere, moribus ac distributione geographica observationes nonnullae*. 44 pp. Appended to *Delectus animalium articulorum quae in itinere per Brasilium annis 1817-1820 jussu et auspiciis Maximiliani Joseph I. Bavariae regis augustissime peracto collegerunt Dr. Jean Baptiste de Spix et Dr. Charles Frederic Philippe de Martius*. Degessit, descripsit, pingenda curavit Dr. Maximilianus Perty, praefatus est et edidit C. F. Ph. de Martius.—*Monachii*.
8021. PHILLIPS, J. B. 1877. The Rocky Mountain Locust, *Caloptenus spretus*.—*Stat. Minn.*, 1876. *Ann. Rept. Comm. Stat.*, 1876, St. Paul, 8, pp. 88-112.
8022. PICKARD, B. C. 1954. *Grasshoppers and Crickets of Great Britain and the Channel Island*. 131 pp.—London.
8023. PIERS, H. 1916-1917. The Orthoptera (cockroaches, locusts, grasshoppers and crickets) of Nova Scotia ; with descriptions of the species and notes on their occurrence and habits.—*Proc. & Trans. Nova Scot. Inst. Sci.*—Halifax, 14 (3), pp. 201-354, 4 pls.
- PIRIE, H. 1950.—See BLACK, D. J. G., GETTY, J., JAMESON, H. R. and PIRIE, H. 1950.
8024. PLOTNIKOV, V. I. 1914. The question of the control of *Locusta migratoria* in the province of Semiretchensk (Turkestan). [In Russian.]—*Agric. Turkestan*, Tashkent, No. 10, pp. 900-912.
8025. PLOTNIKOV, V. I. 1921. What is necessary in order to increase our knowledge of locusts ? [In Russian.]—*Bull. 3rd All-Russian Ent. Phytopath. Meeting in Petrograd (18th-25th Dec. 1921)*, Petrograd, No. 7, pp. 12-13.

8026. PLOTNIKOV, V. I. 1923. *Dociostaurus maroccanus* Thunb., *Caliptamus italicus* L. and *Locusta migratoria* L. [In Russian.]—*Turkapravada*, Tashkent, 2 (1-2), pp. 3-4 and 6-7.
8027. PLOTNIKOV, V. I. 1924. The locust prospects of 1923 in Turkestan. [In Russian.]—*Cotton Indust.*, Moscow, 2 (3-4), pp. 34-36.
8028. POLOZHENTSEV, P. A. 1954. Helminthids (nematodes and gordiids). Review of the current literature. [In Russian.]—*Turd. gel'mint. Lab.*, Moscow, 7, pp. 282-303.
8029. PONIATOVSKY, S. 1913. On the question of the fight against *Stauronotus maroccanus* Thb. in Bokhara.—*Agric. Turk.*, Tashkent, No. 2, pp. 109-114.
8030. POPENOE, E. A. 1891. Notes on the recent outbreak of *Disosteira longipennis*.—*Insect Life*, Washington, 4, p. 41. Also in *Rept. ent. Soc. Ont.*, Toronto, 22, p. 63, 1891.
8031. POPHAM, W. L. and REYNOLDS, D. 1950. Grasshoppers' another season.—*U. S. Dept. Agric. Off. Inform.*, Washington, 3 pp.
8032. PORTER, C. E. 1917a. La última invasión de langosta en Argentinae.—*An. Zool. Apl.*, Santiago de Chile, 4 (1), pp. 19-24.
8033. PORTER, C. E. 1917b. Notas de acarologia. Un parásito de la *Schistocerca paranensis* Burm.—*An. Zool. Apl.*, Santiago de Chile, 4 (2), p. 30.
8034. PORTILLO, G. A. 1937. Posibilidades que ofrece el avión en la República Argentina en la lucha contra la langosta.—*5th Conf. Nac. Aeron. (Minist. Agric. Nac. Dir. Déf. Agric.)*, Buenos Aires, 59 pp.
8035. PORTILLO, G. A. 1939. Campaña aérea antiacridiana realizada en base al proyecto estudiado y aprobado por la.—*5th Conf. Nac. Aeron.*, (Minist. Agric. Nac. Dir. Déf. Agric.), Buenos Aires, 27 pp.
8036. PORTILLO, G. A. 1946a. Observación aérea para el control de las mangas de langosta.—*Conf. Int. Expertos en la Lucha contra la Langosta*, Montevideo, pp. 68-72.
8037. PORTILLO, G. A. 1946b. Empleo de aviones y su coordinación con los métodos de lucha terrestre en la guerra química contra la langosta.—*Conf. Int. Expertos en la Lucha contra la Langosta*, Montevideo, pp. 52-85.
8038. PORTILLO, G. A. 1946c. Empleo del helicóptero en la lucha contra la langosta.—*Conf. Int. Expertos en la Lucha contra la Langosta*, Montevideo, pp. 74-77.
8039. PORTILLO, G. A. 1946d. Eficiencia que debe esperarse de la coordinación del trabajo diurno y nocturno sobre una manga.—*Conf. Int. Expertos en la Lucha contra la Langosta*, Montevideo, pp. 106-108.
8040. PORTILLO, G. A. 1946e. Instrucciones generales para los pilotos que intervienen en la campaña antiacridiana.—*Conf. Int. Expertos en la Lucha contra la Langosta*, Montevideo, pp. 155-161.
8041. PORTILLO, G. A. 1947. *Instrucciones para el servicio de helicópteros y para los pilotos que intervienen en la campaña antiacridiana*. 19 pp.—Buenos Aires (Minist. Agric.).

8042. PORTILLO, G. A. and MARCHIONATTO, J. B. 1946. Aspectos fundamentales de la organización del trabajo en la lucha contra la langosta.—*Conf. Int. Expertos en la Lucha contra la Langosta*, Montevideo, pp. 177-183.
8043. PORTSCHINSKY, J. 1894. *Ueber die den Sasten und Gräsern in den Gouvernements Perm, Tobolsk und Orenburg schädliche Heuschrecken*. 131 pp.—St. Petersburg.
8044. PORTSCHINSKY, J. 1895. *Die Parasiten der schädlichen Feldheuschrecken Russlands*. 32 pp.—St. Petersburg.
8045. —Deleted.
8046. PRADHAN, S. and BINDRA, O. S. 1953. Comparative resistance, surface area and cuticular components of different instars of locust (*Schistocerca gregaria* Forskal).—*Proc. Indian Sci. Congr. Hyderabad Deccan 1953*, Calcutta, 4, Pt. 3, Abstracts, pp. 259-260.
8047. PRATT, H. C. 1914. Locust spraying experiments.—*Agric. Bull. F. M. S.* Kuala Lumpur, 2 (10), pp. 249-255.
8048. PRATT, H. C. and SOUTH, F. W. 1913. Progress report on locust work since June, 1913.—*Agric. Bull. F. M. S.*, Kuala Lumpur, 2 (3), pp. 53-59.
8049. PRATT, H.C. and SOUTH, S.W. 1914. Progress report on locust work to November 30th. 1913.—*Agric. Bull. F.M.S.*, Kuala Lumpur, 2(6), pp. 152-156.
8050. PREDTECHENSKII, S.A. 1925. The locust fauna of the Moksha River basin in Central Russia. [In Russian.]—*Déf d' Plantes*, Leningrad, 2(3), pp. 153-154.
8051. PREDTECHENSKII, S.A. 1928. *Chorthippus volgensis* Sp. n.) (Orthoptera, Acridodea) aus dem Gebiet der unteren Wolga. [In Russian.]—*Rev. russe Ent.*, Moscow, 22(3-4), pp. 229-230.
8052. PREDTECHENSKII, S.A. 1936. The geographical distribution and zones of economic importance of the Moroccan Locust (*Dociostaurus moroccanus* Thnb.) in USSR.—*Summary Sci. Res. Work. Inst. Plant Prot. (Lenin Acad. agric. Sci., 1935)*, Leningrad, pp. 16-20.
8053. PRUTHI, H.S. 1939. Ecology and control of insects.—*Indian J. Ent.*, New Delhi, 1(3), pp. 87-91.
8054. PUNGUR, J. 1918. Orthoptera (*In Fauna regni Hungariae*).—Budapest.
8055. PUTNAM, L.G. 1949. Insecticides for grasshopper control.—*Proc. Publ. Dept. Agric. Canada, Div. Ent.*, Ottawa, No. 73.
8056. PYLNOV, E. 1917. Contribution to the Acridiid and Locustid fauna of Northern Mongolia. [In Russian.]—*Rev. Russ. Ent.* Petrograd, 16 (3-4), pp. 275-284.
- PYNE, C. K. 1954. —See RAY-CHAUDRI, S. P. and PYNE, C. K. 1954.

Q

NIL

R

8057. RABELER, W. 1952. Die Tiergesellschaft hannoverscher Tal-fettwiesen (*Arrhenatheretum elatioris*).—*Mitt. flor.-soziol. Arbeitsgem.*, Stolzenau/Waser, (N.F.) Hft 3, pp. 130-140.
8058. RABELER, W. 1953. Die Tiergesellschaft eines nitrophilen Kriechrasens in Nordwestdeutschland.—*Mitt. flor.-soziol. Arbeitsgem.*, Stolzenau/Weser, (N.F.) Hft 4, pp. 166-171.
8059. RAEVSKÍĭ, V. 1932. On the organisation of the control of adult Moroccan Locust with poisoned bran mash. [In Russian.]—*Bull. Plant. Prot.*, Leningrad, 3, pp. 5-12.
8060. RAFES P.M. 1931. Technical methods and organisation of the control of the Migratory or Asiatic Locust (*Locusta migratoria* L.) [In Russian.]—*Bull. N. Caucas. Agric. For. Pests*, Rostov-on-Don, 4, 73 pp.
8061. RAMÍREZ, R. 1917. *Medias contre la plaga de la langosta*. 60 pp.—Mexico (Dirección Agric.)
8062. RANJIFO, O. 1896. La langosta en el Sur (Crónica Agrícola).—*Bol. Soc. Nac. Agric.*, Santiago, 27, pp. 214-215.
8063. RATHVON, S.S. 1869-1870. Rocky Mountain grasshopper cannot live in Pennsylvania.—*Amer. Ent.*, St. Louis, 2, p. 88. [Signed S.S.R.]
- . RAWLINS, W.A. 1948.—See SUN, YUN-PEI., RAWLINS, W.A. and NORTON, L.B. 1948.
8064. RAY-CHAUDRI, S.P. and PYNE, C.K. [1953]. The frequency of induced dicentric bridges in meiosis in the grasshopper, *Gesonía punctifrons* in relation to the intensity of radiation. *Proc. 41st Indian Sci. Congr. (Hyderabad (Deccan) Calcutta, Pt. 3, Abstracts*, p. 167.
8065. REDTENBACKER, J. 1893. *Ueber Wanderheuschrecke*. 24 pp.—Budweis (Abdr. Jahresb. deutsch. k.k. Staats-realsch. Budweis).
8066. REED, E.C. 1892. La langosta en Chile.—*Bol. Soc. Nac. Agric.*, Santiago, 23, pp. 596-597.
8067. REED (JR.), H.M. 1950. The lubber locust (*Romalea microptera*).—*Nat. Hist.*, New York, 59, p. 475.
8068. REHN, J.A.G. 1900a. *Melanoplus differentialis* in New Jersey and Pennsylvania.—*Canad. Ent.*, London (Ont.), 32, p. 28.
8069. REHN, J.A.G. 1900b. Notes on Mexican Orthoptera, with descriptions of new species.—*Trans. Amer. ent. Soc.*, Philadelphia, 27, pp. 85-99.
- . REHN, J.A.G. [1919-1928.]—See ANONYMOUS, 1929.
8070. REHN, J.A.G. 1919a. A study of the Orthopterous genus *Merimiria* Stål.—*Proc. Acad. nat. Sci. Philad.*, Philadelphia 71, pp. 55-120, 3 pls.
8071. REHN, J.A.G. 1919b. Descriptions of new and critical notes upon previously known forms of North American Oedipodinae (Orthoptera, Acrididae). First Paper.—*Trans. Amer. ent. Soc.* Philadelphia, 45, pp. 229-255, 3 pls.

8072. REHN, J.A.G. 1920. Records and descriptions of Brazilian Orthoptera.—*Proc. Acad. nat. Sci. Philad.*, Philadelphia, **72**, pp. 214-293, 2 pls.
8073. REHN, J.A.G. 1921a. Collecting grasshoppers in the southern Rockies and the plains.—*Ann. Rept. Acad. nat. Sci. Philad. for 1921*, Philadelphia, pp. 13-23.
8074. REHN, J.A.G. 1921b. Descriptions of new and critical note upon previously known forms of North American Oedipodina (Orthoptera, Acrididae). Second Paper.—*Trans. Amer. ent. Soc.*, Philadelphia, **47**, pp. 171-197, 2 pls.
8075. REHN, J.A.G. 1923. North American Acrididae (Orthoptera). Paper 3. A study of the Ligurotettigi.—*Trans. Amer. ent. Soc.*, Philadelphia, **49**, pp. 43-92, 2 pls.
8076. REHN, J.A.G. 1927. On new and certain previously known American genera of the Acridinae with specific comments and descriptions (Orthoptera, Acrididae).—*Trans. Amer. ent. Soc.*, Philadelphia, **53**, pp. 213-240, 1 pl.
8077. REHN, J.A.G. 1928. On the relationship of certain new on previously known genera of the Acridine group Chrysochraontes (Orthoptera, Acrididae). —*Proc. Acad. nat. Sci. Philad.*, Philadelphia, **80**, pp. 189-205, 2 pls.
8078. REHN, J.A.G. and REHN, J.W.H. 1936. On new or redefined genera of Nearctic Melanopli (Orthoptera : Acrididae).—*Trans. Amer. ent. Soc. Philad.*, Philadelphia, **62**, pp. 1-30, 2 pls.
8079. REHN, J.A.G. and REHN, J.W.H. 1939. Comments on *Dendrotettix hesperus* Hebard.—*Trans. Amer. ent. Soc.*, Philadelphia, **65**, pp. 88-89.
- . REHN, J.W.H. 1936.—See REHN, J.A.G. and REHN, J.W.H. 1936.
- . REHN, J.W.H. 1939.—See REHN, J.A.G. and REHN, J.W.H. 1939.
- . REINHARDT, J.F. 1945.—See MILLS, H.B., CALLENBACH, J.A. and REINHARDT, J.F. 1945.
- . REINIGER, C.H. 1947-1951.—See LIMA, A.D.F., D'ARAÚJO SILVA, A.G., REINIGER, C.H., ALVES, J. and DA. M. RIBEIRO (JR.), A. 1947-1951.
8080. RÉTHLY, A. 1925. Les calamités naturelles en Hongrie de 930 à 1876.—*Mat. Étude d' Calamités*, Geneva, **1** (4), pp. 373-378 ; and **2** (5), pp. 77-78.
- . REYNOLDS, D. 1950.—See POPHAM, W.L. and REYNOLDS, D. 1950.
8081. [RHODESIA, SOUTHERN.] 1924. Locust invasion of Southern Rhodesia.—*Rhod. agric. J.*, Salisbury, **21**(2), pp. 190-192.
8082. [RHODESIA, SOUTH AFRICA.] 1938. A poison bait for young locust hoppers.—*Rhod. agric. J.*, Salisbury, **35** (2), pp. 134-138.
8083. [RHODESIA, SOUTH AFRICA.] 1939. Use of locust bait. Some amendments to previous suggestions.—*Rhod. agric. J.*, Salisbury, **36**(3), pp. 236-237.
8084. RICCI, I. and VERNIA, R.L. 1950. First results of locust control in the province.—*Romagna Agr. Zootec.*, Ravenna, **35**(14), p.2.

8085. RICE, R.I., JOHNSTONE, H.F. and KEARNS, C.W. 1946. A simple exhaust aerosol or spray generator for dispersing insecticide solutions.—*J. econ. Ent.*, Menasha, 39(5), pp. 652-658.
- . RILEY, C.V. 1869.—See WALSH, B.D. and RILEY, C.V. 1869.
8086. RILEY, C.V. 1869-1877. Annual Report of the Noxious, Beneficial and other Insects of the State of Missouri. 1, 180+7 pp., 2 pls. 1869. 2, 136+6 pp., 1870. 5, 160+8 pp. 1873. 6, 169+12 pp., 1874. 7, 8+196+4 pp., map., 1875. 8, 7+185+5 pp., 1876. 9, 7+129+5 pp., 1877. All publ. in Jefferson City. (Also see General Index to these Reports, C.V. RILEY, 1881, *infra*.)
8087. RILEY, C.V. 1877. *The Locust Plague in the United States ; Being more particularly a Treatise on the Rocky Mountain Locust or so-called Grasshopper, as it occurs east of the Rocky Mountains, with practical recommendations for its destruction.* 236 pp., 3 pls.—Chicago.
8088. RILEY, C.V. 1881. General index and supplement to the nine reports on the insects of Missouri.—*Bull. U.S. ent. Comm.*, Washington, 6, 178 pp.
8089. RILEY, C.V. 1888a. Injury by the Rocky Mountain Locust.—*Insect Life*, Washington, 1, pp. 30-31.
8090. RILEY, C.V. 1888b. Injury from non-migratory locusts in Michigan.—*Insect Life*, Washington, 1, pp. 86-87.
8091. RILEY, C.V. 1889. Two local outbursts of locusts.—*Insect Life*, Washington, 2, p. 27.
8092. RILEY, C.V. 1891a. Destructive locusts. A popular consideration of a few of the more injurious locusts (or "grasshoppers") of the United States, together with the best means of destroying them.—*Bull. Div. Ent. U.S. Dept. Agric.*, Washington, 25, 62 pp., 12 pls., map.
8093. RILEY, C.V. 1891b. Locust ravages of the present year.—*Insect Life*, Washington, 3, p. 438.
8094. RILEY, C.V. 1891c. Non-migratory locust devastations in Nevada.—*Insect Life*, Washington, 4, pp. 144-145.
8095. RILEY, C.V. 1892a. The locust or grasshopper outlook.—*Insect Life*, Washington, 4, pp. 321-323.
8096. RILEY, C.V. 1892b. Destructive locusts reported.—*Insect Life*, Washington, 4, p. 401.
8097. RILEY, C.V. 1893. The genus *Dendrotettix*.—*Insect Life*, Washington, 5, pp. 254-256.
8098. RITCHIE, A.H. 1936. Report of the Entomologist, 1935.—*Rep. Dep. Agric. Tanganyika, 1935*, Dar-es-Salaam, pp. 95-103.
8099. ROBBIE, W.A. 1946. Use of calcium cyanide solutions in HCN toxicity experiments with insects.—*J. econ. Ent.*, Menasha, 39 (3), pp. 400-402.
8100. ROCKWOOD, L.P. 1950. Entomogenous fungi of the family Entomophthoraceae in the Pacific Northwest.—*J. econ. Ent.*, Menasha, 43(5), pp. 704-707.

8101. RODENDORF, B.B. 1928. Flies of the family Sacrophagidae, parasites of Acrididae. [In Russian.]—*Pub. Uzbek. Sta. Prot. Plants*, Tashkent. No. 14, 64 pp.
8202. RODRIGUEZ, L. 1942. La plaga de langostas en la Provincia de Imbabura.—*Bol. Dep. Agric. Ecuador*, Quito, No. 14, 18 pp.
8103. RODRIGUEZ, T. 1893. A propósito del folleto del señor Edwyn Reed "La Langosta en Chile"—*Bol. Soc. Nac. Agric.*, Santiago, 24, pp. 263-266.
- . ROLFE, D.T. 1952.—See BURGESS, L.E., McNEIL, E.H. and ROLFE, D.T. 1952.
8104. RONEY, J.N. 1950. Grasshopper control in Arizona ranges.—*Arizona agric. Coll. Ext. Folder*, Phoenix, 62, 4 pp.
8105. RORER, J.B. 1915. Report by the Mycologist on the inoculation of locusts with *Coccobacillus acridiorum*.—*Bull. Dept. Agric. Trinidad and Tobago*, Port of Spain, 14(6), pp. 197-198.
8106. ROSBACO, U.F. 1949. Maices amargos.—*IDIA*, Buenos Aires, 2(24), p. 24.
8107. ROSBACO, U.F. 1951. Consideraciones sobre maices "amargos" con especial referencia a su cultivo en la provincia de Entre Rios.—*IDIA*, Buenos Aires, 4(46), pp. 1-13, 1 map, 4 photos.
- . ROSSI, E.R. 1947.—See STAJANO, C.B. and ROSSI, E.R. 1947.
8108. ROURAUD, E. 1953. Diapauses secondaires et diapauses substitutives dans Revolution de certain insects.—*C. R. Acad. Sci.*, Paris, 236, pp. 2457-2459.
8109. ROVIROSA, E. 1912. *La langosta o chapulin de peste. El mejor metodo experimentado para extinguirlo*. (2nd ed.) 13 pp.—Mexico.
8110. RUBY, J. 1921a. Latitudo contre les sauterelles dans les Bouches-du-Rhône.—*Progres Agric. & Vitic.*, Montpellier, 75 (11), pp. 254-259.
8111. RUBY, J. 1921b. La lutte contre les sauterelles dans les Bouches-du-Rhône.—*Progres Agric. & Vitic.*, Montpellier, 76 (45), pp. 441-446.
8112. RUBY, J. 1922. La lutte contre les sauterelles dans les Bouches-du-Rhône.—*Vie Agric. et. Rur.*, Paris, 20(17), p. 292.
8113. RUFFINELLI, A. and CARBONELL, C.S. 1954. Segunda lista de insectos y otros artrópodos de importancia económica en el Uruguay.—*Rev. Asoc. Ing. agron.*, Montevideo, No. 94[1953], pp. 33-82.
8114. RUGGLES, A.G. and PARKER, J. R. 1924. Kill grasshoppers with poisoned bran mash.—*Circ. Minnesota Univ. Agric. Extens. Div.*, St. Paul (Minn.), 17, 4 pp.

S

8115. SACHAROV, N.L. 1913a. Asiatic locusts in the lower part of the Volga, and the fight against them. [In Russian.]—*Orchard, Market-Garden and Bachza*, pp. 436-440, and 559-563.

8116. SACHAROV, N.L. 1913b. The campaign against locusts in the govt. of Astrakhan in 1913 and desirable organisation in future. [In Russian.]—*Work 1st All-Russian Cong. econ. Ent.*, Kiev, pp. 118-122.
8117. SAEZ, F.A. 1941a. Efectos de la centrifugación sobre las células sexuales de *Schistocerca paranensis*.—*Proc. 7th Int. Genel. Congr.* (Edinburgh, 1939), Edinburgh.
8118. SAEZ, F.A. 1941b. Producción experimental de alteraciones en los cromosomas por la acción de la gravedad en *Schistocerca paranensis*.—*1st Reun. Soc. Argent. Agrot.*, Buenos Aires, pp. 61-62.
8119. SAEZ, F.A. 1947. Hibracas estructurales (inversiones) en *Schistocerca*.—*Com. Soc. Biol.*, Montevideo.
8120. SAEZ, F.A. 1952. Differentiation of meiotic heterochromatin and euchromatin by microspectrophotometric techniques. (Abs.)—*Anat. Rec.*, Philadelphia, 113, p. 571.
- . SAKHAROV, N.L.—See SACHAROV, N.L.
- 8121.—Deleted.
- . SANTA MARÍA, H.C. 1947.—See COSTA, J.J., SANTA MARIA, H.C. and LAMDAM, S. 1947.
8122. SANTORO DE CROUZEL, I. 1944 First instar larva of *Acridiophaga caridei* (Brethes) (Dipt. Sacrophagidae).—*Proc. ent. Soc. Wash.*, Washington, D.C., 46 (9), pp. 239-246.
8123. SAUSSURE, H. DE. 1861. Études sur quelques Orthoptères du Musée de Genève nouveaux ou imparfaitement connus.—*Ann. Soc. Ent. France*, Paris, (4) 1, pp. 469-494, 2 pls.
8124. SAUSSURE, H. DE. 1872. [=1872-1879] *Études sur les insectes Orthoptères*. 6+533 pp., 8 pls.—Paris. [1872-1879]. (Mission scientifique au Mexique et dans l'Amérique centrale. Recherches zoologiques. Sixième patrie, première section, livr. 1, pp. 1-132, pls. 1-4, 1870 ; 2, pp. 133-292, pls. 5-6, 1872 ; 3, pp. 293-516, pls. 7-8, 1874 ; 4, pp. (1-6), 517-533, 1879.
8125. SAUSSURE, H. DE. 1892. Orthoptera centrali americana.—*Soc. ent.*, Zurich, Zurich, 7, pp. 1-1124.
8126. SAY, T. 1824-1828. *American Entomology, or Descriptions of the Insects of North America; Illustrated by Colored Figures from Original Drawings Executed from Nature*. 3 vols. Philadelphia. 1, t. p., pp. 1-8, (1-112), pls. 1-18, 1824 ; *2, pp. (1-142), pls. 19-36, 1825 ; 3, pp. (1-138), pls. 37-54, 1828. To which is added : A glossary to Say's Entomology, 38 pp. Philadelphia, 1825. (Complete writings, 1, pp. 23-24 ; 1-160 ; pls. 1-54)
8127. SAY, T. 1837. Oeuvres entomologiques de Th. Say... contenant l'entomologie américaine, les mémoires insérés dans le Journal de l'Académie des Sciences Naturelles de Philadelphia

*A first fascicle was issued in 1817, containing t. p., pp. 1-10 (1-22), 6 pls. ; the plates being those of vol. 1 afterwards numbered 1 4, 7, 10, 14, 18, but sometimes with changed nomenclature. It contained no Orthoptera (Note by S. H. Scudder, 1901. *Alphab. Index N. Amer. Orthop.*, p. 381).

- dans les Transactions de la Société Philosophique d'Amerique, dans le Journal de Boston, etc., etc., Recueillies et traduites par M.A. Gory. Livr. 1-4., pp. 1-320, pl. 1.—Paris.
8128. SCHANG, P.J. 1934. Algunas experiencias sobrela acción tóxica del paraiso (*Melia azadarach* L.)—*Rev. Med. Vet.*, Buenos Aires, 16, pp. 10-25.
8129. SCHERBINOVSKIĬ, N.S. 1952. *Desert Locust, Schistocerca. Problem of the Protection of the Southern Territories of the U.S.S.R. from the invasions of Schistocerca.* 416 pp., 142 figs. (including figd. maps).—Moscow (State Publ. Agric. Literature).
8130. SCHIUMA, R. 1946. Empleo de cebos tóxicos desecados para la destrucción de la langosta (*Schistocerca cancellata* Serv.).—*Conf. Int. Expertos en la Lucha contra la Langosta*, Montevideo, pp. 118-119.
8131. SCHOLL, E.E. 1914. *Grasshoppers and Their Control.* (Circular). 6 pp.—Austin (Texas Dept. Agric.).
8132. SCHWANWITSCH, B.S. 1949. *A Course of General Entomology* [In Russian.] 900 pp.—Moscow and Leningrad.
8133. SCUDDER, S.H. 1862. Materials for a monograph of the North American Orthoptera, including a catalogue of the known New England species.—*Boston J. nat. Hist.*, Boston, 7, pp. 409-480.
8134. SCUDDER, S.H. 1868. [A chalciditan parasite of Oedipoda.]—*Proc. Bost. Soc. nat. Hist.*, Boston, 12, p. 99. Also in *Ent. Notes*, Boston, 2, p. 1, 1869.
8135. SCUDDER, S.H. 1875a. *Spharagemon*—a genus of Oedipodidae ; with a revision of the species.—*Proc. Bost. Soc. nat. Hist.*, Boston, 17, pp. 467-471. Also in *Ent. Notes*, Boston, 4, pp. 66-70, 1875.
8136. SCUDDER, S.H. 1875b. Revision of two American genera of Oedipodidae.—*Proc. Bost. Soc. nat. Hist.*, Boston, 17, pp. 478-485. Also in *Ent. Notes*, Boston, 4, pp. 77-84, 1876.
8137. SCUDDER, S.H. 1875c. A century of Orthoptera. Decade II.—*Proc. Bost. Soc. nat. Hist.*, Boston, 17, pp. 454-462. Also in *Ent. Notes*, Boston, 4, pp. 57-65.
8138. SCUDDER, S.H. 1876a. A century of Orthoptera. Decade V.—*Proc. Bost. Soc. nat. Hist.*, Boston, 18, pp. 251-257. Also in *Ent. Notes*, Boston, 5, pp. 6-12.
8139. SCUDDER, S.H. 1876b. A century of Orthoptera. Decade VI.—*Proc. Bost. Soc. nat. Hist.*, Boston, 18, pp. 257-264. Also in *Ent. Notes*, Boston, 5, pp. 12-19.
8140. SCUDDER, S.H. 1879. A century of Orthoptera. Decade X.—*Proc. Bost. Soc. nat. Hist.*, Boston, 20, pp. 87-95.
8141. SCUDDER, S.H. 1890. Some genera of Oedipodidae rescued from the Tryxalidae.—*Psyche*, Cambridge, 5, pp. 431-442.
8142. SCUDDER, S.H. 1893a. Malformations in embryo *Dissosteira*.—*Psyche*, Cambridge, 6, p. 406.
8143. SCUDDER, S.H. 1893b. Galapagan genus *Halmenus*.—*Bull. Mus. Comp. Zool.*, Cambridge (Mass.), 25, p. 17.

8144. SCUDDER, S.H. 1896. The Rocky Mountain Locust and its allies in Canada.—*Rept. ent. Soc. Ont.*, Toronto, 26, pp. 62-66.
8145. SCUDDER, S.H. 1897a. The species of the genus *Melanoplus*.—*Proc. Amer. phil. Soc.*, Philadelphia, 36, pp. 5-35.
8146. SCUDDER, S.H. 1897b. Revision of the Orthopteran group *Melanopli* (Acridiidae) with special reference to North American form.—*Proc. U. S. nation. Mus.*, Washington, 20, pp. 1-4+1-421, 26 pls.
8147. SCUDDER, S.H. 1897c. *Guide to the Genera and Classification of the North American Orthoptera found North of Mexico*. 89 pp.—Cambridge (Mass.).
8148. SCUDDER, S.H. 1897d. The genera of North American *Melanopli*.—*Proc. Amer. Acad. Arts Sci.*, Boston, 32 (9), pp. 193-206.
8149. SCUDDER, S.H. 1897e. Pink locustarians.—*Psyche*, Cambridge, 8, pp. 54-55.
8150. SCUDDER, S.H. 1898a. *Aulocara* and *Ageneotettix*.—*Psyche*, Cambridge, 8, p. 71.
8151. SCUDDER, S.H. 1898b. The Acridian subfamily Mastacinae in the United States.—*Psyche*, Cambridge, 8, p. 179.
8152. SCUDDER, S.H. 1898c. A preliminary classification of the Tryxalinae of the United States and Canada.—*Psyche*, Cambridge, 8, pp. 231-239.
8153. SCUDDER, S.H. 1898d. New *Melanopli*.—*Psyche*, Cambridge, 8, p. 299.
8154. SCUDDER, S.H. 1899a. Supplement to a revision of the *Melanopli*.—*Proc. Davenp. Acad. nat. Sci.*, Davenport, 7, pp. 157-205, 3 pls.
8155. SCUDDER, S.H. 1899b. Short studies of North American Tryxalinae.—*Proc. Amer. Acad. Arts Sci.*, Boston, 35 (2), pp. 39-57.
8156. SCUDDER, S.H. 1900a. The species of the Oedipodine genus *Heliastus* Sauss., occurring in the United States.—*Psyche*, Cambridge, 9, pp. 45-47.
8157. SCUDDER, S.H. 1900b. The species of *Hadrotettix*, a genus of Oedipodinae.—*Psyche*, Cambridge, 9, pp. 67-69.
8158. SCUDDER, S.H. 1900c. The clear-winged species of the Oedipodine genus *Mestobregma*.—*Psyche*, Cambridge, 9, pp. 90-93.
8159. SCUDDER, S.H. 1900d. Localities for western Tryxalinae.—*Psyche*, Cambridge, 9, p. 95.
8160. SCUDDER, S.H. 1900e. The species of *Circotettix*, a North American genus of Oedipodinae.—*Psyche*, Cambridge, 9, pp. 135-141.
8161. SCUDDER, S.H. 1901a. A tropical type of Acridian new to the United States.—*J.N. Y ent. Soc.*, New York, 8 [1900] pp. 213-214.
8162. SCUDDER, S.H. 1901b. Alphabetical index to Norte American Orthoptera described in the eighteenth and nineteenth centursei.—*Occ. Papers Boston Soc. nat. Hist.*, Boston, No. 6, vi +1+436 pp.
- . SEAMANS, H.L.—1918.—See COOLEY, R.A., PARKER, J.R. and SEAMANS, H.L. 1918.

8163. Deleted.
8164. SECURA, J.C. 1884. *Informe que la Comisión para el estudio de los medios más adcaudos para la destrucción de la langosta rinde á la Secretaría de Fomento Chiapas*. 184 pp.—Mexico (Francisco Diaz de Leon).
8165. SEIXAS, C.A. 1946. Nuvens de gafannotos. —*Novas. Agric.* São Paulo, No. 17, 4 pp.
8166. SEMENOV, A.E. 1951. The noxious insect fauna of unirrigated orchards in Kondor. [In Russian.] Pp. 377-400. In Pavlovskif, E.N. and Zhadin, V.I [Eds.] *The Kondor Gorge*. 421 pp. —Leningrad & Moscow (Acad. Sci. U.S.S.R.).
8167. SEMPERS, F.W. 1894. *Injurious Insects and the use of Insecticides*. 10+216 pp., 1 pl.—Philadelphia (J.B. Lippincott Co.).
8168. SENGUPTA, G.C. and BEHURA, B.K. 1953. Note on the locust visitation of Orissa in 1953.—*Proc. 41st. Indian Sci. Congr.*, (Hyderabad, Deccan) 1964, Calcutta, Pt. 3, p. 260.
8169. SERAVALLI, F. 1952. El combate de la langosta.—*Bol. téc. Minist. Agric. Costa Rica.*, San José, No. 8, 8 pp.
8170. SERBINOV, I.L. 1914. On the question of the chief diseases and pests (of plants) in the Govt. of Astrakhan.—*Diseases of Plants*, Petrograd, 8(6), pp. 155-174.
8171. SERGENT, E. 1944. Protection des cultures contre les acridiens par un extrait de mélia.—*Arch. Inst. Pasteur Algérie*, Algiers, 22(3), pp. 251-254.
8172. SERGENT, E. and L'HÉRITIER, A. 1914. Essai de destruction des sauterelles en Algérie par le *Coccobacillus acridiorum* de d'Hérèlle.—*Bull. Soc. Nat. d'Acclimat.*, Paris, 61(14), pp. 456-467.
8173. SERVILLE, J.G.A. 1822-1831. In the *Dictionnaire classique d'histoire naturelle* par M.M. Audouin...et Bonj. de Saint Vincent. Ouvrage dirigé par ce dernier collaborateur, et dans lequel on a ajouté pour le porter au niveau de la science, un grand nombre de mots qui n'avaient pu faire de la plupart des dictionnaires antérieurs. Tom. 1-17.—Paris. (Orthoptera, 2, pp. 541-542, 1822.)
8174. SEVASTIANOV, I. 1914. On the question of the means of destroying *Stauronotas maroccanus* in Turkestan. [In Russian.]—*Agric. Turkestan*, Tashkent, No. 5, pp. 477-492.
8175. SEVASTIANOV, I. 1915. Whether the bacillus of d'Herelle or arsenic is necessary to control locusts? [In Russian.]—*Agric. Turkestan*, Tashkent, No. 2, pp. 151-171.
8176. SEVASTIANOV, I. 1923. Locusts in Turkestan and their control. [In Russian.]—*Turk. Political Educ. Dept. (Agric. Ser.)*, Tashkent, No. 3, 49 pp.
8177. SEVASTOPULO, D.G. 1949. Field notes from East Africa (1).—*Entomologist*, London, 82, pp. 130-133.
- . SEVASTYANOV, I.—See SEVASTIANOV, I.
8178. SEVERIN, H.C. 1918. Injurious corn insects.—*Bull. S. Dakota Agric. Expt. Sta.*, Brookings, No. 178, pp. 780-813.

8179. SEVERIN, H.C. 1950. 'Hoppers', 1950.—*South Dakota Farm Home Res. (South Dakota Stat.)*, Sioux Falls, 1, pp. 57-59.
8180. SHAW, G. and NODDER, R.P. 1790-1813. *Vivarium naturae, or The Naturalist's Miscellany*. 24 vols.—London.
8181. SHERWOOD, A.H. 1918. Poisoned bait as a control for grasshoppers.—*S. Dakota State Coll. Agric. & Mech. Arts.*, Brookings, No. 5, 8 pp.
8182. SHIRAKI, T. 1925-1926. On Migratory Locusts. [In Japanese.] —*Formosan Agric. Rev.*, Taihoku, 19 [1925] (3), pp. 219-248 ; (4), pp. 332-344 ; (6), pp. 521-523 ; (7), pp. 619-629 ; (8), pp. 689-694 ; (11), 966-969 ; and 20 [1926] (1), pp. 47-58.
8183. SHOTWELL, R.L. 1953. The use of sprays to control grasshoppers in fall-seeded wheat in western Kansas.—*U.S. Bur. Ent.*, Washington, No. E-868, 14 pp.
8184. SHTAKEL' BERG, A.A. 1929. Ueber eine neue Muscide, die als Parasit in *Locusta migratoria* L. auftritt. [In Russian and German.] —*Izv. prikl. Ent.*, Leningrad, 4(1), pp. 121-129.
8185. SHTCHEGOLEV, I.M. 1913. *Report on injurious insects and diseases of plants in the Government of Taurida during the year 1912*. Pp. 24-56.—Simferopol.
8186. SHUFELDT, R.W. 1883. *Romalea microptera*.—*Science*, Cambridge (Mass.), 2, pp. 811-814, 1 pl.
8187. SHUTTS, J.H. 1952. Some characteristics of the hat ching enzyme in the eggs of *Melanoplus differentialis* (Thomas).—*Proc. S. Dak. Acad. Sci.*, Vermillion, 31, pp. 158-163.
8188. SHVANVICH, B.N. 1950. Aerodynamic stimulators of flight in grasshoppers (*Schistocerca gregaria transiens*)—*Priroda*, Moscow, 39(9), p. 68.
8189. SILVEIRO GUIDO, A. 1947. La langosta *Schistocerca cancellata* y su control.—*Rev. Fac. Agron.*, Montevideo, No. 44 [1946], pp. 69-166.
8190. SILVEIRO GUIDO, A. 1953. Las langostas cricollas y su control —*Bull. Minist. Ganad. Agric. Uruguay*, 10 (495), pp. 7 ; and 12.
8191. SKALOV, YU. YU. 1932. Poisoned baits as a method of controlling the Migratory Locust (*Locusta migratoria* L.), under the conditions of Kuban habitats. [In Russian.]—*Bull. N. Caucas. Inst. Plant Prot.*, Rostov on don, 1(8) (1), pp. 14-36.
8192. SLADE, R. 1945. A new British insecticide, the gamma isomer of benzene hexachloride.—*Chem. Trade J.*, London, 116 (3017), pp. 279-281.
- —. SLINGERLAND, M.V. 1890.—See COMSTOCK, J.H. and SLINGERLAND, M.V. 1890.
8193. SMEE, C. 1937. *Report of the Entomologist*.—*Rept. Dept. Agric. Nyasaland*, Zomba, 1936, pp. 20-24.
8194. SMEE, C. 1938. *Report of the Entomologist*.—*Rept. Dept. Agric. Nyasaland*, Zomba, 1937, pp. 19-26.
8195. SMEE, C. 1941. *Report of the Entomologist, 1940*. 7 pp., typescript.—Zomba (Dep. Agric., Nyasaland). (Summary in *Rey. appl. Ent. (A)*, London, 29, pp. 588-589, 1941).

8196. SMEE, C. 1943. *Report of the Entomologist, 1942*. 7 pp., typescript.—Zomba (Dept. Agric., Nyasaland). (Summary in *Rev. appl. Ent.*, (A), London, 31, pp. 353-354, 1943).
- . SMITH, G.L. 1945a.—See MICHEL BACHER, A.E., SMITH, R.F. and SMITH, G.L. 1945.
8197. SMITH, G.L. 1945b. Control of certain cotton insects with DDT Pp. 7-8. In "Investigation with DDT in California, 1944". 2+33 pp.—Berkeley.
8198. SMITH, J.B. 1890. *Catalogue of Insects Found in New Jersey*. 486 pp.—Trenton.
8199. SMITH, J.B. 1892. Grasshoppers, locusts and crickets.—*Bull. New Jersey agric. Coll. exp. Sta.*, New Brunswick, No. 90, 34 pp.
8200. SMITH, J.H. 1938. Report of the Entomological Section.—*Rept., Dept. Agric. Stk. Qd.* 1937-38, Brisbane, pp. 29-32.
8201. SMITH, J.H. 1940. Report of the Entomological Section.—*Rept. Dept. Agric. Stk. Qd.*, 1939-1940, Brisbane, repr. pp. 6-8.
8202. SMITH, R.C. 1937. Magnesium sulfate—an unsatisfactory substitute for arsenicals in grasshopper baits.—*Science*, New York, 86, pp. 226-228.
- . SMITH, R.F. 1945.—See MICHEL BACHER, A.E., SMITH, R.F. and SMITH, G.L. 1945.
8203. SNAPP, O.I. 1922. Arsenate of lead spray for plum curculio kills grasshoppers.—*J. econ. Ent.*, Geneva (N.Y.), 15, p. 247.
8204. SNODGRASS, R.E. 1954. Insect metamorphosis.—*Smithson. misc. Coll.*, Washington, 122(9), 124 pp., 17 figs.
- . SORENSON, C. J. 1938.—See KNOWLTON G.F. and SORENSON, C.J. 1938.
8205. SOTO, J.G. DE. 1946. La organización de la lucha contra la langosta en el Uruguay.—*Conf. Int. Expertos en la Lucha contra la Langosta*, Montevideo, pp. 163-172.
8206. [SOUTH AFRICA.] 1914. Locust destruction in the Cape Midlands.—*Agric. J. Un. S. Afr.*, Pretoria, 7(5), pp. 706-708.
8207. [SOUTH AFRICA.] 1915. Locust destruction.—*Bull. Dept. Agric. Un. S. Afr.*, Pretoria, No. 75, 8 pp.
- . SOUTH, F.W. 1913.—See PRATT, H.C. and SOUTH, F.W. 1913.
- . SOUTH, F.W. 1914a.—See PRATT, H.C. and SOUTH, F.W. 1914.
8208. SOUTH, F.W. 1914b. Agricultural Pests Enactment, No. 13 of 1913.—*Agric. Bull. F.M.S.*, Kuala Lumpur, 2(9), pp. 220-224.
8209. SOUTH, F.W. 1914c. Report on the work of locust destruction, January to March 1914.—*Agric. Bull. F.M.S.*, Kuala Lumpur, 2(9), pp. 227-230.
8210. SOUTH, F.W. 1914d. Summary of locust work, March 12 to April 30, 1914, Selangor.—*Agric. Bull. F. M.S.*, Kuala Lumpur, 2(11), pp. 294-297.
8211. SOUTH, F.W. 1914e. Report on locust work, 1st May to 5th July 1914.—*Agric. Bull. F. M.S.*, Kuala Lumpur, 2(12), pp. 323-326.

8212. SOUTH, F.W. 1915a. A summary of locust work in 1914.—*Agric. Bull. F.M.S.*, Kuala Lumpur, 3(8), pp. 293-297.
8213. SOUTH, F.W. 1915b. Summary of locust work or the third quarter July to September 1915.—*Agric. Bull. F.M.S.*, Kuala Lumpur, 4(3), pp. 68-72.
8214. SOUTH, F.W. 1916a. A summary of locust work in 1915.—*Agric. Bull. F.M.S.*, Kuala Lumpur, 4(5), pp. 146-150.
8215. SOUTH, F.W. 1916b. Summary of the locust work for the 1st. quarter, 1916.—*Agric. Bull. F.M.S.*, Kuala Lumpur, 4(9), pp. 291-297, table.
8216. SOUTH, F.W. 1916c. Summary of locust work for the 2nd quarter 1916.—*Agric. Bull. F.M.S.*, Kuala Lumpur, 4(12), pp. 385-390.
8217. SOUTH, F.W. 1916d. Summary of locust work for the 3rd quarter, 1916.—*Agric. Bull. F.M.S.*, Kuala Lumpur, 5(3), pp. 64-72, 1 table.
8218. SOUTH, F.W. 1917. Summary of locust work for the 4th quarter 1916.—*Agric. Bull. F.M.S.*, Kuala Lumpur, 6(1), pp. 21-37.
8219. [SPAIN] 1923. La compana contra la langosta.—*Rev. Inst. Agric. Catalán S. Isidro*, Barcelona, 72(5), pp. 93-94.
8220. SPAWN, G.B. 1944. Tillage methods in grasshopper control.—*Bull. S. Dakota agric. exp. Sta.*, Brookings, No. 379, 16 pp.
- . SPENCE, W. 1818-1826.—See KIRBY, W. and SPENCE, W. 1818-1826.
8221. SPENCER, G.J. 1940. The effect of hailstorms on grasshoppers.—*Canad. Ent.*, Guelph, 72(12), pp. 233-234.
8222. SRIVASTAVA, A.S. 1954a. Important pests and diseases of sugarcane in Uttar Pradesh and their control during 1954. —*Proc. 23rd (Mtg.) Sugar Technol. Assn. India*, Nawabganj (Kanpur), Pt. 2, pp. 158-165.
8223. SRIVASTAVA, A.S. 1954b. Important pests and diseases of sugarcane in Uttar Pradesh and their control during 1954.—*Agric. & anim. Husb. Uttar Pradesh*, Lucknow, 5(5), pp. 5-6.
8224. SRIVASTAVA, A.S. 1954c. Uttar Pradesh mein tiddiyon kā ākraman aur uski rōk thām. [in Hindi.] [Locust invasion in Uttar Pradesh and its control.]—*Krishi aur Pashupalan* (Agric. & anim. Husb.), Lucknow, 5(5), pp. 5-10.
8225. STAJANO, C.B. and ROSSI, E.R. 1947. Contrubución al conocimiento del valor bromatologico de la langosta voladora (*Sch. cancellata*) y de sus huevos.—*Rev. Fac. Agron.*, Montevideo, No. 44, pp. 229-237.
8226. STÅL, C. 1878. Observations Orthopterologiques, 3. De Genere *Pezotettix* et nonnullis Generibus affinibus.—*Bihang K. Svenska Vet. Akad. Handl.*, Stockholm, 5(9), pp. 3-20.
8227. STANKOVIC', A and BJEGOVIC', P. 1951. Essais de lutte contre quelques insectes nuisables aux plantes cultivées. [In Serbian, with French summary.]—*Zastita bilja*, Belgrade, 3.
8228. STEINHAUS, E.A. 1945. Insect Pathology and biological control.—*J. econ. Ent.*, Mensaha, 38(5), pp. 591-596.

8229. STERNBURG, J. and KEARNS, C.W. 1952. Chromatographic separation of DDT and some of its known and possible degradation products.—*J. econ. Ent.*, Menasha, 45(3), pp. 505-509.
8230. STOLL, O. 1881. Ueber die Wanderheuschrecke von Central-Amerika, *Schistocerca* (*Acridium*) *peregrina* Oliv.—*Mitth. schweiz. ent. Ges.*, Schaffhausen, 7, pp. 199-211.
8231. STRANDTMANN, R.W. 1953. Notes on the nesting habits of some digger wasps.—*J. Kans. ent. Soc.*, Manhattan, 26, pp. 45-52.
8232. STRONG, I. A. 1940. *Report of the Chief of the Bureau of Entomology and Plant Quarantine 1939-1940*. 128 pp.—Washington (U.S. Dept. Agric.).
8233. STUARDO, O. 1943. Un *Calliphoridae* (Diptera) que debe incorporarse a la fauna Chilena.—*Bol. Dep. San. Veg.*, Santiago de Chile, 2(2), p. 132.
8234. [SUDAN GOVERNMENT.] 1954. *Annual Report of the Research Division, 1951-52*. 191 pp. 1 map.—Sudan (Minist. of Agric.).
8235. SUDEIKIN, G.S. 1913. *Pests of Agricultural plants in the Government of Voronezh, according to observations made in the year 1912*. [In Russian.] 68 pp.—Voronezh.
8236. SUIZER, J.H. 1761 *Die Kennzeichen der Insekten nach anleitung des Ritters Karl Linnaeus durch 24 Kupfertafeln erläutert und mit derselven natürlichen Geschichte begleitet. Mit einer Vorrede der Herrn Johannes Gesznars*. 28+203+67 pp., 24 pls.—Zurich.
8237. SUN, YUN-PEI., RAWLINS, W.A. and NORTON, L.B., 1948. Comparative toxicity of chlordan, DDT, benzene hexachloride and chlorinated camphene.—*J. econ. Ent.*, Menasha, 41(1), pp. 91-97.
8238. SUNDBERG, R. 1916. *Memoria de los trabajos realizados contra la longosta. Invasion de 1915-1916*. 444 pp.—Montevideo (Minist. Indust.).
- . SUTTON, W.S. 1900.—See HUNTER, S.J. and SUTTON, W.S. 1900.

T

8239. T.S. 1917. On anti-locust measures in Bokhara. [In Russian.]—*Agric. Turkestan*, Tashkent, 12 (4-5), p. 310.
8240. TARBINSKI, S.P. 1925. The Orthopterous fauna of the Bryans Government. [In Russian.]—*Déf. des Plantes*, Leningrad, 1(6), pp. 206-210.
- . TELFORD, H.S. 1942.—See MÜNRO, J.A. and TELFORD, H.S. 1942.
8241. THOMAS, C. 1865. Insects injurious to vegetation in Illinois.—*Trans. Illinois State Agric. Soc.*, Springfield, 5 [1861-64], pp. 401-468.
8242. THOMAS, C. 1876a. A list of the Orthoptera of Illinois.—*Bull. Illinois Mus. nat. Hist.*, Springfield, No. 1, pp. 59-69.
8243. THOMAS, C. 1876b. A list of Orthoptera collected by Joseph Duncan Putnam of Deavenport, Iowa, during the summers of 1872-3-4 and -5, chiefly in Colorado, Utah and Wyoming Territories.—*Proc. Davenport Acad. nat. Sci.*, Davenport, 1, pp. 249-264, 1 pl.

8244. THOMAS, C. 1877. Description of a new species of Acrididae from Arizona.—*Proc. Davenport Acad. nat. Sci.*, Davenport, 2, pp. 124-125, 1 pl.
8245. THOMAS, C. 1877-80. *Report of the State Entomologist on the Noxious and Beneficial Insects of the State of Illinois*. No. 6, pp. 174+7, 1877 ; No. 7, 290 pp., 1878 ; No. 9, pp. 4+142+6 pp., 1880.—Springfield.
8246. THOMAS, C. 1878. On the Orthoptera collected by Dr. Elliott Coues, U.S.A., in Dakota and Montana, during 1873-74.—*Bull. U.S. geol. Surv. Terr.*, Washington, 4, pp. 481-501.
8247. THOMAS, C. 1880. *Manual of Economic Entomology*. Part 3. The Acrididae of Illinois.—*Rept. Ent. Illinois*, Springfield, 9, pp. 71-140.
- . THOMPSON, R.W. 1937.—See GILBERT, H.A. and THOMPSON, R.W. 1937.
- . THOMPSON, W.L. 1948.—See GRIFFITHS (JR.), J.T. and THOMPSON, W.L. 1948.
8248. THOMSEN, F. 1914. Locust birds.—*Agric. J. Un. S. Afr.*, Pretoria, 7 (5), pp. 682-683.
8249. THUNBERG, C.P. 1815. Acrydii descriptio.—*Nova Acta reg. Soc. Upsal.*, Upsaliae, 7, pp. 157-162.
8250. THUNBERG, C.P. 1827. Truxalis insecti genus illustratum.—*Nova Acta reg. Soc. Upsal.*, Upsaliae, 9, pp. 76-88.
8251. TOMASELLO, J.F. 1942. *Algunos aspectos de la lucha contra la langosta*. 10 pp., 6 pls.—Santa Fe (Rotary Club).
8252. TOMASELLO, J.F. 1946. La lucha contra la langosta *Schistocerca paranensis*.—*Conf. Int. Expertos en la lucha contra la Langosta*, Montevideo, pp. 184-189.
8253. TOMIC', M. 1907. *Schmeil's Description of the Animal species*. [In Serbian.]—552 pp. —Belgrade.
- . TOTTER, J.R. 1954.—See GAULDEN, M.E. and TOTTER, J.R. 1954.
8254. TOWNSEND, C.H.T. 1884. On the courtship of the sexes in *Oedipoda carolina*.—*Canad. Ent.*, London (Ont.), 16, pp. 167-168.
8255. TOWNSEND, C.H.T. 1891. Some notes on Acrididae in the vicinity of Constantine, Michigan.—*Proc. ent. Soc. Wash.*, Washington, 2, pp. 43-44.
8256. TOWNSEND, C.H.T. 1893. On the injurious and other locusts of New Mexico and Arizona.—*Insect Life*, Washington, 7, pp. 79-82.
8257. TRABUT, [L.] 1921. Un echo de la lutte contre les sauterelles en Crau.—*Bull. Agric. Algérie-Tunisie-Maroc*, Algiers, 27 (7), pp. 126-127.
8258. TREHERNE, R.C. 1921. The grasshopper and the range, —*Agric. J.*, Victoria, B.C., 6 (8), pp. 192-193 and 195.

8259. TRINCHIERI, G. 1944. Third contribution to the locust bibliography.—*Int. Bull. Plant Prot.*, Rome, **18** (3-12), pp. 28M-32M, 39M-48M, 54M-64M, 72M-80M, 92M-100M and **19** (3-6) [1945], pp. 22M-32M, 38M-48M, 100M-109M.
8260. TRUJILLO PELUFFO, A. 1935. Laboratorios e insectarios para el estudio biológico de la *Schistocerca paranensis* Burm.—*Conf. Int. Expertos en la Lucha Contra la Langosta*, Montevideo, **1934**, pp. 59-63.
8261. TRUJILLO PELUFFO, A. 1937. Insectos y otros parásitos de la agricultura y sus productos en el Uruguay.—*Univ. Fac. Agron.* Montevideo, 325 pp.
8262. TRUJILLO PELUFFO, A. 1946. La langosta en le Uruguay.—*Conf. Int. Expertos en la Lucha Contra la Langosta*, Montevideo, pp. 83-91.
8263. [TURKESTAN.] 1917a. *Instructions for combating locusts in Turkestan in 1917*. 11 pp.—Tashkent.
8264. [TURKESTAN.] 1917b. Anti-locust operations in 1917.—*Agric. Turkestan*, Tashkent, **12** (2), pp. 139-144.
8265. TURTON, W. 1800-1806. *A General System of Nature, through the Three Grand Kingdoms of Animals, Vegetables and Minerals, Systematically Divided into their Several Classes, Orders, Genera, Species and Varieties with their Habitations, Manners, Economy, Structure and Peculiarities. Translated from the Gmelin's last edition of the celebrated Systema Naturae, by Sir Charles Linné, amended and enlarged by the Improvements and Discoveries of Later Naturalists and Societies, with Appropriate Copperplates, in Seven Volumes.*—London. (Orthoptera, **1**, 1802.)
8266. TURTON, W. 1806. *A General System of Nature through the Three Grand Kingdoms of Animals, Vegetables and Minerals, Systematically Divided into their several Classes, Orders, Genera, Species and Varieties, with their Habitations, Manners, Economy, Structure and Peculiarities. By Sir Charles Linné. Translated from Gmelin, Fabricius, Willdenow, etc., together with various Modern Arrangements and Corrections derived from the Transactions of the Linnean and other Societies, as well as from the Classical Works of Shaw, Thornton, Abbot, Donovan, Sowerby, Latham, Dillwyn, Lewin, Martyn, Andrews, Lambert, etc., etc., with a Life of Linné, appropriate Copperplates, and a Dictionary, Explanatory of the Terms which occur in Several Departments of Natural History, in Seven Volumes.*—London (Orthoptera, **2**, pp. 523-570.)
8267. TUTT, J.W. 1902. *The Migration and Dispersal of Insects*. 132 pp.—London (E. Stock).
- . TUZET, O. 1928.—See GRASSÉ, P.P. and TUZET, O. 1928.

U

8268. [UNION OF SOVIET SOCIALIST REPUBLICS.] 1914a. The campaign against locusts. [In Russian.]—*Siberian Agric.*, Tomsk, No. 10, pp. 292-293.

8269. [UNION OF SOVIET SOCIALIST REPUBLICS.] 1914*b*. The campaign against locusts. [In Russian.]—*Orchard, Market, Garden & Bachza*, Astrakhan, No. 6, p. 409.
8270. [UNITED STATES OF AMERICA.] 1939. Summary for 1938.—*Insect Pest Surv. Bull.*, U.S. Dep. Agric. Bur. Ent., Washington, 18 (10), pp. 657-685.
8271. [UNITED STATES OF AMERICA.] 1940. Summary for 1939.—*Insect Pest Surv. Bull.*, U.S. Dep. Agric. Bur. Ent., Washington, 19 (10), pp. 627-650, 5 maps, multigraph.
8272. [UNITED STATES OF AMERICA.] 1941. Summary for 1940.—*Insect Pest Surv. Bull.*, U.S. Dep. Agric. Bur. Ent., Washington, 20 (10), pp. 559-591, 3 maps, multigraph.
8273. [UNITED STATES OF AMERICA.] 1950*a*. The eternal plague.—*Fm. Quart.*, Cincinnati, 5, pp. 58-59 ; 91-92.
8274. [UNITED STATES OF AMERICA.] 1950*b*. Grasshopper control.—*Manitoba Dept. Agric. Immigr. Publ.*, Winnipeg, No. 229, 4 pp.
8275. [UNITED STATES OF AMERICA.] 1950*c*. Proposed range grasshopper research program.—*Montana Stockgrower*, Great Falls, 22 (10), pp. 28 ; 30 ; and 32-34.
8276. [UNITED STATES OF AMERICA.] 1950*d*. Tests of insecticides for grasshopper control 1948 and 1949.—*Publ. U.S. Dept. Agric. Bur. Ent. & Plant Quar.*, Washington, No. E-807.
8277. URBAHNS, T.D. 1917. Destroy the grasshopper.—*Mthly. Bull. Cal. State Commiss. Hortic.*, Sacramento, 6 (6), pp. 249-253.
8278. URBAHNS, T.D. 1919. Grasshopper and control measures.—*Mthly. Bull. Cal. State Dept. Agric.*, Sacramento, 8 (9), pp. 518-528.
8279. URBAHNS, T.D. 1920. Grasshopper control in the Pacific States.—*Farmers Bull. U.S. Dept. Agric.*, Washington, D.C., No. 1140, 16 pp.
8280. URICH, F.W. 1915*a*. Locusts and methods of destroying them.—*Bd. Agric. Trinidad & Tobago*, Port of Spain, No. 13, pp. 1-6.
8281. URICH, F.W. 1915*b*. Locusts or grasshoppers.—*Bull. Dept. Agric. Trinidad & Tobago*, Port of Spain, 14 (4), pp. 120-128, 1 map.
8282. URICH, F.W. 1915*c*. Notes on the South American Migratory Locust (*Schistocerca paranensis* Burm.)—*Bull. Dept. Agric., Trinidad & Tobago*, Port of Spain, 14 (6), pp. 194-197.
8283. URICH, F.W. 1916*a*. Notes on the South American Locust, *Schistocerca paranensis* Burm.—*Bull. Agric. Trinidad & Tobago*, Port of Spain, 15(1), pp. 15-16.
8284. URICH, F.W. 1916*b*. Notes on the South American Migratory Locust (*Schistocerca paranensis* Burm.)—*Bull. Dept. Agric., Trinidad & Tobago*, Port of Spain, 15 (5), pp. 172-173.
- URICH, F.W. 1922. —See NOWELL, W. and URICH, F.W. 1927.

8285. [URUGUAY, SOUTH AMERICA.] 1916. *Memoria de los trabajos realizados contra la langosta : Invasión del 1915-1916*. 444 pp., with maps & illust.—Montevideo (Déf. Agric. Rep. Oriental del Uruguay)
8286. [URUGUAY, SOUTH AMERICA.] 1919. *Memoria de los trabajos realizados contra la langosta : Invasión del 1917-1918*. 93 pp.—Montevideo (Déf. Agric. Minist. Indust.)
8287. [URUGUAY, SOUTH AMERICA.] 1920. La lucha contra la langosta : Convenio entre el Brasil y el Uruguay.—*Bol. Mens. Min. ind. Déf. Agric.*, Montevideo, 1 (7), pp. 59-60.
8288. [URUGUAY, SOUTH AMERICA.] 1924a. La langosta en el Uruguay.—*Bol. Mens. (Minist. Indust.) Déf. Agric.*, Montevideo, 5 (7-8), pp. 121-122, 1 map.
8289. [URUGUAY, SOUTH AMERICA.] 1924b. Los últimos informes sobre la invasión de la langosta.—*Bol. Mens. (Minist. Indust.) Déf. agric.*, Montevideo, 5 (11-12), pp. 163-165.
8290. UTIDA, S. 1954. "Phase" dimorphism observed in the laboratory population of the cowpea weevil, *Callosobruchus quadrimaculatus*. (In Japanese, with English summary.)—*Jap. J. appl. Zool.*, Tokyo, 18, pp. 161-168.
8291. UVAROV, B.P. 1913a. Poisoned baits in fighting locusts. [In Russian.]—*South Russian Agric. Gazette*, Charkov, 1913, 11 pp.
8292. UVAROV, B.P. 1913b. *Report of the Bureau of Entomology of Stavropol for the year 1912*. [In Russian.] 32 pp.—St. Petersburg (Publ. Cent. Bd. Land Adm. & Agric.).
8293. UVAROV, B.P. 1914. *Report of the Entomological Bureau of Stavropol for 1913*. [In Russian.] 86 pp., 1 plan, 1 map.—Petrograd (Publ. Cent. Bol. Land Adm. & Agric.).
8294. UVAROV, B.P. 1917. The attitude of entomologists to the new method of controlling locusts. [In Russian.]—*Agric. Turkestan*, Tashkent, 12 (6), pp. 343-348.

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8295. VALLEJO, E.L. 1917. Instrucciones para combatir la plaga de langostas.—*Rev. Agric.*, Mexico, 1 (7), pp. 288-289.
8296. VÁSQUEZ LEDESMA, C.O. 1935. Sobre organización permanente y otras obligaciones legales.—*Conf. Int. Expertos en la Lucha Contra la Langosta*, Montevideo, 1934, pp. 85-89.
8297. VASSILIEW, I.V. 1914. Pests of cotton in Fergana, according to observations made in 1913. [In Russian.]—*Mem. Bur. Ent. Sci. Comm. Cent. Bol. Land. Adm. & Agric.*, St. Petersburg, 10 (10), 23 pp.
8298. VAYSSIÈRE, P. 1920. La lutte contre les sauterelles en Crau.—*Rev. d'Hist. Nat. Appl.*, Paris, 1 (12), pp. 337-341.
8299. VAYSSIÈRE, P. 1923. Les acridiens en France en 1921 et 1922.—*Ann. Épiphyties*, Paris, 9 (2), pp. 73-83.
8300. [VENEZUELA.] 1918. Contra la langosta.—*Rev. Inst. Agric. Catatan S. Isidro*, Barcelona, 67 (13), p. 23.

8301. VERMEIL, M. 1914. La lutte contre les sauterelles. Resultats des experiences de 1913.—*Bull. Bimens. Off. Govt. Alger*, Paris, 20 (2), p. 26.
- . VERNIA, R.L. 1950.—See RICCI, I. and VERNIA, R.L. 1950.
8302. VILLERS, C.J. DE. 1789. Caroli Linnaei entomologia, faunae suecicae descriptionibus aucta ; D.D. Scopoli, Geoffroy, De Geer, Fabricii, Schrank, etc., speciebus vel in systemate non enumeratis, vel nuperrimé detectis, vel speciebus Galliae australis locupletata, generum Specierumque rariorum iconibus ornata. 4 vols.—Lugduni. (Orthoptera, vol. 1.)
8303. VINOKUROV, G. M. 1937. The ploughing under of egg masses as a control of grasshoppers. (Preliminary contribution.) [In Russian.]—*Plant Prot.*, Leningrad, No. 14, pp. 95-99.
8304. VOIGT, F. S. 1831-1843. Das Thierreich geordnet nach seiner Organisation als Grundlage der naturgeschichte der Thiere und Einleitung in die vergleichende Anatomie vom Baron von Cuvier. Nach der zweiten vermehrten Ausgabe übersetzt und durch zusatze erweitert. 6 vols.—Leipzig. (Orthoptera, 5, pp. 347-366, 1839.)
8305. VOSTRIKOV, P. 1914. An experiment on the application of sodium arsenite in the fight against *Locusta migratoria*. [In Russian.]—*Orchard, Market-Garden and Bachza*, Astrakhan, No. 8, pp. 518-519.
8306. VOSTRIKOV, P. 1916. Birds assisting man in the control of insect-pests and the important part played by rooks and starlings [In Russian.]—*Orchards, Market.-Garden and Bachza*, Astrakhan. Nos. 2-3, p. 13.

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8307. WADE, J. S. 1951. A selected bibliography of the insects of the world associated with sugarcane, their predators and parasites. —*Mem. int. Soc. Sugar. Tech.*, 1, 113 pp.
8308. WAKELAND, C. 1950. Chlorinated hydrocarbons in baits for range grasshopper control.—*Proc. amer. Assoc. econ. Ent. North centr. States Br.*, 5, pp. 54-55.
8309. WALKER, E. M. 1897. Occurrence of *Schistocerca americana* (Drury) at Toronto.—*Canad. Ent.*, London (Ont.), 29, p. 89.
8310. WALKER, E. M. 1898a. A new grasshopper from Ontario. —*Canad. Ent.*, London (Ont.), 30, pp. 90-92.
8311. WALKER, E. M. 1898b. Notes on some Ontario Acridiidae. [I-II.]—*Canad. Ent.*, London (Ont.), 30, pp. 122-126.
8312. WALKER, E. M. 1898c. Notes on some Ontario Acridiidae, III. Oedipodinae.—*Canad. Ent.*, London (Ont.), 30, pp. 258-263.
- 8312a. WALKER, E. M. 1899. Notes on some Ontario Acridiidae III Oedipodinae (concl.)—*Canad. Ent.*, London (Ont.), 31, pp. 29-36.
8313. WALOFF, N. 1949-1950. Biology of the British shorthorned grasshoppers. [Abs.]—*Proc. R. ent. Soc. Lond.*, London, (C), 14, p. 34.

8314. WALSH, B. D. and RILEY, C. V. 1869. Parasites on "hateful grasshopper".—*Amer. Ent.*, St. Louis, **1**, p. 249.
8315. WALTON, W. R. 1916. Grasshopper control in relation to cereal and forage crops.—*Fmr. Bull.*, U. S. Dept. Agric., Washington, No. 747, 20 pp.
8316. WARD, I. J. 1945. Outbreak of *Melanoplus mexicanus* Sauss. Pp. 65-71. In : 39th Annual Report of the Department of Agriculture (British Columbia) for the year 1944, 176 pp., 1 pl.—Victoria, B. C.
8317. WARE, F. C. W. 1915. Locusts in Baluchistan.—*Agric. J. India*, Calcutta, **10** (2), pp. 159-166, 2 pls., 1 map.
8318. WEBER, H. 1954. *Grundriss der Insektenkunde*. xi+428 pp.—Stuttgart (G. Fischer).
8319. WEBSTER, F. M. 1899. A prolonged season of occurrence for *Schistocerca americana*.—*Canad. Ent.*, London (Ont.), **31**, p. 28.
8320. WEBSTER, F. M. 1915a. The grasshopper problem and alfalfa culture.—*Fmr. Bull.* U.S. Dept. Agric., Washington, No. 637, 10 pp.
8321. WEBSTER, F. M. 1915b. Some developments in grasshopper control.—*J. econ. Ent.*, Concord, **8** (6), pp. 527-535.
8322. WEED, C. M. 1886. On the injurious locusts of central Illinois. In "*Misc. Ess. econ. Ent. Illinois*", pp. 48-56.—Springfield.
8323. WEED, C. M. 1887. On an outbreak of injurious locusts in central Illinois.—*Rept. Ent. Illinois*, Springfield, **15**, pp. 40-44.
8324. WEED, C. M. 1897. *Life Histories of American Insects*. 12+272 pp., 21 pls.—New York.
8325. WEIH, A. S. 1951. Untersuchungen über das Wechselsingen (*Anaphanie*) und über das angeborene Lautschema einiger Feldheuschrecken.—*Z. Tierpsychol.*, Berlin, **8**, pp. 1-41.
8326. WELLINGTON, J. S. 1938. Entomological work.—*Rep. Dep. Agric. S. Leone*, 1937, Freetown, pp. 43-44.
8327. [WESTERN AUSTRALIA.] 1954. Vermin. An Act [of Parliament of Western Australia] relating to Vermin Facing, and the control, Prevention and Eradication of Vermin, and for other purposes incidental thereto. 67 pp.—Perth (H.M.G.).
8328. WESTWOOD, J. O. 1837. *Illustrations of Exotic Entomology, containing upwards of six Hundred and Fifty Figures and Descriptions of Foreign Insects, interspersed with Remarks and Reflections on their Nature and Properties. A new edition, brought down to the Present State of the Sciences, with the Systematic Characters of each Species, Synonyms, Indexes, and other Additional Matter*. 3 vols. **1**, 26+123 pp., 1+50 pls.; **2**, 6+100 pp., 50 pls.; **3**, 6+94 pp., 50 pls.—London.
8329. WESTWOOD, J. O. 1839-1840. *An Introduction to the Modern Classification of Insects, founded on the Natural Habits and Corresponding Organizations of the Different Families*. 2 vols. —London. (Orthoptera, **1**, pp. 398-462, 1839.)

8330. WHITE, M. J. D. 1950. Cytological polymorphism in wild populations of western grasshoppers (*Trimerotropis* spp.). [Abs.]—*Genetics*, Baltimore, Manasha, 35, p. 139.
8331. WHITEHOUSE, F. C. 1920. Entomological Report, 1919, of the Alberta Natural History Society.—*Ann. Rept. Dept. Agric. Prov. Alberta, 1919*, Edmonton, 1920, pp. 127-129.
8332. WHITMAN, A. *et al.* 1876. *The Grasshopper or Rocky Mountain Locust, and its Ravages in Minnesota. A Special Report to the Hon. C. K. Davis, Governor of Minnesota.* 50 pp.—Saint Paul.
8333. WILBUR, D. A., FRITZ, R. F., and PAINTER, R. H. 1942. Grasshopper problems associated with strip cropping in western Kansas.—*J. Amer. Sec. Agron.*, Geneva (N.Y.), 34 (1), pp. 16-29.
- . WILBUR, D. A., 1954.—See PAINTER, R. H., BRYSON, H. R. and WILBUR, D. A. 1954.
8334. WILCOX, E. V. 1895. Spermatogenesis of *Caloptenus femur rubrum* and *Cicada tibicen*.—*Bull. Mus. comp. Zool.*, Cambridge, 27, pp. 1-28, 5 pls.
8335. WILCOX, E. V. 1896. Further studies on the spermatogenesis of *Caloptenus femur rubrum*.—*Bull. Mus. comp. Zool.*, Cambridge, 29, pp. 193-203, 3 pls.
8336. WILCOX, M. A. 1896. Anatomy of the grasshopper.—*Observer* Portland, 7, pp. 184-192.
8337. WILLE, J. E. 1934. Viaje de inspección a las zonas de Huanta (Ayacucho) infestadas por la langosta.—*Inf. Estac. agric. La Molina*, Lima, No. 25, pp. 21-28.
8338. WILLE, J. E. 1941. Tres informes de observaciones entomológicas en la costa en 1940.—*Inf. Estac. Agric. La Molina*, Lima, No. 53, p. 26
8339. WILLE, J. E. 1946. Experimentos con los nuevos insecticidas DDT, Gammexane ejecutados en la Estacion Experimental Agricola de la Molina hasta fines de Mayo de 1946.—*Bol. Estac. exp. agric. La Molina*, Lima, 29, 33 pp., 8 graphs.
8340. WILLE, J. E. 1952. *Entomologia Agricola del Peru*. (2nd revised edn.). VIII+544 pp., 222 figs. —Lima (Minist. Agric.).
- 8340a. WILLEMSE, C. 1948. Notes on the neotropical subfamily Pauliniinae (Coleopterninae) (Orthoptera, Acridoidea).—*Publ. Natuurh. Genootsch. Limburg, Maastricht*, 1, pp. 133-142.
8341. WILSON, C. C. 1939. Grasshopper surveys in California.—*Bull. Dep. Agric. Calif.*, Sacramento, 28 (2), pp. 170-173.
8342. WILSON, H. F. 1915. Grasshopper in Oregon. pp 133-136. In Second Biennial Crop Pest and Horticultural Report 1913-1914.—*Oregon. Agric. Expt. Sta.*, Corvallis, 288 pp., 11 pls.
8343. WILSON, T. 1915. The outbreak of locusts in 1914.—*Prcc. ent. Soc. British Columbia*, Victoria, 7, pp. 41-43.
8344. WOJEWODIN, A. W. 1950. Staubförmige präparate von Hexachlorcyclohexan zur Bekämpfung der Heuschrecke.—*Sowj. Landw. kunde.*, 8(3), pp. 89-92.

8345. WOLCOTT, G. N. 1951. The insects of Puerto Rico. Parts 1-4 (concl.).—*J. Agric. Univ. P.R.*, Rio Piedras, **32**, pp. 1-975.
- . Woo, F. C. 1947.—See LUH, P. W. and Woo, F. C.
8346. WOODWORTH, C. W. 1906. The wing veins of insects.—*Tech. Bull. Ent.*, **1**(1), pp. 63-110.
8347. WORDEN, W. L. 1950. Nightmare on the plains [grasshoppers] —*Saturday Evening Post*, London, **223** (10), p. 25 ; and 79-82.
8348. [WORLD METEOROLOGICAL ORGANIZATION.] 1953. *Final Report on the First Session of the Regional Association for Africa held at Tananarive (Madagascar), 19-30 January 1953*. 253 pp., mimeograph, 4 maps, 8 figs.—Tananarive (Service Météorologique de Madagascar).

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NIL

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- . YAMASITA, Z. 1952.—See KATO, M., MATSUDA, T. and YAMASITA, Z. 1952.
8349. YATZENKOVSKII, E. V. 1913. Some details of the destruction of *Stauronotus maroccanus* in the Government of Stavropol. [In Russian].—*Rev. Russe. Ent.*, St. Petersburg, **13** (2), pp. 342-359.
8350. YATZENTKOVSKII, E. V. 1915. On the question of changing the technique of the control of locusts. [In Russian].—*Agric. Gazette*, Petrograd, No. 28, pp. 789-791 and 819-821.

Z

8351. ZAKHAROV, L. Z. 1952. *Pests of woods, shelter-belts and forest plantations, and methods of their control*. [In Russian.] 72 pp., 25 figs.—Saratov.
8352. ZUNINO, H. A. 1946a. Procedimiento biológico para la lucha contra la langosta.—*Conf. Int. Expertos en la lucha contra la Langosta*, Montevideo, **1946**, pp. 108-110.
8353. ZUNINO, H. A. 1946b. Empleo de cebos tóxicos.—*Conf. Int. Expertos en la Lucha contra la Langosta*, Montevideo, **1946**, pp. 111-113.

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7369, 7480, 7487, 7488, 7517, 7518, 7591, 7607, 7664, 7667, 7727, 7738, 7744, 7754, 7770, 7778, 7779, 7788, 7789, 7921, 7956, 7959, 7975, 7994, 7995, 7998, 7999, 8000, 8013, 8046, 8108, 8121, 8126, 8127, 8132, 8142, 8187, 8204, 8265, 8266, 8318, 8324.

5. PHYSIOLOGY*(Including biochemistry)*

7251, 7256, 7260, 7261, 7262, 7263, 7272, 7274, 7294, 7330, 7342, 7350, 7351, 7355, 7366, 7367, 7384, 7385, 7391, 7407, 7408, 7409, 7416, 7418, 7419, 7420, 7423, 7424, 7426, 7466, 7479, 7480, 7487, 7488, 7492, 7493, 7501, 7502, 7503, 7506, 7517, 7518, 7536, 7546, 7553, 7555, 7559, 7569, 7573, 7578, 7579, 7581, 7590, 7597, 7602, 7607, 7610, 7617, 7624, 7633, 7635, 7642, 7643, 7644, 7650, 7651, 7652, 7662, 7665, 7667, 7712, 7715, 7719, 7726, 7727, 7737, 7738, 7744, 7751, 7752, 7766, 7769, 7778, 7779, 7788, 7789, 7790, 7802, 7803, 7804, 7809, 7811, 7820, 7830, 7834, 7864, 7868, 7870, 7873, 7874, 7875, 7887, 7918, 7940, 7948, 7956, 7958, 7965, 7975, 7980, 7981, 7982, 7985, 7994, 7998, 7999, 8001, 8012, 8016, 8017, 8064, 8082, 8083, 8099, 8100, 8101, 8105, 8114, 8117, 8118, 8120, 8121, 8126, 8127, 8130, 8132, 8142, 8167, 8172, 8175, 8181, 8187, 8188, 8192, 8197, 8202, 8203, 8221, 8228, 8229, 8237, 8254, 8265, 8266, 8267, 8276, 8305, 8308, 8318, 8324, 8325, 8329, 8334, 8335, 8339, 8340, 8344, 8352, 8353.

6. BIONOMICS AND ECOLOGY*(Including life-histories, ecology, parasites, predators, epidemics, etc.)*

7249, 7250, 7252, 7253, 7257, 7258, 7259, 7264, 7265, 7266, 7267, 7268, 7269, 7270, 7271, 7272, 7273, 7275, 7276, 7277, 7278, 7279, 7280, 7282, 7283, 7284, 7285, 7286, 7287, 7288, 7290, 7291, 7296, 7297, 7299, 7302, 7303, 7304, 7305, 7308, 7309, 7313, 7314, 7316, 7317, 7318, 7319, 7320, 7321, 7322, 7323, 7325, 7326, 7329, 7333, 7337, 7338, 7340, 7341, 7342, 7343, 7344, 7347, 7348, 7349, 7352, 7353, 7354, 7357, 7358, 7361, 7362, 7365, 7367, 7368, 7369, 7370, 7371, 7372, 7376, 7377, 7378, 7379, 7380, 7381, 7383, 7384, 7385, 7386, 7388, 7391, 7393, 7394, 7395, 7397, 7398, 7399, 7400, 7401, 7402, 7406, 7408, 7409, 7410, 7413, 7414, 7415, 7416, 7417, 7418, 7421, 7423, 7424, 7426, 7429, 7430, 7431, 7432, 7433, 7434, 7435, 7436, 7437, 7438, 7439, 7440, 7441, 7442, 7443, 7444, 7445, 7446, 7447, 7448, 7450, 7451, 7452, 7453, 7455, 7456, 7459, 7460, 7462, 7463, 7466, 7467, 7468, 7469, 7470, 7471, 7472, 7473, 7475, 7476, 7477, 7478, 7481, 7482, 7483, 7485, 7486, 7488, 7489, 7490, 7491, 7492, 7493, 7496, 7498, 7500, 7501, 7502, 7503, 7504, 7506, 7507, 7511, 7512, 7513, 7515, 7516, 7517, 7518, 7519, 7521, 7522, 7523, 7524, 7525, 7526, 7527, 7528, 7529, 7530, 7531, 7532, 7533, 7535, 7539, 7540, 7541, 7542, 7543, 7544, 7546, 7548, 7549, 7552, 7553, 7554, 7555, 7556, 7557, 7558, 7560, 7561, 7563, 7564, 7565, 7566, 7567, 7568, 7570, 7574, 7576, 7578, 7579, 7580, 7583, 7584, 7591, 7592, 7593, 7594, 7595, 7597, 7599, 7600, 7601, 7607, 7608, 7609, 7611, 7612, 7613, 7614, 7615, 7616, 7618, 7619, 7621, 7622, 7623, 7626, 7627, 7629, 7630, 7631, 7632, 7640, 7642, 7645, 7646, 7648, 7654, 7655, 7656, 7657, 7659, 7661, 7664, 7665, 7670, 7671, 7672, 7674, 7677, 7678, 7679, 7680, 7681, 7682, 7683, 7690, 7695, 7710, 7711, 7712, 7713, 7714, 7719, 7720, 7721, 7722, 7723, 7724, 7725, 7726, 7727, 7728, 7729, 7730, 7733, 7734, 7735, 7736, 7737, 7738, 7739, 7740, 7741, 7742, 7743, 7744, 7745, 7746, 7747, 7748, 7749, 7750, 7751, 7752, 7753, 7754, 7755, 7756, 7757, 7758, 7759, 7760, 7761, 7762, 7763, 7764, 7765, 7767, 7770, 7772, 7773, 7774, 7775, 7776, 7777, 7778, 7779, 7780, 7784, 7785, 7786, 7788, 7789, 7790, 7791, 7792, 7793, 7794, 7795, 7796, 7797, 7798, 7799, 7800, 7801, 7805, 7806, 7807, 7808, 7811, 7814, 7816, 7817, 7818, 7819, 7820, 7821, 7822, 7831, 7832, 7833, 7835, 7836, 7837, 7839, 7840, 7841, 7842, 7843, 7844, 7845, 7847, 7851, 7853, 7854, 7863, 7865, 7866, 7867, 7869, 7871, 7872, 7877, 7878, 7880, 7882, 7883, 7884, 7888, 7889, 7890, 7892, 7893, 7896, 7898, 7899, 7900, 7901, 7902, 7903, 7910, 7911, 7912, 7913, 7914, 7915, 7916, 7919, 7922, 7925, 7926, 7927, 7929, 7930, 7931, 7933, 7934, 7936, 7937, 7938, 7939, 7940, 7941, 7942, 7943, 7944, 7945, 7953, 7955, 7958, 7959, 7960, 7961, 7963, 7964, 7966, 7967, 7968, 7969, 7970, 7972, 7973, 7974, 7976, 7977, 7978, 7979, 7980, 7983, 7984, 7986, 7987, 7989, 7990, 7991, 7992, 7993, 7994, 7995, 7996, 7998, 7999, 8002, 8003, 8004, 8005, 8006, 8010, 8011, 8015, 8018,

6. BIONOMICS AND ECOLOGY—*contd.*

8019, 8020, 8021, 8023, 8024, 8025, 8026, 8027, 8028, 8030, 8031, 8032, 8033, 8034, 8035, 8039, 8043, 8045, 8048, 8049, 8052, 8053, 8057, 8058, 8059, 8062, 8063, 8064, 8065, 8066, 8067, 8068, 8080, 8081, 8084, 8086, 8087, 8089, 8090, 8091, 8092, 8093, 8094, 8095, 8096, 8098, 8102, 8103, 8106, 8107, 8109, 8113, 8115, 8116, 8117, 8121, 8122, 8126, 8127, 8128, 8129, 8131, 8132, 8134, 8137, 8138, 8139, 8140, 8163, 8164, 8165, 8166, 8167, 8168, 8170, 8173, 8174, 8176, 8177, 8178, 8179, 8180, 8182, 8184, 8185, 8189, 8191, 8193, 8194, 8195, 8196, 8199, 8200, 8201, 8205, 8206, 8209, 8210, 8211, 8212, 8213, 8214, 8215, 8216, 8217, 8218, 8219, 8221, 8222, 8223, 8224, 8225, 8227, 8228, 8230, 8231, 8232, 8233, 8234, 8235, 8236, 8239, 8241, 8245, 8248, 8251, 8254, 8256, 8257, 8258, 8260, 8261, 8262, 8264, 8265, 8266, 8267, 8268, 8269, 8270, 8271, 8272, 8273, 8275, 8276, 8277, 8279, 8280, 8281, 8282, 8283, 8284, 8285, 8286, 8287, 8288, 8289, 8292, 8293, 8297, 8298, 8299, 8301, 8303, 8306, 8307, 8309, 8313, 8314, 8315, 8316, 8317, 8318, 8319, 8320, 8322, 8323, 8324, 8325, 8326, 8327, 8328, 8329, 8330, 8331, 8332, 8333, 8337, 8338, 8339, 8340, 8341, 8342, 8343, 8345, 8347, 8348, 8349, 8351.

7. PHASES

(Including biometry)

7347, 7571, 7581, 7666, 7834, 7891, 7934, 8014, 8290, 8330.

8. EVOLUTION, PHYLOGENY, GENETICS, ETC.

7405, 7422, 7425, 7578, 7795, 7876, 7897, 7904, 8108, 8118, 8120.

9. CONTROL

7249, 7253, 7254, 7255, 7256, 7257, 7258, 7259, 7261, 7262, 7263, 7264, 7265, 7266, 7267, 7269, 7270, 7272, 7274, 7275, 7276, 7277, 7279, 7280, 7281, 7283, 7284, 7286, 7287, 7288, 7289, 7290, 7291, 7293, 7294, 7295, 7296, 7298, 7301, 7302, 7306, 7307, 7308, 7310, 7311, 7312, 7315, 7318, 7321, 7322, 7324, 7325, 7326, 7327, 7330, 7333, 7335, 7336, 7340, 7342, 7343, 7345, 7349, 7350, 7351, 7353, 7356, 7358, 7359, 7361, 7364, 7371, 7378, 7388, 7397, 7399, 7400, 7401, 7402, 7408, 7409, 7414, 7415, 7416, 7417, 7418, 7419, 7420, 7421, 7423, 7424, 7446, 7447, 7450, 7466, 7471, 7474, 7475, 7477, 7484, 7486, 7490, 7499, 7506, 7507, 7509, 7510, 7511, 7512, 7513, 7515, 7516, 7523, 7525, 7526, 7527, 7528, 7532, 7533, 7534, 7535, 7536, 7539, 7540, 7541, 7542, 7543, 7548, 7552, 7556, 7557, 7558, 7559, 7560, 7564, 7565, 7566, 7567, 7568, 7569, 7573, 7574, 7576, 7577, 7582, 7592, 7594, 7595, 7598, 7601, 7602, 7603, 7604, 7609, 7610, 7611, 7614, 7615, 7617, 7618, 7620, 7626, 7627, 7632, 7639, 7640, 7641, 7643, 7645, 7646, 7647, 7650, 7651, 7658, 7662, 7663, 7668, 7671, 7683, 7718, 7719, 7721, 7722, 7728, 7734, 7739, 7741, 7743, 7745, 7747, 7748, 7749, 7750, 7753, 7755, 7756, 7757, 7758, 7759, 7760, 7763, 7766, 7767, 7768, 7769, 7771, 7774, 7780, 7784, 7785, 7790, 7792, 7793, 7794, 7802, 7803, 7804, 7805, 7806, 7807, 7812, 7813, 7814, 7815, 7817, 7818, 7821, 7830, 7833, 7836, 7838, 7842, 7864, 7868, 7870, 7880, 7886, 7887, 7888, 7889, 7890, 7892, 7893, 7894, 7900, 7903, 7916, 7917, 7918, 7920, 7921, 7922, 7925, 7926, 7927, 7929, 7930, 7932, 7936, 7937, 7938, 7939, 7940, 7941, 7942, 7943, 7944, 7945, 7955, 7956, 7958, 7960, 7961, 7963, 7964, 7965, 7967, 7968, 7969, 7970, 7971, 7972, 7973, 7974, 7976, 7978, 7980, 7981, 7982, 7992, 8001, 8004, 8011, 8012, 8015, 8016, 8017, 8018, 8024, 8026, 8027, 8028, 8029, 8030, 8032, 8033, 8034, 8035, 8036, 8037, 8038, 8040, 8041, 8042, 8047, 8048, 8049, 8053, 8055, 8059, 8060, 8061, 8080, 8081, 8082, 8083, 8084, 8085, 8087, 8092, 8099, 8100, 8101, 8104, 8105, 8109, 8110, 8111, 8112, 8114, 8115, 8116, 8128, 8129, 8130, 8131, 8163, 8164, 8167, 8169, 8170, 8171, 8172, 8174, 8175, 8176, 8178, 8179, 8181, 8182, 8183, 8184, 8189, 8190, 8191, 8192, 8193, 8194, 8195, 8196, 8197, 8200, 8201, 8202, 8203, 8205, 8206, 8207, 8209, 8210, 8211, 8212, 8213, 8214, 8215, 8216, 8217, 8218, 8219, 8220, 8221, 8222, 8223, 8224, 8227, 8228, 8229, 8237, 8238, 8239, 8248, 8251, 8252, 8257, 8258, 8263, 8264, 8268, 8269, 8270, 8271, 8272, 8274, 8276, 8277, 8278, 8279, 8280, 8281, 8282, 8283, 8284, 8285, 8286, 8287, 8291, 8292, 8293, 8294, 8295, 8296, 8297, 8298, 8299, 8300, 8301, 8303, 8305, 8306, 8308, 8315, 8316, 8320, 8321, 8326, 8327, 8331, 8333, 8337, 8339, 8342, 8343, 8344, 8349, 8350, 8351, 8352, 8353.

10. ZOOGEOGRAPHY, FAUNISTICS AND TAXONOMY

7252, 7300, 7339, 7346, 7357, 7360, 7362, 7368, 7370, 7373, 7374, 7375, 7376,
 7382, 7383, 7387, 7389, 7390, 7392, 7393, 7394, 7395, 7396, 7398, 7403, 7404, 7405,
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 7882, 7885, 7895, 7905, 7906, 7907, 7908, 7909, 7924, 7928, 7935, 7946, 7947, 7949,
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 8240, 8242, 8243, 8244, 8246, 8247, 8249, 8250, 8253, 8255, 8256, 8265, 8266, 8267,
 8302, 8304, 8309, 8310, 8311, 8312, 8312a, 8328, 8329, 8334, 8335, 8340a, 8345.

**A NEW SYMPHYLID, *SCUTIGERELLA KRISHNANI* sp. n.,
FROM SOUTH INDIA**

By

G. SUNDARA RAJULU

Department of Zoology, Madras University, Madras†

(With 1 Text-figure)

The symphylid fauna of India is incompletely known. The only three named species of Symphyla known from India are *Scutigerella subunguiculata* (Imms, 1908) from Tehri-Garhwal (Himalaya), *S. unguiculata* (Gravely, 1910) from Bengal and *Polyxenella krishnani* (Sundara Rajulu, 1963) from Madras State. The collection of Myriapoda from Alagarkoil Hills, near Madurai (Madras State), included several symphylids which, though belonging to the genus *Scutigerella* Ryder, differs from the two known species *S. subunguiculata* and *S. unguiculata* in the possession of nonemarginate penultimate scutum.

Acknowledgements.—I have great pleasure in acknowledging my indebtedness to Professor G. Krishnan, Director, Zoology Research Laboratory, University of Madras, for guidance and encouragement; to Mr. N. Krishnan, Research Scholar in this Department for help during collection; and to the University of Madras, for the award of a Research Studentship.

***Scutigerella krishnani* *sp. n.**

(Text-fig. 1)

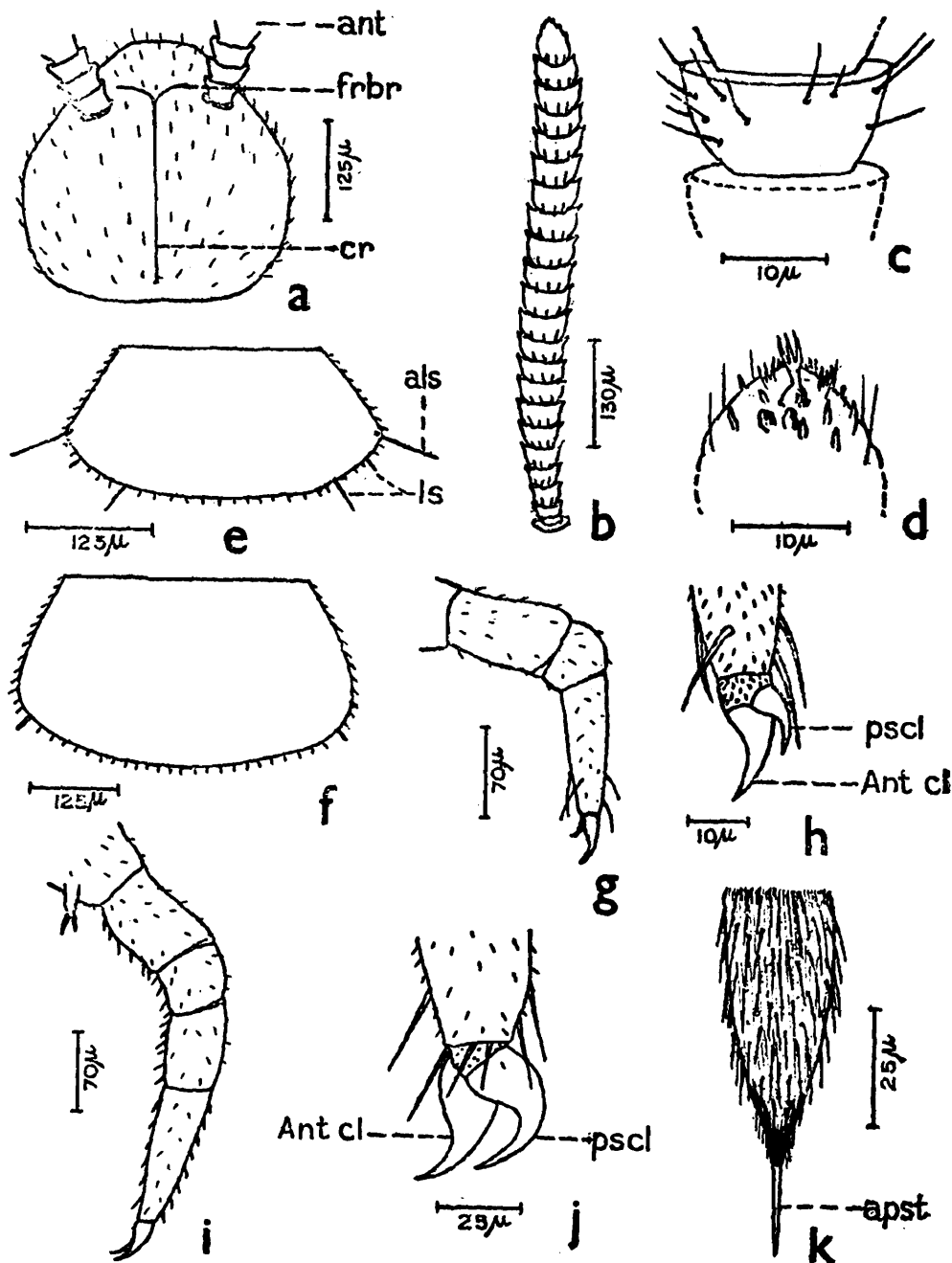
MATERIAL.—25 specimens, Alagarkoil Hills (Madras State, South India) *ca.*, 9°55' N. lat. and 78°10' E. long.; coll. *G. Sundara Rajulu* 25.vii.1962; found in soft mud under stones.

DESCRIPTION.—*General* : Body creamy white; anterior region narrow. Total body-length (without antennae) 2.5-3.0 mm. *Head* : Very narrow with a well-developed lateral angle; all setae on head uniform in length; central rod distinctly visible with frontal branches (Text-fig. 1a). *Eyes and ocelli* : Absent. *Antennae* : Very stout, short and roughly club-shaped, 0.5-0.7 mm. long; number of joints 19-25 (Text-fig. 1b), varying with the length of specimens; setae on inner side of distal joints slightly longer than those on outer side. Second whorl begins from the 7th proximal segment. This whorl is completely developed only on outer side in the distal joints in larger specimens (Text-fig. 1c). Third whorl begins about middle of antenna on lower side, but with only one seta and towards

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end of antenna with 2-3 setae. Setae in central whorl long on upper and only a little shorter, on lower side. Terminal joint with a large stalked striped organ on a conspicuous protuberance, two small stalked striped organs, two globular organs without stalk and some styliform, small sensory setae (Text-fig. 1*d*). Segments of antennae saucer-shaped except the terminal one which is globular.



TEXT-FIG. 1.—*Scutigerella krishnani* sp. n.

(a) Head, in dorsal view. (b) Entire antenna. (c) Antennal setae of the 16th distal segment. (d) Terminal segment of antenna. (e) Second scutum. (f) Penultimate scutum. (g) First leg. (h) Claws of first leg. (i) Last leg. (j) Claws of last leg. (k) Cercus.

als., antero-lateral seta; ant., antenna; Ant cl., anterior claw; apst., apical seta; cr., central rod; frbr., frontal branch of central rod; ls., lateral setae; pscl., posterior claw.

Scuta : Second scutum (Text-fig. 1e) with posterior margin slightly convex in middle; antero-lateral setae directed sideways; of lateral setae, two pairs longer than the other; the postero-lateral pair longest, only half as long as antero-lateral pair and directed backwards. First, third, fifth, sixth and eighth scuta each with an anterolateral seta, about as long as that on second scutum and one or two pairs of lateral setae developed as on second scutum. Fourth, 7th and 9th-13th scuta without any anterolateral seta but with 1-2 pairs of lateral setae as long as those of second scutum and directed backward. The penultimate scutum (Text-fig. 1f.) similar in contour to second scutum. **Legs :** First pair with an anterior claw, long and freely curved; the posterior claw small, half as long as anterior one; no front seta (Text-fig. 1g or h.). Last pair of legs with tarsus 4-5 times longer than deep; metatarsus with 5-6, and tarsus with 7-8 setae in anterior dorsal row (Text-fig. 1i.); these setae and the distal dorsal setae similar; anterior and posterior claws (Text-fig. 1j.) similar, both short and thick. **Cerci :** Slightly over 4-5 times longer than deep; beset with a large number of long setae; terminal area looking backwards; apical seta slightly shorter than depth of cerci (Text-fig. 1k.).

TYPE-SPECIMENS.—*Holotype* : Z. S. I. Reg. No. 3008/18, in spirit in a vial, Alagarkoil Hills (Madras State), 25. vii. 1962, coll. G. Sundara Rajulu, deposited in National Zoological Collections, Zoological Survey of India, Calcutta.

Paratypes : The same data as for the holotype; deposited as follows : (i) Two examples Z.S.I. Reg. No. 3009/18, in spirit in a vial, with Zoological Survey of India. (ii) One example with Dr. G. Krishnan, Director, Zoological Research Laboratory, Madras University, Madras.

TYPE-LOCALITY AND GEOGRAPHICAL DISTRIBUTION.—India : Alagarkoil Hills, as above. Known only from the type-locality.

COMPARISON.—*Scutigerella krishnani* n. sp. is similar to *S. orientalis* Hansen, but is easily distinguishable by the following features : (i) Antennae very short, with 19 to 25 saucer-shaped segments. (ii) Central rod distinctly visible, with frontal branches. (iii) Anterolateral setae of second scutum directed sideways. (iv) Penultimate scutum not emarginate. (v) First pair of legs without front seta. (vi) Twelfth pair of legs with similar anterior and posterior claws. (vii) Apical seta of cerci about half as long as depth of cerci.

In *S. orientalis* Hansen, the antennae are very long with 22-41 bi-conical segments; no central rod; anterolateral setae of second scutum directed forwards; penultimate scutum emarginate; first pair of legs with a well-developed, stumpy frontal seta, twelfth pair of legs with dissimilar claws; apical seta of cerci as long as depth of cerci.

SUMMARY

1. A new species of Symphyla, *Scutigerella krishnani* is described from southern India (type-locality Alagarkoil Hills, Madras State).

2. It is closely allied to *S. orientalis* Hansen, in the nature and arrangement of the seta on the segments of the antennae, the contour of the

second scutum and the nature of the claws in the first pair of legs ; but differs in the nature and number of the antennal segments, the possession of a distinct central rod, non-emarginate penultimate scutum and the twelfth pair of legs with similar claws.

REFERENCES

- GRAVELY, F. H. 1910. On a subspecies of *Scutigerella unguiculata* Hansen, found in Calcutta.—*Rec. Indian Mus.*, Calcutta, **5**, p. 483.
- HANSEN, H. J. 1903. The genera and species of the order Symphyla.—*Quart. J. micr. Sci.*, London, **47**, pp. 1-101.
- IMMS, A. D. 1908. On a new species of Symphyla from the Himalayas.—*J. Linn. Soc. (Zool.)*, London, **30**, pp. 252-255.
- MICHELbacher, A. E. 1942. Synopsis of *Scutigerella*.—*Ann. ent. Soc., Amer.*, **35**, pp. 267-288.
- SUNDARA RAJULU, G. 1963. On the occurrence of a new Symphylid *Polyexnella krishnani* gen. et. sp. nov.—*Ann. Mag. nat. Hist.*, London, **6**, pp. 137-144.
- VERHOFF, K. W. 1934. Symphyla und Pauropoda. In : Dr. H. G. Bornn's Klassen und Ordnungen des Tierreichs. (Akad. Vern.). Buch 3, pp. 120-198.

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