

RECORDS of the INDIAN MUSEUM

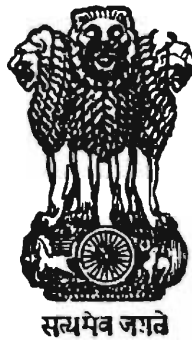
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ZOOLOGICAL RESULTS OF THE INDIAN CHO-OYU EXPEDITION (1958) IN NEPAL

PART 1.—FOREWORD

By

M. L. ROONWAL

Director, Zoological Survey of India, Calcutta

FOREWORD

The Zoological Survey of India attached Mr. A. K. Datta (then Zoological Assistant) as the Zoologist to the Indian Cho-Oyu Expedition which successfully climbed this peak in Nepal in 1958. Mr. Datta made collections, between altitudes 2,000—5,000 metres above sea-level, of about 2,000 specimens of animals belonging to various groups such as small mammals, reptiles, amphibians, fishes, spiders and insects. A number of interesting photographs were also taken by him to illustrate the terrain and the habitat of the various animals collected.

Collections were made from a total of 64 Collecting Stations. Where possible, Mr. Datta also recorded the maximum and minimum air temperatures at each Station. This information is given in Part 2.

The Zoological Results of the Expedition will be published in 9 parts as follows :—

Part 1.—Foreword. (*By* M. L. Roonwal.)

Part 2.—The Collecting Stations. (*By* A. K. Datta.)

Part 3.—Mammals. (*By* H. Khajuria.)

Part 4.—Reptiles. (*By* M. N. Acharji.)

Part 5.—Amphibia. (*By* M. B. Kripalani.)

Part 6.—Pisces [in part]. (*By* A. K. Datta.)

Part 7.—Pisces [concluded]. *Psilorhynchus pseudecheneis*, a new Cyprinid fish from Nepal. (*By* A. G. K. Menon and A. K. Datta.)

Part 8.—Arachnida. (*By* B. K. Tikader.)

Part 9 --Insecta. (*By* A. P. Kapur.)

ZOOLOGICAL RESULTS OF THE INDIAN CHO-OYU EXPEDITION (1958) IN NEPAL

PART 2.—THE COLLECTING STATIONS

By

A. K. DATTA

Zoological Survey of India, Calcutta

(With 1 Table, 1 Text-fig., and 5 Plates)

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I—INTRODUCTION

The Indian Cho-Oyu Expedition 1958 started from Kathmandu on March 26, 1958, and returned on June 24, 1958, after climbing the top of Cho-Oyu (8,155 metres) on May 15, 1958. The route followed by the expedition is shown in the accompanying map. (Text-fig. 1). The Zoological field work in the expedition consisted of making extensive collections of the fauna in the Solo Khumbu district in the Eastern Nepal Himalayas upto an elevation of 5,500 metres in the Dudh Kosi, Bhote Kosi and Imja Khola Valleys, by myself. Altogether over 2,000 specimens were collected at the altitude between 2,000 — 5,500 metres in the varying habitats like torrential streams, lakes, high meadows, barren-rocks, ablation valleys, snow fields and glaciers. The collection includes many species of fishes, frogs, lizards, snakes, small mammals, insects and spiders.

In the torrential streams of the Dudh Kosi drainage basin up to an elevation of 3,000 metres, 13 species of fish belonging to 12 genera of 4 families were obtained. The fish *Coraglanis kishinonyei* Kimura has been recorded for the first time in the Indian region. Lizards, snakes and frogs were collected under barren rocks and in the marshy areas along the long mountainous paths up to an elevation of 3,000 metres. In altitudes of 3,000 — 5,000 metres in the high solitary Khumbu glaciated moraines, examples of mouse hares, voles, and different species of insects belonging to the families Gryllidae, Nepidae, Meloidae and Coccinellidae were collected in the xerophytic vegetation below rocks and in crevices. Spiders belonging to the genera *Tegenaria*, *Hania*, *Drassodes*, *Phaeocedus* and *Xysticus* were collected in the fissures of rocks and boulders in the ablation valleys near the Nagpala and Khumbu glaciers at 5,500 metres altitude.

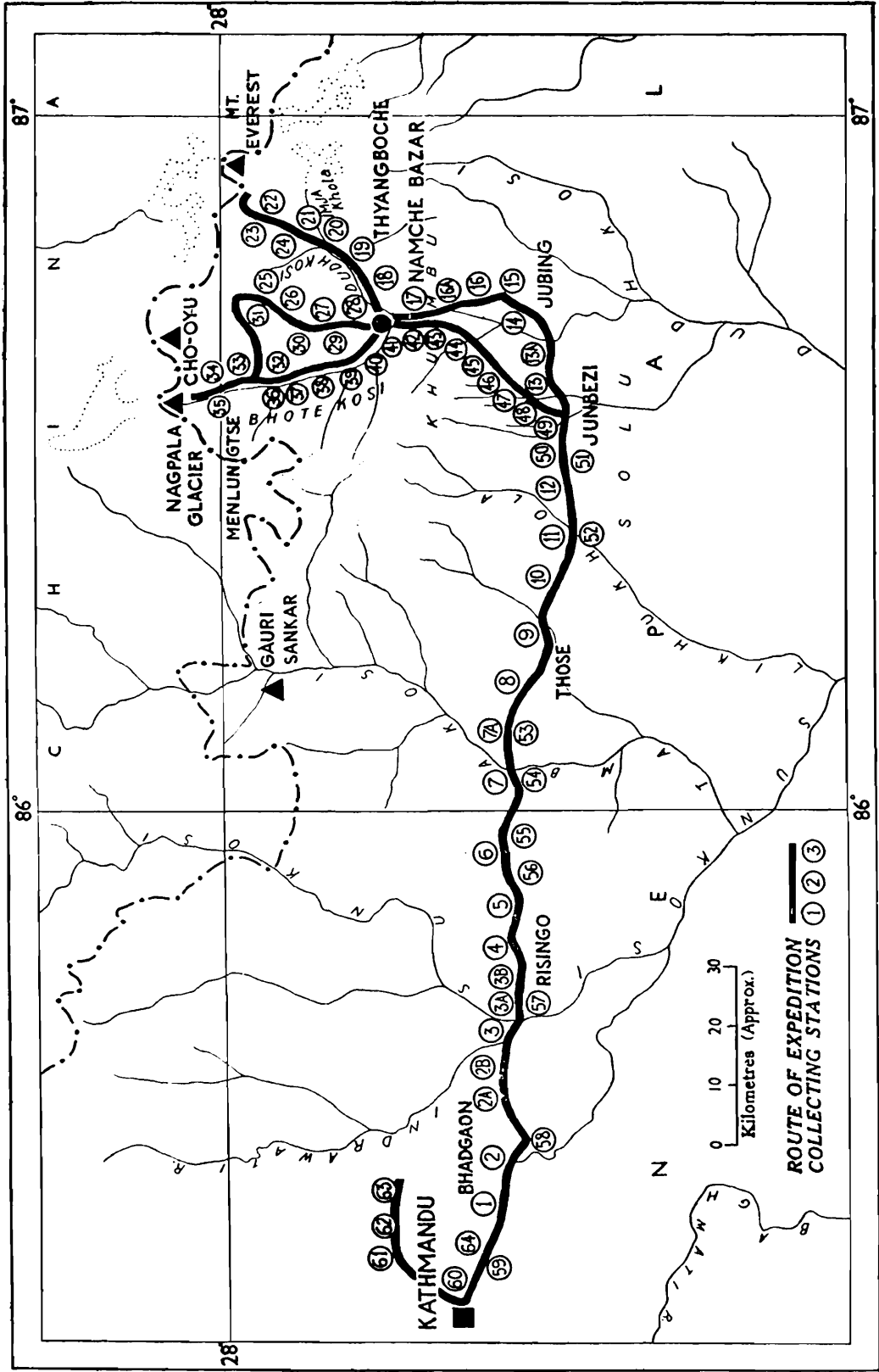
A number of photographs were taken of the habitats where the specimens were collected (Plates 8-12).

[225]

The list of stations where collections were obtained are detailed in Table 1.

II—LIST OF COLLECTING STATIONS
(TABLE 1)

Collections were made at a total of 64 Collecting Stations which are listed in Table 1. Where possible, the air temperatures recorded and the number of specimens collected at each Station are given.



TEXT-FIG. 1—Map of the Eastern Nepal Himalayas, showing the route of the Indian Cho-Oyu Expedition (1958).

TABLE 1.

List of Collecting Stations, etc., in Nepal where halts were made and collections obtained during the Indian Cho-Oyu Expedition (1958) from March 20 to June 24, 1958.

*Abbreviations :**M.*, altitude in metres.*Ex.*, *exs.*, examples (of zoological specimens).*Lat.*, latitude.*Long.*, longitude*Sta.*, Station Number.

Serial number	Date (1958)	Station number	Locality ; approximate altitude (in metres) ; approximate latitude (N.) and longitude (E.) ; and description	Air temperature recorded during halt (in degrees C.)		Collections made (Nos. approx.)	Remarks
				Minimum	Maximum		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1	19-3-58 to 25-3-58	Sta. 0	Kathmandu, 1371 m. Lat. 27°44' ; long. 85°20'.	34°	45°	<i>Nil.</i>	
2	26-3-58	Sta. 1	Banepa, 1577 m. Lat. 27°42' ; long 85°31'	38°	52°	<i>Nil.</i>	
3	27-3-58	Sta. 2	Stream 2 miles N. of Panch Khal, 1800 m. Lat. 27°43' ; long. 85°33'.	34°	55°	fishes	
3(a)	27-3-58	Sta. 2A	Small shallow pool at Panch Khal.	34°	55°	frogs	
3(b)	27-3-58	Sta. 2B	At. Alt. 1890 m, Small Pool	34°	55°	frogs	
4	28-3-58	Sta. 3	Stream of Dolaghat, 710 m. Lat. 27°44' ; long. 85°48'.	32°	53°	fishes	
						aquatic insects	

TABLE 1-- *contd.*

List of Collecting Stations, etc., in Nepal where halts were made and collections obtained during the Indian Cho-Oyu Expedition (1958) from March 20 to June 24, 1958.

Serial number	Date (1958)	Station number	Locality ; approximate altitude (in metres) ; approximate latitude (N) and longitude (E.) ; and description	Air temperature recorded during halt (in degrees C.)		Collections made (Nos. approx.)	Remarks
				Minimum	Maximum		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
5	28-3-58	Sta. 3A	On way to Phokda village, 700 m. Lat. 27°40' ; long. 85°42'.	32°	53°	insects	
6	29-3-58	Sta. 4	Stream N.E. of Chaubas, 2021 m. Lat. 27°41' ; long. 85°44'.	29°	50°	fishes	
7	30-3-58	Sta. 5	Pool with rocky bed at Rdisingo, 2200 m. Lat. 27°43' ; long. 85°43'.	27°	53°	tadpole	
8	31-3-58	Sta. 6	Stream at Phoktey, 2000 m. Lat. 27°45' ; long. 85°47'.	28°	55°	fishes	
9	1-4-58	Sta. 7	On way to Namdu, 2030 m. Lat. 27°46' ; long. 85°46'.	28°	51°	insects	
10	1-4-58	Sta. 7A	Stream at Namdu, 2000 m. Lat. 27°46' ; long. 85°46'.	27°	54°	fishes	
11	2-4-58	Sta. 8	Fast flowing stream with rocky bed at Sikri, 2100 m. Lat. 27°37' ; long. 86°10'.	25°	60°	fishes	
12	3-4-58	Sta. 9	Stream at Thosey, 2600 m. Lat. 27°38' ; long. 86°17'.	25°	53°	fishes	
13	4-4-58	Sta. 10	Bhandar. 2745 m. Lat. 27°41' ; long. 86°40'.	24°	51°	insects	
14	5-4-58	Sta. 11	Stream, on way to Shate, 2700 m. Lat. 27°40' ; long. 86°30'.	20°	55°	fishes	
15	6-4-58	Sta. 12	Stream N. of Jumbezi, 3000 m. Lat. 27°40' ; long. 86°35'.	20°	48°	fishes	

16	7-4-58	Sta. 13	On way to Taksindu, 3200 m. underneath stone boulders, Lat. 27°41' ; long. 86°37'.	19°	45°	snake, frogs	
17	7-4-58	Sta. 13A	Stream, N. of Takasindu, 3100 m. Lat. 27°42' ; long. 86°39'.	19°	45°	fishes	
18	8-4-58	Sta. 14	On way to Khari Khola, 3108 m. Lat. 27°44' ; long. 86°43'.	20°	38°	frog	
19	9-4-58	Sta. 15	Ghat, 3200 m. Lat. 27°45' ; long. 86°44'	19°	40°	fishes	
20	10-4-58	Sta. 16	Stream N. of Ghat, 3200 m. Lat. 27°45' ; long. 86°45'.	18°	34°	fishes	
21	10-4-58	Sta. 16B	N. E. of Ghat, 3100 m. Lat. 27°44' ; long. 86°44'.	19°	32°	insects	
22	15-4-58	Sta. 17	From Shrubby vegetation, 3500 m. N. of Namche Bazar, Lat. 27°46' ; long. 86°44'	18°	39°	insects	11-4-58 to 14-5-58 halt at Namche Bazar.
23	16-4-58	Sta. 18	On way to Thyangaboche, 4150 m. from Shrubby vegetation, Lat. 27°41' ; long. 86°46'	19°	35°	insects	Halt at Thyangaboche from 17-4-58 to 19-4-58.
24	20-4-58	Sta. 19	On way to Pangboche, 4572 underneath stones with vegetations. Lat. 27°42' ; long. 86°47'.	16°	29°	insects	
25	21-4-58	Sta. 20	On way to Thaparma, 4572. Lat. 27°43' ; long. 86°49'.	14°	30°	insects	
26	22-4-58	Sta. 21	On way to Phariiche, 4600 m. Lat. 27°45' ; long. 86°46'.	10°	29°	insects	

TABLE 1.—*contd.*

List of Collecting Stations, etc., in Nepal where halts were made and Collections obtained during the Indian Cho-Oyu Expedition (1958) from March 20 to June 24, 1958.

Serial number	Date (1958)	Station number	Locality ; approximate altitude (in metres) ; approximate latitude (N.) and longitude (E.) ; and description	Air temperature recorded during halt (in degrees C.)		Collections made (Nos. approx.)	Remarks
				Minimum	Maximum		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
27	23-4-58	Sta. 22	On way to Lobujeige, 4876. m. Lat. 27°44' ; long. 86°48'.	8°	28°	spider	
28	25-4-58	Sta. 23	On way to camp at 4376 m.			spider, insects	
29	24-4-58	Sta. 23A	Gorashan, 5334 m. Lat. 27°49' ; long. 86°45'.	5°	25°	insects	
						spiders	
						mammal	
30	26-4-58	Sta. 24	On way to Labujeye, 4876 m. Lat. 27°50' ; long. 86°50'.	4°	25°		No collections, due to bad weather.
31	27-4-58	Sta. 25	On way to Panjboche, 4500 m. long. 86°49'. Lat. 27°45'.	8°	26°		Ditto.
32	28-4-58	Sta. 26	On way to Thyangaboche, 4260 m. Lat. 27°44' ; long. 86°45'.	10°	29°		Ditto.
33	29-4-58 to 30-4-58	Sta. 27	On way to Phorche, 4300 m. Lat. 27°50' ; long. 86°45'.	10°	25°		Ditto.
34	1-5-58 to 3-5-58	Sta. 28	On way to Namche Bazar, 3810 m. from Shrubby vegetations. Lat. 27°52' ; long. 86°44'.	20°	31°	insects	
35	4-5-58	Sta. 29	On way to Thami, underneath bouldery with shrubby vegetation, 4000 m. Lat. 27°38' ; long. 68°40'.	19°	32°	insects	

36	5-5-58	Sta. 30	On way to Marlung. 4500 m. Lat. 27°50' ; long. 86°40'.	19°	30°	insects	
37	6-5-58	Sta. 31A	On way to Chule, 5000 m. Lat. 28° ; long. 86°36'.	15°	30°	insects	
38	7-5-58, 8-5-58, 10-5-58	Sta. 31B Sta. 32, Sta. 33	Round about Lunak, 5100 m. Lat. 28°25' ; long. 86°34'.	13°	20°	spider an insects	
39	11-5-58	Sta. 34	On way to Lehengo, 5100 m. Lat. 28°10' ; long. 86°40'.	13°	21°	insects	
40	12-5-58	Sta. 35	On way to Mosamba Lake, 4600 m. Lat. 28°20' ; long. 86°42'.	15°	25°	insects	
41	13-5-58 to 14-5-58	Sta. 36 Sta. 36A	On way to Dudh, Pokhari, 5000 m. Lat. 28°10' ; long. 86°45'.	14°	23°	insects	
			Small pool on the N. of Dudh Pokhari, 5000 m. Lat. 28°20' ; long. 86°46'.	14°	25°	Oligochaeta	
42	15-5-58	Sta. 37	On way to Dob, 5000 m. Lat. 27°58' ; long. 86°50'.	14°	25°	insects	
43	16-5-58 to 20-5-58	Sta. 38	Round about Namche Bazar, 3800 m. Lat. 27°48' ; long. 86°43'.	19°	31°	insects	
44	21-5-58	Sta. 39	On way to Puyan, 3350 m. Lat. 27°40' ; long. 86°47'.	19°	32°		No. Collections due to bad weather
45	22-5-58	Sta. 40	Round about Puyan, 3500 m. Lat. 27°40' ; long. 86°47'	20°	39°		Ditto.

TABLE 1—*contd.*

List of Collecting Stations, etc., in Nepal where halts were made and Collections obtained during the Indian Cho-Oyu Expedition (1958) from March 20 to June 24, 1958.

Serial number	Date (1958)	Station number	Locality ; approximate altitude (in metres) ; approximate latitude (N.) and longitude (E.) ; and description	Air temperature recorded during halt (in degrees C.)		Collection made (Nos. approx.)	Remarks
				Mnimum	Maximum		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
46	23-5-58	Sta. 41	On way to Lukhla, 4870 m. Lat. 27°45' ; long. 86°45'.	20°	32°	insects	
46(a)	24-5-58	Sta. 42					
46(b)	26-5-58	Sta. 43					
47	27-5-58	Sta. 44	On way to Chama, 3000 m. Lat. 27°42' ; long. 86°43'.	20°	39°	insects	
48	28-5-58	Sta. 45	On way to Tata, 4400 m. Lat. 27°41' ; long. 86°40'.	19°	34°	insects	
49	29-5-58	Sta. 46	On way to Jamnaso, 4876. Lat. 27°42' ; long. 86°29'.	20°	39°	spider. and fishes	
50	30-5-58	Sta. 47	On way to Thanja, 3600 m. Lat. 27°48' ; long. 86°35'.	25°	40°	insects	
51	1-6-58	Sta. 48	On way to Jumbezi, 2700 m. Lat. 27°40' ; long. 86°35'.	35°	45°	insects and fishes	
52	1-6-58	Sta. 49	Round about Jumbezi, 2600 m. Lat. 27°40' ; long. 86°35'.	33°	50°	lizard, frog	
53	1-6-58	Sta. 50	At Jumbezi, 2895, stream with rocky bed. Lat. 27°40' ; long. 86°35'.	35°	51°	fishes	
54	2-6-58	Sta. 51	On way to Chinga stream with rocky bed, 2438 m. Lat. 27°38' ; long. 86°39'.	32°	49°	fishes	

55	3-6-58	Sta. 52	On way to Chagmz, stream (fast flowing, rocky bed), 2895 m. Lat. 27°40' ; long. 86°18'.	32°	55°	fishes, frog	
56	4-6-58	Sta. 53	Fast flowing stream at Mekchang, 2590 m. Lat. 27°35' ; long. 86°16'.	39°	56°	fishes	
57	5-6-58	Sta. 54	Fast flowing stream at Yarshab, 2286 m. Lat. 27°34' ; long. 86°10'.	37°	51°	fishes	
58	6-6-58	Sta. 55	Stream with rocky bed, fast flowing at Kerantichap. 1828 m. Lat. 27°38" ; long. 86°2'.	40°	60°	fishes	
59	7-6-58	Sta. 56	Stream at Chetra, 24000 m. Lat. 27°40' ; long. 86°.	41°	65°	fishes	
60	8-6-58	Sta. 57	Stream at Sangsholi, 2133 m. Lat. 27°38' ; long. 85°48'.	39°	64°	leech and fishes	
61	9-6-58	Sta. 57A	Dolaghat, 1066 m. Lat. 27°38' ; long. 85°40'.	37°	60°		No collection. due to bad weather.
62	10-6-58	Sta. 58	Baneppa, 1066 m. Lat. 27°35' ; long. 85°32'.				
63	11-6-58 to 19-6-58	Sta. 59	Kathmandu, 1371 m. Lat. 27°40' ; long. 85°20'.	38°	52°	fishes	
64	20-6-58	Sta. 60	Baghmati River, Kathmandu Valley, 1370 m. Lat. 27°45' ; long. 85°30'.	38°	65°	fishes	
65	21-6-58	Sta. 61	Stream near Nilkanth, alt. 1524 m. Kathmandu Valley. Lat. 27°45' ; long. 85°15'.	38°	68°	fishes	

TABLE 1—concl'd.

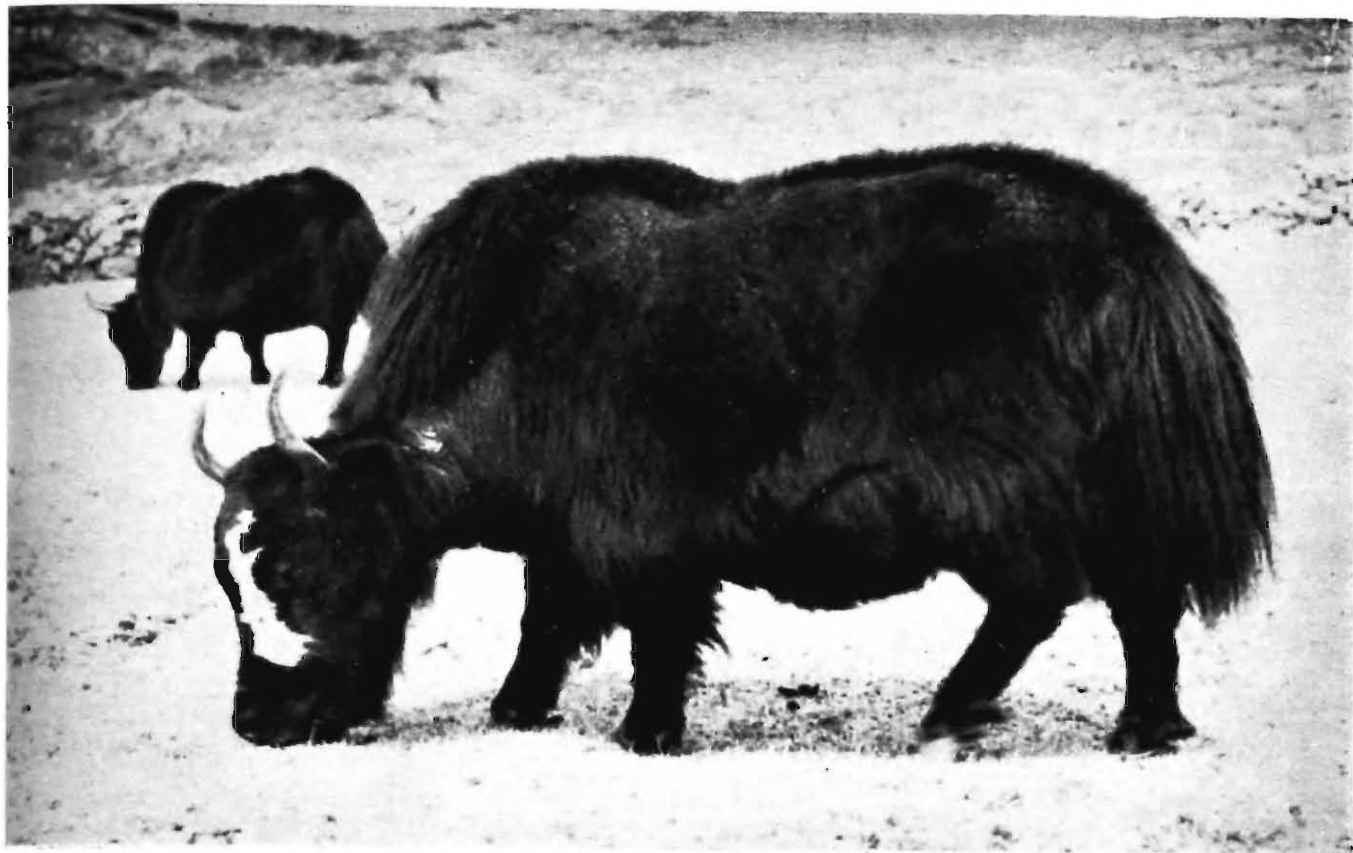
List of Collecting Stations, etc., in Nepal where halts were made and collections obtained during the Indian Cho-Oyu Expedition (1958) from March 20 to June, 24 1958.

Serial number	Date (1958)	Station number	Locality ; approximate altitude (in metres) ; approximate latitude (N.) and longitude (E.); and description	Air temperature recorded during halt (in degrees C)		Collection made (Nos. approx.)	Remarks
				Minimum	Maximum		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
66	22-6-58	Sta. 62	Stream near Soumbhunath, 1370 m. Kathmandu Valley. Lat. 27°35' ; long. 85°15'.	35°	69°	fishees	
67	23-6-58	Sta. 63	Stream near Thankot., 1800 m. Kathmandu Vally. Lat. 27°40' ; long. 85°10'.	35°	69°	fishes	
68	24-6-58	Sta. 64.	Stream near Kirtipur , 1981 m. Kathmandu Valley. Lat. 27°43" ; long. 85°19".	35°	65°	fishes	

PLATE 8

FIG. 1.—Photograph, showing Yaks grazing in an enclosure at Chule (*ca.* 4,000 metres), dated 10th May 1958. (Photo : A. K. Datta, 10th May, 1958.)

FIG. 2.—A view of the Lower Dudh Kosi Valley (*ca.* 3,000 metres) below Namche Bazar, dated 10th April 1958. (Photo : A. K. Datta, 10th April, 1958.)



1



2

Top: Photograph, showing Yaks grazing in an enclosure at Chule.
Bottom: A view of the lower Dudh Kosi Valley.

234 (b)

PLATE 9

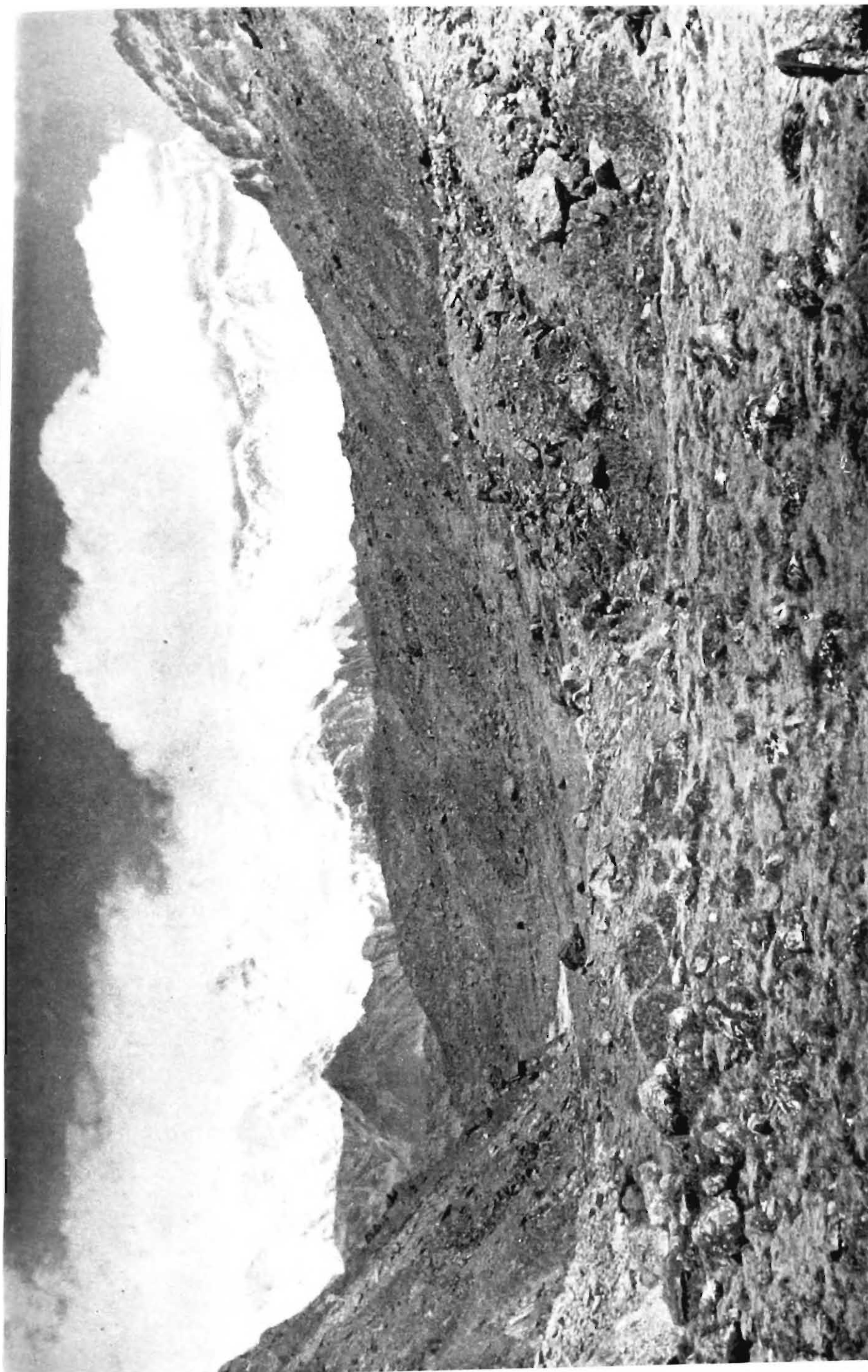
A view of the Bhote Kosi Valley as seen at Murlung (*ca.* 3,700 metres), dated the 8th May, 1958. (Photo : A. K. Datta.)



A view of the Bhote Kosi Valley at Murlung.

PLATE 10

A view of the mountains below Nagpala Glacier (*ca.* 4,000 metres). The Cho-Oyu group of peaks are seen in the background. (Photo : A. K. Datta, 20th May, 1958.)

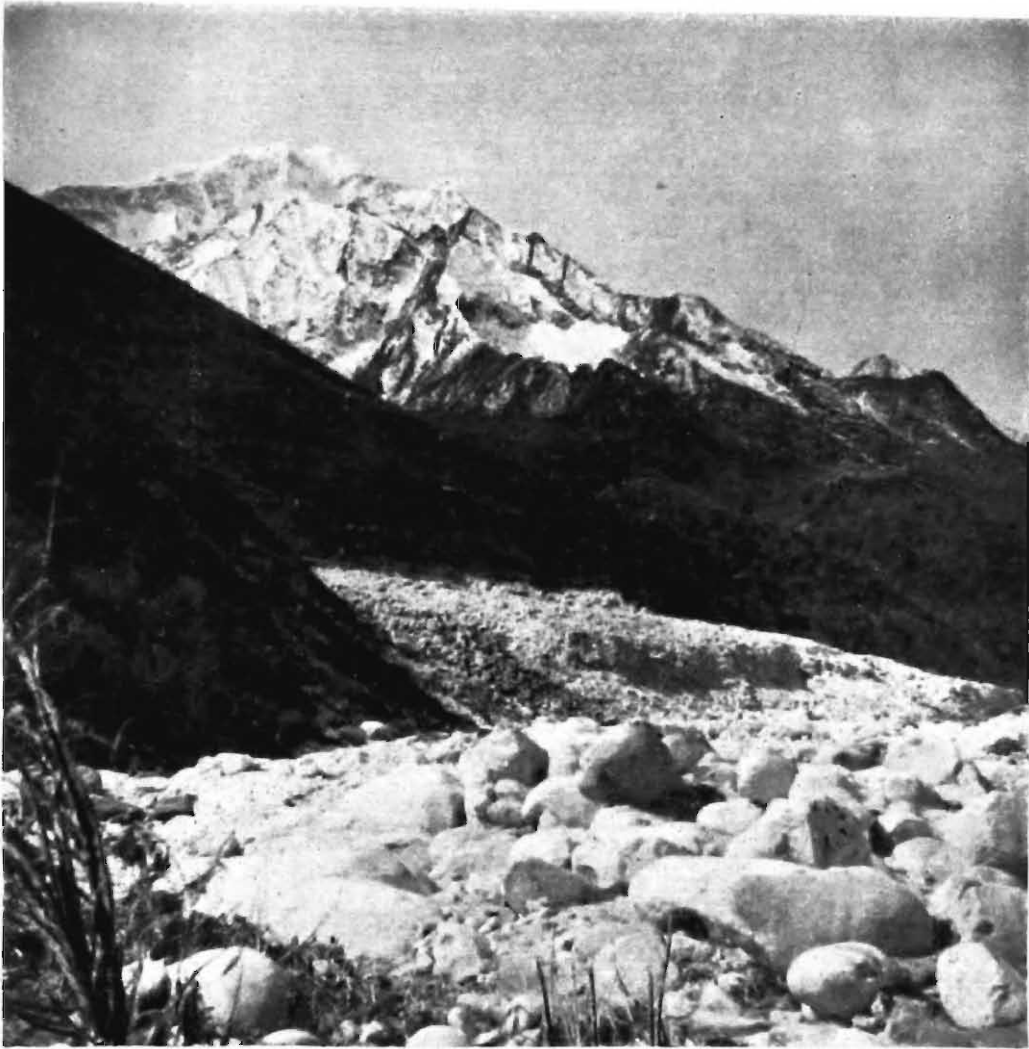


A view of the mountains below Nagpala Glacier.

PLATE 11

FIG. 1.—A view of the Mecharma Valley at Thami (*ca.* 3,200 metres). The Central peak is Mt. Taweche. (Photo : A. K. Datta, 23rd May, 1958.)

FIG. 2.—Looking across the Mecharma Valley above Thami. (Photo : A. K. Datta, 23rd May, 1958.)



1



2

Top: A view of the Mecharma Valley at Thami.
Bottom: A view across the Mecharma Valley above Thami.

PLATE 12

FIG. 1.—A view of the Nagpala Glacier above Lunak (*ca.* 4,000 metres). Snow of peaks are seen in the background. (Photo : A. K. Datta, 26th May, 1958)

FIG. 2.—A view of the Bhore Kosi Valley below Nagpala glacier (*ca.* 3,500 metres). (Photo : A. K. Datta, 28th May, 1958.)



1



2

Top: A view of the Nagpala Glacier above Lunak.

Bottom: A view of the Bhote Kosi Valley below Nagpala Glacier.

ZOOLOGICAL RESULTS OF THE INDIAN CHO-OYU EXPEDITION (1958) IN NEPAL

PART 3.—MAMMALS

By

H. KHAJURIA

Zoological Survey of India, Calcutta

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I—INTRODUCTION

The mammal collection made by the Indian Cho-Oyu Expedition (1958) in Nepal consists of only three specimens comprising three species belonging to Orders Lagomorpha and Rodentia. The only other account of the mammals of the area (Khumbu Dist., Eastern Nepal) appears to be by Biswas and Khajuria (1955, 1957).

All measurements are in millimetres. The measurements of the skulls are according to the system of Ellerman (1947).

II—SYSTEMATIC ACCOUNT

Order 1. LAGOMORPHA

Family OCHOTONIDAE

Genus *Ochotona* Link

Ochotona macrotis ? *macrotis* (Günther)

1875. *Lagomys macrotis* Günther, *Ann. Mag. nat. Hist.*, London (4) 16, p. 231, Doba, Kuenlun Mountains, extreme southern Chinese Turkestan (on road from Yarkand to Karakoram Pass, Blanford).

Material.—1 ex., ♀, Sta. No. 23A (Gorashan, ca. 5,334 m. Khumbu Dist., Eastern Nepal), 25-iv-58.

Field notes.—Collected in loose rocks.

Systematic and other notes.—The specimen closely resembles the one referred to this form by Biswas and Khajuria (1957, p. 241). However, since both these specimens are alcoholic and unmeasured, no further

remarks on their subspecific identification can be given except those already made by these authors.

Measurements.—

Hind-foot, 29 ; *ear*, 24·5.

(From an alcoholic specimen.)

Skull : *Occipitonasal length*, 45 ; *palate*, 18·5 ; *diastema*, 10·3 ; *palatal foramen*, 12·2 ; *bulla*, 10·5 ; *upper tooth row*, 8·7 ; *condylobasal length*, 41·4.

Distribution.—Russian Tianshan and Pamir Mountains, Kashmir, northward to Karakoram Mountains, Kuenlun Mountains in Southern Chinese Turkestan , Eastern Nepal.

Order 2. RODENTIA

Family MURIDAE

Subfamily 1. MURINAE

Genus 1. *Rattus* Fischer

Rattus rattus ? *khumbuensis* Biswas and Khajuria

1955. *Rattus rattus khumbuensis* Biswas and Khajuria, *Proc. zool. Soc.*, Calcutta, 8(1), p. 27, Porcha, alt. ca. 4,267 m., Dudh Kosi Valley, Khumbu Dist., Eastern Nepal.

Material.—1 ex., juv. ♂, Sta. No. 18 (Thangboche Monastery Building, alt. ca. 4,158 m., Khumbu Dist., Eastern Nepal), 16. iv. 58.

Systematic and other notes.—The specimen is juvenile with the third molar in the course of eruption and cannot subspecifically be determined with certainty. It, however, appears close to *R. r. khumbuensis* B. & K. except that the dorsal coloration is somewhat darker and the underside a bit paler.

Measurements.—

Head and body, 73·4 ; *tail*, 97·5 , *hind-foot*, 25·2 ; *ear*, 13·7. (From an alcoholic specimen.)

Skull *Occipitonasal length*, 31·5 ; *palate*, 16·1 ; *diastema*, 8·0 ; *palatal foramen*, 4·7 ; *bulla*, 5·3 ; *upper tooth row*, 6·1 ; *condylobasal length*, 28·8.

Distribution.—High altitudes of Khumbu District, Eastern Nepal.

Subfamily 2. MICROTINE

Genus 2. *Alticola* Blanford

Alticola stoliczkanus stracheyi (Thomas)

1880. *Arvicola stracheyi* Thomas, *Ann. Mag. nat. Hist.*, London, (5) 6, p. 322. Ladak. Originally cited as Kumari, but see Hinton, 1926, p. 322.

Material.—1 ex., Sta. No. 23A (on way to Gorasham, alt. ca. 334 m., Khumbu District, Eastern Nepal), 25. iv. 58.

Field notes.—Collected in loose rocks.

Systematic and other notes.—Biswas and Khajuria (1957) recorded this vole from the same district and from a similar altitude.

Measurements.—

Body : *head and body*, 81·8 ; *tail*, 20·0 ; *hind-foot*, 18 ; *ear*, 8·5
(From an alcoholic specimen).

Skull : *Occipitonasal length*, 26·3 ; *palate*, 14·1 ; *diastema* 8·6 ; *palatal foramen*, 5·0 ; *bulla*, 5·7 ; *upper tooth row*, 6·2 ; *condylobasal length*, 27·2.

Distribution.—From Kashmir (Ladak) to Mount Everest (Eastern Nepal).

III—SUMMARY

Three species belonging to orders Lagomorpha and Rodentia are recorded from the Khumbu District, Eastern Nepal in the vicinity of Cho-Oyu peak.

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ZOOLOGICAL RESULTS OF THE INDIAN CHO-UYU EXPEDITION (1958) IN NEPAL

PART 4.—REPTILIA

By

M. N. ACHARJI

Zoological Survey of India, Calcutta
(With 1 Plate)

I—INTRODUCTION

Three reptilian specimens, a cobra (*Naja*) and two examples of *Calotes* lizards, were collected during the Expedition. Short systematic remarks on them are given below.

II—SYSTEMATIC ACCOUNT

Class REPTILIA

Order SQUAMATA

Suborder 1. *SERPENTES*

Family ELAPIDAE

***Naja naja kaouthia* Lesson**

(The Monocellate Indian Cobra)

1831. *Naja kaouthia* Lesson, in : Ferussac, *Bull. Sci. Nat.*, Paris, 25, p. 122. (Type-locality : Bengal).

Material.—1 ex., Sta. No. 13A, on way to Taksindhu, ca. 3,200 m. underneath stone boulders, lat. 27° 41' N. and long. 86° 37' E., 7. 9. 1958.

Systematic remarks.—A juvenile specimen ; total length 372 mm. tail-length 55 mm. Scales in the mid-body 18 ; ventral 190 ; caudal 54.

Coloration.—Brownish above with a faint blackish brown streak on the hinder part of the dorsal region. The monocellate marking on the hood is well marked.

Distribution.—Bengal and the Eastern Himalayas as far west as Nepal whole of Indo-China ; S. China.

Suborder 2. *SAURIA*

Family AGAMIDAE

***Calotes versicolor* (Daudin)**

(The Indian Tree-Lizard)

1802. *Agama versicolor* Daudin, *Hist. Nat. Rept.*, Paris, 3, p. 395, pl. 44 (Type-locality : India).

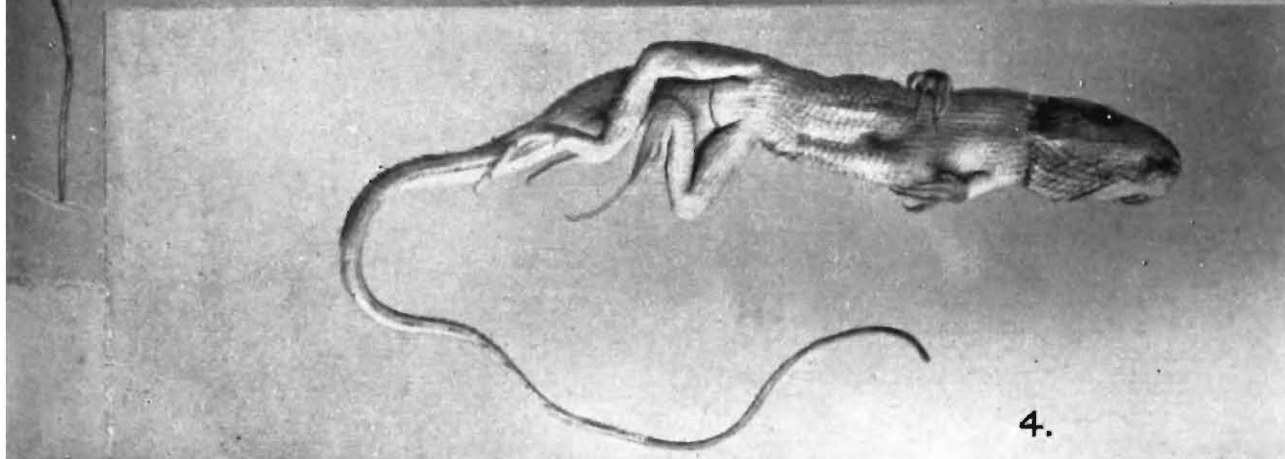
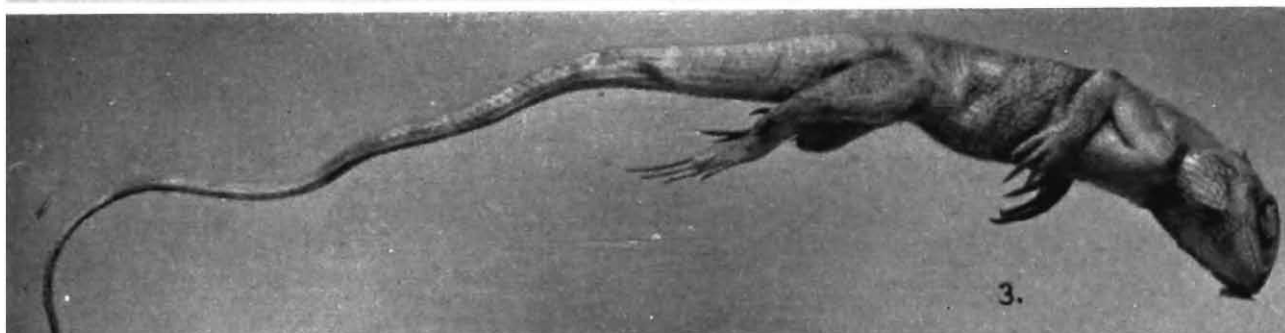
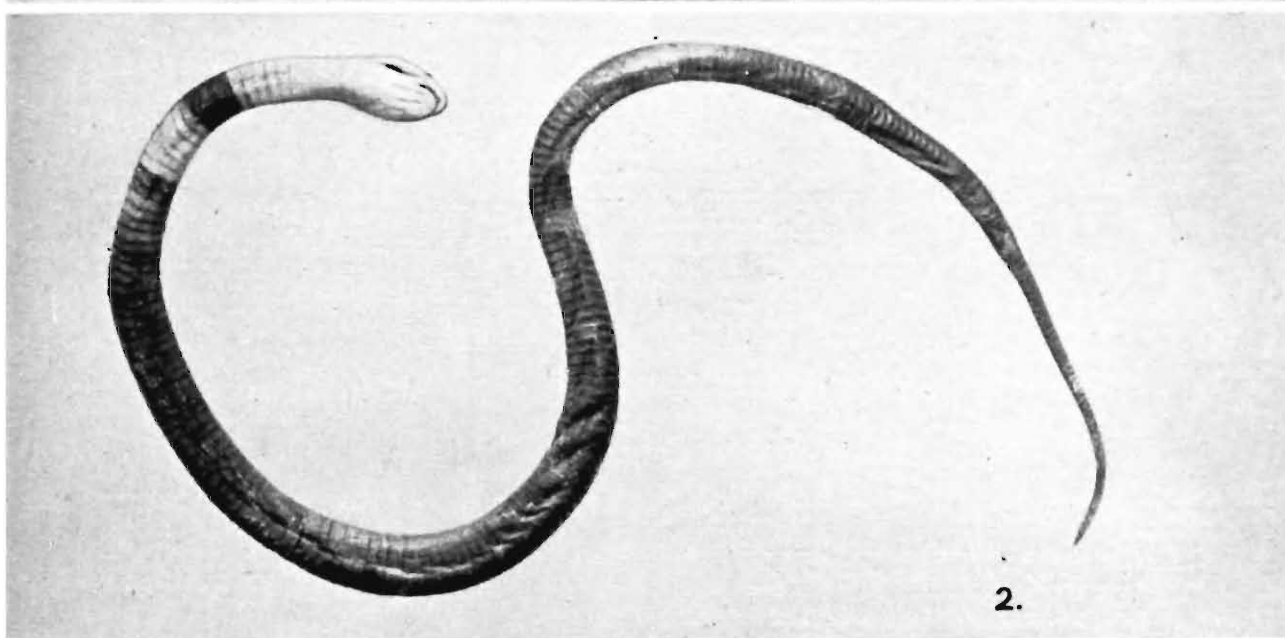
PLATE 13

FIG. 1.--Dorsal view of *Naja naja kaouthia*, collected during the Cho-Oyu Expedition.

FIG. 2.--Ditto, ventral view.

FIG. 3.--Lateral view of *Calotes versicolor*, collected during the Cho-Oyu Expedition, Sta. No. 14A.

FIG. 4.--Ditto, ventral view.



ZOOLOGICAL RESULTS OF THE INDIAN CHO-OYU EXPEDITION (1958) IN NEPAL

PART 5.—AMPHIBIA

By
(Miss) M. B. KRIPALANI

Zoological Survey of India, Calcutta

(With 1 Plate)

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I—Introduction		241
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I—INTRODUCTION

The following account is based on the collections made from Nepal, by Dr. A. K. Datta, in March-June, 1958, during the Indian Cho-Oyu Expedition (1,307-2,895 m. or 4,290 ft.-9,500 ft. altitude), at and around Panchkhal (1,307-1,577 m. or 4,290-5,175 ft.), Risingo (2,134 m. or 7,000 ft.), Taksindhu (2,804 m. or 9,200 ft.) and Chagna (2,896 m. or 9,500 ft.). Four species of the family Ranidae, viz., *Rana cyanophlyctis* Schneider, *R. limnocharis* Wiegmann, *Staurois afghanus* (Gunther) and *S. himalayana* Boulenger, are represented in the collection. *S. himalayana*, was hitherto known only from Darjeeling District (India) in the Eastern Himalayas and is now being recorded from Nepal.

The following abbreviations have been used :—Alt. m., altitude, in metres ; exs., examples (*i. e.*, number of individuals) ; Sta. No., collecting Station Number.

II—SYSTEMATIC ACCOUNT

Class AMPHIBIA

Order ECAUDATA

Family RANIDAE

Genus 1. *Rana* Linnaeus

1. *Rana cyanophlyctis* Schneider

1799. *Rana cyanophlyctis*, Schneider, *Hist. Amphibia*, Friederii, 1, p. 137. (*Type-loc.*: India Orientali.)

1920. *Rana cyanophlyctis*, Boulenger, *Rec. Indian Mus.*, Calcutta, 20, p. 12.

Material.—(i) 1 ex., Sta. No. 2B, Panchkhal, ca. 1,307 m. (4,290 ft.)
27.iii.58. (ii) 1 ex., Sta. No. 2A, Panchkhal, ca. 1,577 m. (5,175 ft.) in

a small pool, 27. iii. 58. (iii) 3 exs., Sta. No. 2A, Panchkhal, 8 miles east of Banipa, 27. iii. 58.

Systematic and other remarks.—Fingers rather pointed ; toes with the tips swollen, with very broad web nearly reaching the tips, the free border very feebly emarginate ; outer metatarsals separated nearly to the base ; a strong dermal fringe on the outer toe ; a small but very prominent, pointed digitiform inner metatarsal tubercle, its base about $\frac{1}{5}$ the length of the inner toe, no outer tubercle. Lower parts smooth and devoid of the series of small porous warts on the lower parts, thus distinguishing its from *R. hexadactyla* which is its closest ally.

Distribution.—The species occurs in Ceylon, India, including the Himalayas, upto 1,828 m. (6,000 ft.) and westwards into Afghanistan, Baluchistan and South Arabia. It is now being recorded from Panchkhal in Nepal.

2. *Rana limnocharis* Wiegmann

1835. *Rana limnocharis*, Wiegmann, *N. Acta. Ac. Leop. Carol.*, Halle, 17, p. 255.

1920. *Rana limnocharis*, Boulenger, *Rec. Indian Mus.*, Calcutta, 20, p. 28.

Material.—(i) 2 exs., Sta. No. 2A, Panchkhal, ca. 1,577 m. (5,175 ft.) in a small shallow pool, 27.iii.58. (ii) 4 exs., Sta. No. 2A, Panchkhal, 8 miles east of Banipa, 27.iii.58. (iii) 1 tadpole, Sta. No. 5A, Risingo, ca. 2,134 m. (7,000 ft.) in a stream 2 miles down the valley from camp, 30.iii.58. (iv) 1 ex., Sta. No. 13A, Taksindu, ca. 2,804 m. (9,200 ft.) in a ditch, 7.iv.58.

Systematic and other remarks.—The species is easily distinguished by having the fingers obtusely pointed, and the first finger longer than the second. Hind-limb moderately long ; the tibio-tarsal articulation not reaching the tip of snout. Toes obtusely pointed, usually half webbed, outer metatarsals united in the basal half, inner metatarsal tubercle oval or elliptical, blunt, about one-third the length of the inner toe, a small outer metatarsal tubercle present. Usually all the specimens are with a V-shaped band from eye to eye.

Tadpole.—The tadpole mentioned in the above material seems to belong to this species. It has the tail attenuate to a rather obtuse point, about twice as long as body. Beak white, edged with black, a long marginal series of upper labial teeth with a short series on each side, 3 long uninterrupted series of lower labial teeth, outer shortest.

Distribution.—The species occurs in Ceylon, India, China, Malay Archipelago, eastwards to Borneo, Lombok, the Philippines and Japan. It has already been recorded from the Himalayas (Sikkim) upto 2,133 m. (7,000 ft.).

Genus 2. *Staurois* Cope3. *Staurois afghanus* (Gunther)

1858. *Polypedates afghana*, Gunther, *Cat. Batr. Sal. Brit. Mus.*, London, p. 81 (Type-loc.: Afghanistan).
 1882. *Rana afghana*, Boulenger, *Cat. Batr. Ecaud.*, London, p. 69.
 1890. *Rana latopalmata*, Boulenger, *Faun. Brit. India. Rep. and Amph.*, London, p. 462.
 1920. *Rana latopalmata*, Boulenger, *Rec. Indian Mus.*, Calcutta, **20**, p. 217.
 1931. *Staurois afghanus*, Noble, *Biology of Amphibia*, New York, p. 521.
 1950. *Staurois afghanus*, Linn., *Feldiana (zool. m.)*, Chicago, **2**, p. 358.
 1953. *Staurois afghanus*, Kripalani, *Rec. Indian Mus.*, Delhi, **50**, p. 359.

Material.—(i) 1 frog, Sta. No. 52A, Chagna, ca. 2,896 m. (9,500 ft.) in a rocky stream, 3.vi.58. (ii) 1 tadpole, Sta. No. 5A, Risingo, ca. 2,134 m. (7,000 ft.) in a stream two miles down the valley from camp, 30.iii.58.

Systematic and other remarks.—The history of the species is complicated. Günther (1858) described it from an adult female and two larvae, all supposed to have come from Afghanistan. Boulenger (1882), transferred it to the genus *Rana* and in 1890 treated it as a synonym of *Rana latopalmata* Boulenger 1882, stating that the types were not collected from Afghanistan. However, the name *afghana* Gunther has absolute priority. Noble (1931) groups all the species of genus *Rana* having tadpoles with suctorial discs under the genus *Staurois* Cope.

Tadpole.—The tadpole has a ventral suctorial disc, and thus unmistakably belongs to the genus *Staurois*. It is distinguished from the tadpole of *S. himalayana* Boulenger by having the dental formula 3 which in *himalayana* is 3

$$\begin{array}{r} 4+4/1+1 \\ 2 \end{array} \qquad \begin{array}{r} 5+5/1+1 \\ 2 \end{array}$$

Distribution.—The species has been recorded from the western Himalayas (in Kangra district) and in Nepal (eastern Himalayas) between 305—1,829 m. (1,000—6,000 ft.), Khasi hills, southern Yunnan and hills of Burma as far south as Tenasserim. This is an additional record from Nepal (Changa and Risingo.)

4. *Staurois himalayana* Boulenger

1888. *Rana himalayana*, Boulenger, *Ann. Mag. Nat. Hist.*, London, (6) 2, p. 507. (Type-loc.: Darjeeling District, India).
 1920. *Rana himalayana*, Boulenger, *Rec. Indian Mus.*, Calcutta, **20**, p. 219.
 1931. *Staurois himalayana*, Noble, *Biology of Amphibia*, New York, p. 521.
 1953. *Staurois himalayana*, Kripalani, *Rec. Indian Mus.*, Delhi, **50**, p. 361.

Material.—1 tadpole, Sta. No. 52A, Chagna, ca. 2,896 m. (9,500 ft.) in rocky stream, 3.vi.58.

Systematic and other remarks.—The single tadpole resembles that of *S. afghanus* in having a ventral suctorial disc, but differs from it in having the dental formula as 3 which in *afghanus* is 3

$$\begin{array}{r} 4+4/1+1 \\ 2 \end{array} \qquad \begin{array}{r} 5+5/1+1 \\ 2 \end{array}$$

Distribution.—So far it has been recorded from eastern Himalayas in Darjeeling District (India). It is now being recorded from Chagna in Nepal.

III—SUMMARY

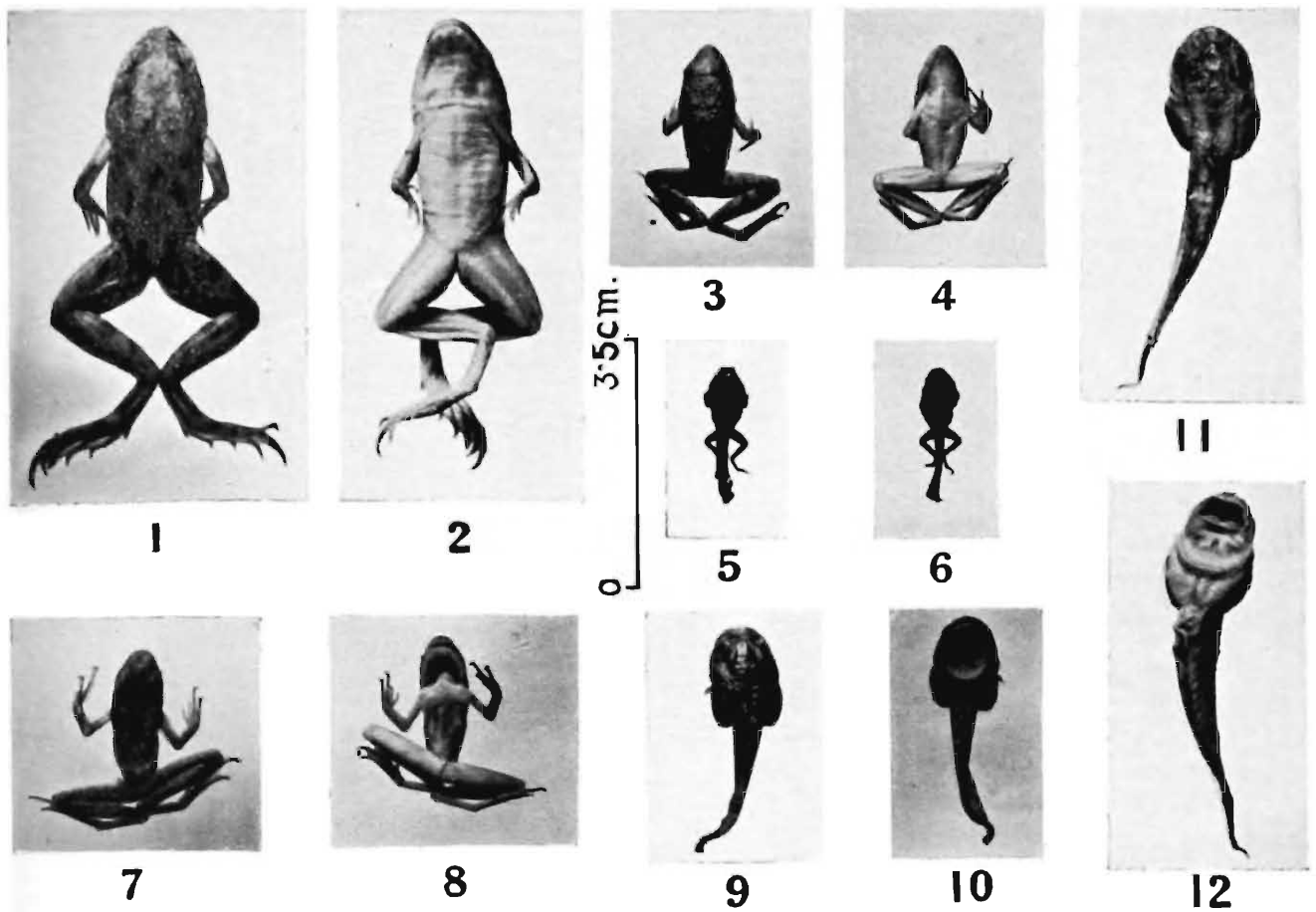
The report is based on a small collection of Amphibia from Nepal made by Dr. A. K. Datta of the Indian Cho-Oyu Expedition (1958). Four species, all belonging to the family Ranidae, are recorded. These are : *Rana cyanophlyctis* Schneider, *R. limncharis* Wiegmann, *Staurois afghanus* (Günther) and *S. himalayana* Boulenger. The last mentioned is being recorded from Nepal for the first time.

IV—REFERENCES

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PLATE 14

- FIG. 1.—*Rana cyanophlyctis* Schneider. Dorsal view.
 FIG. 2.—Ditto, Ventral view.
 FIG. 3.—*Rana limnocharis* Wiegmann. Dorsal view.
 FIG. 4.—Ditto, Ventral view.
 FIG. 5.—Ditto, Tadpole. Dorsal view.
 FIG. 6.—Ditto, Ditto, Ventral view.
 FIG. 7.—*Staurois afghanus* Günther. Dorsal view.
 FIG. 8.—Ditto, Ventral view.
 FIG. 9.—Ditto, Tadpole. Dorsal view.
 FIG. 10.—Ditto, Ditto. Ventral view.
 FIG. 11.—*Staurois himalayana* Boulenger. Tadpole. Dorsal view.
 FIG. 12.—Ditto, Ventral view.



Frogs and tadpoles collected during Indian Cho-Oyu Expedition (1958).

ZOOLOGICAL RESULTS OF THE INDIAN CHO-OYU EXPEDITION (1958) IN NEPAL

PART 6.—PISCES [IN PART]

By

A. K. DATTA

Zoological Survey of India, Calcutta

(With 1 Plate)

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I—INTRODUCTION

This paper is based on the fish collection made by me as a member in the Indian Cho-Oyu Expedition in Eastern Nepal from March to June, 1958. Thirteen species belonging to 12 genera and 4 families were collected. The fish *Coraglanis kishinouyei* Kimura is recorded here for the first time in the Indian Region.

I am thankful to Dr. M. L. Roonwal, Director, Zoological Survey of India, for giving me the opportunity in joining the Expedition from the Zoological Survey of India, and for the facilities in studying the collection. I am also thankful to Dr. K. S. Misra, lately Assistant Superintendent, Zoological Survey of India for guidance in working out the collection.

Abbreviations used.—m., altitude in metres ; *exs.*, examples ; *Sta.* No., Collecting Station.

II—SYSTEMATIC ACCOUNT

Order I. CYPRINIFORMES

Division (A) CYPRINI

Family 1. CYPRINIDAE

Subfamily (a) CYPRINIAE

Genus 1. *Barilius* Hamilton

1. *Barilius vagra* Hamilton

1822. *Cyprinus vagra* Hamilton, *Gangetic Fishes*, pp. 269 385. (*Type-loc.* : R. Ganges, Patna.)

Material.—(i) 7 exs., Sta. No. 61 (Nilkanth, *ca.* 1,524 m.) in the Baghmata River in rocky pools, 2. vi. 58. (ii) 25 exs., Sta. No. 60 (Kukanath, *ca.* 1,371 m.) in the Baghmata River, 11.vi.58.

Systematic remarks.—Length of the head 5.0—6.5, depth of body 5.0—6.0 in total length. Diameter of eye 3.5—4.0 in length of head. Barbels 2 pairs, rostral nearly half as long as head; maxillary very short. Dorsal origin midway between the posterior origin of the orbit and root of caudal, its last two rays over the anal. Pectoral not long as the head. Lateral-line scales 42-44; 2.0-2.5 rows between the lateral-line and base of the Pelvic; 20 rows before the base of dorsal. Colour silvery with 10-14 blue cross bars from the back to the lateral-line. Head naked. Body scaly.

Distribution.—Rivers in the Himalayan ranges, Jamuna and Ganga and Rivers in the Punjab, Assam and Baghmata R., Kathmandu Valley, Nepal.

Genus 2. *Schizothorax* Heckel

2. *Schizothorax richardsonii* (Gray)

1832. *Cyprinus richardsonii* Gray, *Illustr. Indian Zool.*, p. 1, Pl. 94, Fig. 2. (*Type loc.* : Eastern Himalayas.)

Material.—(i) 1 ex., Sta. No. 8 (Sikri, *ca.* 2,100 m.) in the Sikri stream, 2.iv.58. (ii) 6 exs., Sta. No. 52 (Chagma, *ca.* 2,875 m.) in the tributary of Khimte Khola stream, 3.vi.58. (iii) 2 exs., Sta. No. 13 (Takshindu, *ca.* 3,100 m.) in the Dudh Kosi drainage, 7.iv.58. (iv) 1 ex., Sta. No. 51 (Chinga, *ca.* 2,438 m.) in the Dudh Kosi drainage 2.vi.58. (v) 1 ex., Sta. No. 55 (Kerantichapp, *ca.* 1,829 m.) in the stream below Keranti village, 6.vi.58. (vi) 3 exs., Sta. No. 57 (Sanghosli, *ca.* 2,133 m.) in the Sun Kosi river, 8.vi.58. (vii) 6 exs. Sta. No. 3A (Dolaghat, *ca.* 710 m.) in the Sun Kosi river, 23.iii.58.

Systematic remarks.—Length of head 5.0—6.0, depth of body 5.0—6.0 in total length. Diameter of eye 5.5—6.0 in length of head. Barbels 2 pairs about half the length of eye and hidden in the fold of upper lip. Dorsal fin commencing about midway between the snout and base of caudal; its spine moderately strong and toothed. Ventral fin not reaching the anal. Caudal forked. Lateral-line scales 98—100, 24 rows of scales between lateral-line and base of dorsal and 19 between lateral-line and ventral. Head naked; body scaly.

Distribution.—The Dudh Kosi River, Eastern Nepal, and rivers in the Himalayas.

Genus 3. *Labeo* Cuvier

3. *Labeo dyocheilus* (McClelland)

1839. *Cyprinis dyocheilus* McClelland, *Indian Cyprinidae*, pp. 268, 330, pl. 37, Fig. 1. (*Type-loc.* : Assam.)

Material.—(i) 4 exs., Sta. No. 62 (Soumbhunath, ca. 1,370 m.) in rocky pools ; Baghmati river, 22.vi.58.

Systematic remarks.—Length of head 5·0—5·5, depth of body 5·5 in total length. Diameter of eye 4·5—5·0 in length of head. Barbels pairs, one short maxillary pair. Dorsal fin commences midway between end of snout and posterior end of base of anal fin. Pectoral reaches the ventrals. Caudal deeply forked. Lateral-line scales 42-43, 5 rows between lateral-line and base of ventral fin. Head naked, body scaly.

Distribution.—Rivers in the Himalayan ranges ; Assam ; Burma. R. Baghmati, Kathmandu Valley, Nepal.

Genus 4. *Danio* Hamilton

4. *Danio dangila* Hamilton

1822. *Cyprinus dangila* Hamilton. *Gangetic Fishes*, pp. 321, 390. (*Type-loc.*: Monghyr, Bihar.)

Material.—(i) 22 exs., Sta. No. 54 (Kirtipur, ca. 1,981 m.), in rocky pools ; Baghmati drainage, 24.vi.58.

Systematic remarks.—Length of head 4·5—5·0, depth of body 3·5—4·0 in total length. Diameter of eye 2·5—3·0 in length of head. Barbels 2 pairs ; rostral shorter than the head ; maxillary pair slightly longer. The posterior dorsal ray of the dorsal fin is above the anal. Caudal slightly emarginate. Lateral-line scales 37-38, 2 rows between the lateral-line and base of the ventral ; 18 rows before dorsal fin. Head naked, body scaly.

Distribution.—Rivers in the Himalayas at Darjeeling ; also hills close to Akyab (Day). R. Baghmati, Kathmandu Valley, Nepal.

Genus 5. *Garra* Hamilton

5. *Garra gotyla* Gray

1832. *Garra gotyla* Gray, *Illustr. Indian Zool.*, p. 88, Fig. 3. (*Type-loc.* : Rapti R., Gorakhpur, U. P.)

Material.—(i) 6 exs., Sta. No. 57 (Sanghosli, ca. 2,133 m. alt.) in rocky pools ; 8.vi.58.

Systematic remarks.—Length of head 5·0—5·5, depth of body 5·0—6·0 in total length of head. Barbels 2 pairs ; rostral one, maxillary, both are of equal length. Dorsal fin arises anteriorly to the origin of the ventral. Pectoral fin shorter than the head. Caudal slightly lobed. Lateral-line scales 32-34. Head naked, body scaly.

Distribution.—Dudh Kosi River, eastern Nepal. Also along the base of the Himalayas (Kangra, Ravi river, Simla, Chumba, Gharwal ; and Mahanadi river in Darjeeling District).

Subfamily (b) *PSILORHYNCHINAE*Genus 6. *Psilorhynchus* McClelland6. *Psilorhynchus* sp.

Several specimens of this fish were collected from the Dudh Kosi River, eastern Nepal. They constitute a new species, which is described in the next part (Part 7) of this series by A. G. K. Menon and A. K. Datta.

Family COBITIDAE

Genus 7. *Botia* Gray7. *Botia dayi* Hora

1932. *Botia dayi* Hora, *Rec. Indian Mus.*, Calcutta, 34, p. 571. (*Type-loc.* : Mahananda R., Darjeeling, Eastern Himalayas, W. Bengal.)

Material.—(i) 8 exs., Sta. No. 63 (Thankot, *ca.* 1,800 m.) in the Baghmati River, 23.vi.58.

Systematic remarks.—Length of head 4.0—4.5, depth of body 4.8—5.1 in the total length. Diameter of eye 5.9—6.4 in length of head. Barbels 8 ; 4 rostral, 2 maxillary and 2 mandibular. Origin of the dorsal fin is midway between the tip of snout and the base of caudal fin. Pectoral long and narrow. Caudal deeply forked with two lobes, sharp and rounded. Head naked.

Distribution.—Baghmati River, Kathmandu Valley, Nepal. Also Mahananda R., Darjeeling, W Bengal ; in the Ganga, Jamuna and Sone rivers in northern India.

Genus 8. *Nemacheilus* Van Hasselt8. *Nemacheilus beavani* Gunther

1868. *Nemacheilus beavani* Gunther, *Cat. Brit. Mus.*, London, 7, p. 350. (*Type-loc.* : Kosi R., Eastern Himalayas.)

Material.—45 exs., Sta. No. 60 (Pasupatinath, *ca.* 1,371 m.) in the Baghmati River, 11.vi.58.

Systematic remarks.—Length of head 5.0—5.5, depth of body 7.5—8.0 in total length. Diameter of eye 5.5 in length of head. Barbels six ; 4 rostral and 2 maxillary. Dorsal fin arises slightly nearer the end of the snout than base of the caudal. Caudal lobed. Pectoral extends two-thirds the distance to the root of the ventral. Caudal distinctly lobed and pelvic provided with fleshy appendages. Head naked ; scales embedded in the body skin. Observed for the first time in the Kathmandu Valley.

Distribution.—Rivers at the foot-hills of eastern Himalayas and Baghmati R., in the Kathmandu Valley, Nepal, (eastern Nepal).

9. *Nemacheilus inglisi* Hora

1935. *Nemacheilus* var. *inglisi* Hora, *Rec. Indian Mus. Calcutta*, 37, p. 58, ^P 3, Figs. 9, 10. (Type-loc. : Teesta R., Northern Bengal.)

Material.—(i) 6 exs., Sta. No. 6 (Phoktey, ca. 2,000 m. alt.) 31.iii.58 (ii) 10 exs., Sta. No. 9 (Those, ca. 2,400 m.) 3.iv.58. (iii) 2 exs., Sta. No. 51 (Chunga, ca. 2,438 m.) 2.vi.58. (iv) 5 exs., Sta. No. 8 (Sikri, ca. 2,100 m.) 2.iv.58. (v) 8 exs., Sta. No. 56 (Chetra, ca. 2,400 m.) 7.vi.58. (vi) 6 exs., Sta. No. 31 (Dolaghat, ca. 710 m.) 28.iii.58. (vii) 5 exs., Sta. No. 4 (Chaubas, ca. 2,021 m.) 29.iii.58. (viii) 7 exs., Sta. No. 55 (Kerantichap, ca. 1,8282 m.) 6.vi.58. (ix) 2 exs., Sta. No. 59 (Kathmandu, ca. 1,371 m. alt.) 11.vi.58. (x) 2 exs., Sta. No. 52 (Chagma, ca. 2,895 m.) 3.vi.58. (xi) 2 exs., Sta. No. 2 (Panchkhal, ca. 1,800 m.) 28.iii.58. (xii) 3 exs., Sta. No. 57 (Sangsholi, ca. 2,133 m. alt.) 8.vi.58. (xiii) 3 exs., Sta. No. 64 (Kirtipur, ca. 1,981 m.) 24.vi.58. (xiv) 6 exs., Sta. No. 54 (Yarshah, ca. 2,286 m.) 5.vi.58 in the Sun Kosi River.

Systematic remarks.—Length of the head 5.0—5.5, depth of the body 7.0—7.5 in the total length. Diameter of the eye 5.0—5.25 in the length of the head. Barbels 6 ; rostral shorter than the maxillary. Origin of the dorsal fin nearer to the base of the caudal than to the tip of the snout. Longest ray of the dorsal shorter than the depth of the body. Pectoral shorter than the head. Caudal fin truncate. Scales indistinctly embedded in the skin on the upper surface, none on the lower. A stoutly built little fish, cylindrical in front, tapering towards the tail ; slightly flattened in the vertical plane. Dorsal profile slightly arched and the ventral straight. Head naked and scales embedded in the upper surface of the body skin.

Distribution.—Dudh Kosi River in the eastern Nepal. Also in rivers of northern Bengal.

Division (B) SILURI

Family SISORIDAE

Genus 9. *Coraglanis* Hora10. *Coraglanis kishinouyei* Kimura

1934. *Auchloglanis kishinouyei* Kimura, *Sanghai Sci. Inst.*, Shanghai, 3, pp. 178-179, Pl. 4. Type-loc. : Chengtu or Loshan (—Kiating) markets, (Min River drainage, Szechwan, China.)

Material.—(i) 1 ex., Sta. No. 11 (Ghat, ca. 3,200 m.) in a flowing stream with rocky bed (a tributary of the Dudh Koshi River) 9.iv.58. (ii) 2 exs., Sta. No. 52 (Chagma, ca. 2,895 m.) in the Dudh Kosi River, 3.vi.58. (iii) 2 exs., Sta. No. 53 (Mekchang, ca. 2,590 m.) in the Likhu Khola stream, 4.vi.58. (iv) 2 exs., Sta. No. 9 (Those, ca. 2,600 m.) in the Likhu Khola stream, 3.iv.58.

Systematic remarks.—Length of head 5 in the total length. Barbels 4 pairs. Distance between anterior origin of pelvic and anal fin is 3 times in that between anterior origin of pelvic and base of caudal fin. Vent at the anterior origin of anal fin. Length of caudal peduncle 2 times in length of head and width 1.55 in its own length. *Goraglanis kishinouyei* is recorded for the first time the Indian Region. This species is known after two examples obtained by Dr. Cora D. Reeves from the markets of Chengru and Kiating in China. The addition of 7 examples in the collection of Zoological Survey of India is of great value. The characteristic feature in this species is that the gill openings are restricted and extended only upto the base of the pectorals spine.

Distribution.—Dudh Kosi River in eastern Nepal. Also Miu River drainage, Szechwan, China.

Genus 10. *Glyptothorax* Blyth

11. *Glyptothorax cavia* (Ham.)

1822. *Pimelodus cavia* Hamilton, *Gangetic Fishes*, p. 188. (*Type-loc.*: Northern Bengal.)

Material.—(i) 4 exs., Sta. No. 62. (Soumbhunath, ca. 1,370 m.) in the Baghmati stream. Kathmundu Valley, 22.vi.58.

Systematic remarks.—Length of the head 4.5—5.0, depth of the body 5.5—6.0 in total length. Diameter of eye 10.0—10.5 in length of head. Barbels 8, nasal barbel short; maxillary as long as head; mandibular shorter than the head. The origin of the dorsal fin is more towards the tip of the snout than the root of the caudal. The dorsal spine is blunt and rough, non-serrated on the anterior surface. Caudal fin forked. The occipital process is distinctly separated from basal bone of dorsal. The adhesive apparatus on the chest has a smooth space in the middle with a distinct central pit. Head and body scaleless.

Distribution.—Baghmati R. Kathmandu Valley, Nepal. Also in rivers of northern Bengal, Assam, eastern Himalayas and Burma.—

Genus 11. *Pseudecheneis* Blyth

12. *Pseudecheneis sulcatus* (McClelland)

1842. *Glyptosternon sulcatus* McClelland, *J. Nat. Hist. Calcutta*, 2, p. 587, Pl. 4. (*Type-loc.*: Khasi Hills, Assam.)

Material.—(i) 1 ex. Sta. No. 14 (Kharikhola, ca. 2,800 m. in the Dudh Kosi stream, 3.vi.58.

Systematic remarks.—Length of the head 5.5—5.25, depth of the body 6.0—6.5 in total length. Diameter of the eye 8.5—9.0 in length of head. Barbels 6; maxillary pair with broad and its length is one third of the length of the head. Origin of the dorsal fin is towards the tip of the snout than to the root of the caudal. Spine of the anterior dorsal is broad and weak. Caudal emarginate. The underside of the thorax is flattened into an adhesive apparatus with 14 transverse folds of skin. Head and body scaleless.

Distribution.—Dudh Kosi River, eastern Nepal. Also in rivers in Darjeeling (W. Bengal), and Khasi Hills (Assam).

Order II. OPHICEPHALIFORMES

Family OPHICEPHALIDAE

Genus 12. *Channa* Gronovis

13. *Channa gachua* (Ham.)

1822. *Ophiocephalus gachua* Hamilton, *Gangetic Fishes*, p. 68, Pl. 21, Fig. 21. (Type-loc. : Ponds and ditches of Bengal.)

Material.—(i) 5 exs., Sta. No. 2 (Panchkhal ca. 1,800 m. in the Punch stream, 27.iii.58. (ii) 1ex., Sta. No. 59 (Kathmandu ca. 1,371 m.) in the Baghmata River, 11.vi.58.

Systematic remarks.—Length of the head 4.2—5.5, depth of the body in total length. Diameter of the eye 6.5—7.0 in length of head. Barbels absent. Origin of the dorsal fin is towards the tip of the snout than to the root of the caudal. Pectoral fin is as long as the head behind the eye, pelvic fin is absent. Lateral-line scales 44-45; it bends downwards after proceeding about 12 scales. Head and body scaly.

Distribution.—Baghmata R., Kathmandu Valley, Nepal. Also rivers in India (including Andamans), Ceylon and Burma.

III—SUMMARY

During the course of the survey 13 species of fish belonging to 12 genera and 4 families were collected in which *Coraglanis kishinouyei* Kimura, *Psilorhynchus* sp., *Pseudecheneis sulcatus* (McClelland), *Glyptothorax cavia* (Ham.), *Danio dangila* Ham., *Garra gotyla* Gray, *Botia dayi* Hora, *Nemacheilus beavani* Gunther and *Channa gachua* (Ham.) have been recorded for the first time in the eastern Nepal Himalayas.

The genus *Schizothorax* Heckel is represented by *Schizothorax richardsonii* (Gray) It is found upto the altitude of 3,000 metres. This genus is spread from Afghanistan along the whole Himalayan range through the contiguous range of hills to south-eastern China. *Garra* Hamilton is represented by *Garra gotyla* Gray. It is found at 2,000 metres alt. in the rocky pools where the water is comparatively deeper and less rapid. *Psilorhynchus* McClelland is represented by a new species which are abundant in the torrential streams and grows to a fairly large size, with the body elongated almost whip-like posteriorly.

Nemacheilus van Hasselt is represented by two species, *N. beavani* Gunther and *N. inglisi* Hora. They are found among pebbles and stones at the bottom of the streams, where they largely escape the effects of the rushing water-current.

Coraglanis kishinouyei Kimura has been recorded for the first time in the Indian Region, in the torrents of the Dudh Kosi River (3,000m.)

in the Solo Khumbu District, eastern Nepal. *Pseudecheneis sulcatus* (McClelland) is recorded for the first time from the Dudh Kosi drainage (2,800 m.).

The genera *Labeo* Cuvier, *Danio* Ham., *Botia* Gray, *Barilius* Ham., *Glyptothorax* Blyth, and *Channa* Gronowis are found in the Baghmati drainage in the Kathmandu Valley up to the altitude of 1,800 metres, where the water is comparatively deep and less rapid.

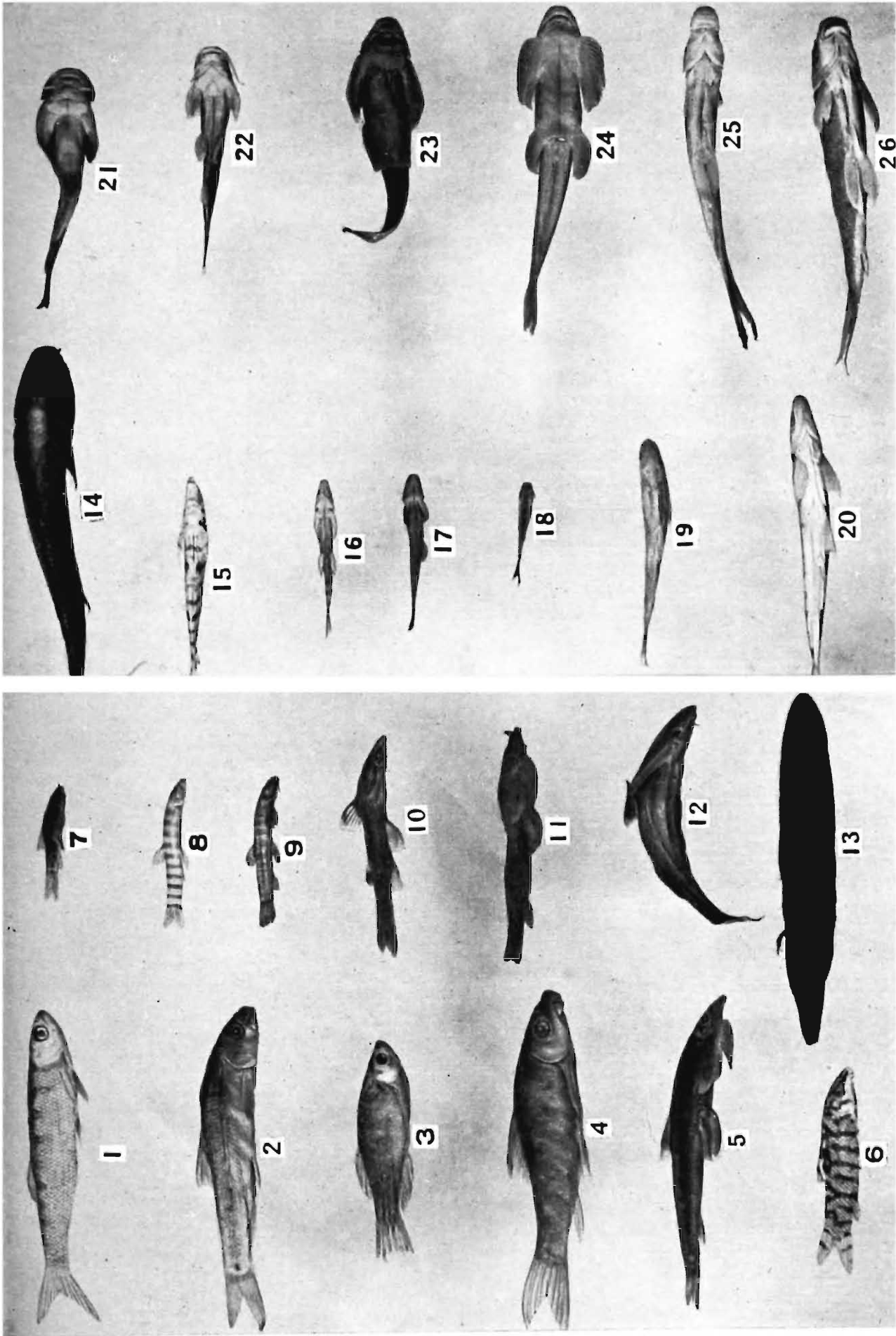
IV—REFERENCES

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PLATE 15

Fishes collected in eastern Nepal with the Indian Cho-Oyu Expedition (1958). Figs. 1 to 13.—Lateral view $\times \frac{1}{2}$. Figs. 14 to 26.—Ventral view $\times \frac{1}{2}$.

- FIG. 1.—*Barilius vagra* Ham.
 FIG. 2.—*Schizothorax richardsonii* (Gray).
 FIG. 3.—*Danio dangila* Ham.
 FIG. 4.—*Labeo dycheilus* (McClell.).
 FIG. 5.—*Psilorhynchus homaloptera* Hora & Mukerji.
 FIG. 6.—*Botia dayi* Hora.
 FIG. 7.—*Garra gotyla* Gray.
 FIG. 8.—*Nemacheilis beavani* Gunther.
 FIG. 9.—*Nemacheilus inglisi* Hora.
 FIG. 10.—*Glyptothorax cavia* (Ham.).
 FIG. 11.—*Coraglanis kishinouyei* Kimura.
 FIG. 12.—*Pseudechenis sulcatus* (McClell.).
 FIG. 13.—*Channa gachua* (Ham.).
 FIG. 14.—*Channa gachua* (Ham.).
 FIG. 15.—*Botia dayi* Hora.
 FIG. 16.—*Nemacheilus beavani* Gunther.
 FIG. 17.—*Nemacheilus inglisi* Hora.
 FIG. 18.—*Garra gotyla* Gray.
 FIG. 19.—*Danio dangila* Ham.
 FIG. 20.—*Chela vagra* Ham.
 FIG. 21.—*Coraglanis kishinouyei* Kimura.
 FIG. 22.—*Glyptothorax cavia* (Ham.).
 FIG. 23.—*Pseudechenes sulcatus* (McClell.).
 FIG. 24.—*Psilorhynchus homaloptera* Hora & Mukerji.
 FIG. 25.—*Schizothorax richardsonii* (Gray).
 FIG. 26.—*Labeo dyocheilus* (McClell.).



Fishes collected from eastern Nepal during the Indian Cho-Oyu Expedition (1958).

**ZOOLOGICAL RESULTS OF THE INDIAN CHO-OYU
EXPEDITION (1958) IN NEPAL**

PART 7.—PISCES (CONCLUDED). *Psilorhynchus pseudecheneis*, A NEW
CYPRINID FISH FROM NEPAL.

By

A. G. K. MENON and A. K. DATTA

Zoological Survey of India, Calcutta

(With 2 Plates)

Order CYPRINIFORMES

Family CYPRINIDAE

Subfamily *PSILORHYNCHINAE*

Genus *Psilorhynchus* McClelland

Psilorhynchus pseudecheneis sp. nov.

Material.—2 exs., Panchkhal, ca. 1,800 m., 27. iii. 58 ; 1 ex., Dolaghat, ca. 710 m., 28. iii. 58 ; 2 exs., Raisingo, ca. 2,200 m., 30. iii. 58 ; 2 exs., Phoktey, ca. 2,000 m., 31. iii. 58 ; 5 exs., Sikri, ca. 2,100 m., 2. iv. 58 ; 15 exs., Ghat, ca. 2,950 m., 10. iv. 58 ; 1 ex., Tanga, ca. 2,600 m., 30. v. 58 ; 1 ex., Chinga, ca. 2,438 m., 2. vi. 58 ; 3 exs., Mekchanj, ca. 2,590 m., 4. vi. 58 ; 2 exs., Keranti-chap, ca. 1,829 m., 6. vi. 58 ; all in the Dudh Kosi drainage, Solokumbhu District.

Diagnosis.—A *Psilorhynchus* attaining a standard length of 96.0 mm., with a greatly depressed and flattened body, small dorso-lateral eyes naked ventral surface with three pairs of transverse folds of skin on the belly, ten undivided rays in the pectoral fin, and 48 to 50 scales along the lateral line. Colour pale olivaceous green above, paler below with broad lateral band along the lateral line.

Description (Pl. 16).—Depth of body 7.45 (6.39—10.22) in standard length, length of head 5.97 (5.44—6.39). Width of head 1.08 (1.00—1.16) in length of head, height of head 1.75 (1.41—2.20). Pupil of the eye behind the middle of the length of head. Inter-orbital space somewhat flat. Snout spatulate, obtusely pointed with trenchant margins, the sides of the snout and face studded with fine tubercles in bigger specimens, 2.48 (1.91—2.94) in length of head, diameter of eye 5.49 (4.60—6.10), inter-orbital width 1.62 (1.15—2.20). Nares placed at the upper corner of snout and separated by a membranous flap. 48 to 50 scales in the lateral line ; $5\frac{1}{2}$ from the origin of the dorsal to lateral line ; $3\frac{1}{2}$ between

this and pelvic. The mid-dorsal streak in front of Dorsal with four to eight or nine scales ; the chest, belly and the posterior pelvic region upto vent naked. Dorsal 11, 7 ; distance between its anterior origin and tip of snout 2.18 (2.03—2.45) in standard length ; situated slightly behind the origin of pelvic ; its height much lower than the depth of body below it and its free margin straight and oblique. Pectorals x, 9 ; pedunculate, broad, expanded and fan-shaped with rounded free margin ; shoulder and the undivided rays studded with fine tubercles similar to tubercles of head, horizontally placed, longer than head, the length being about 1.54 (1.39—1.57) times the head. Pelvics shorter, inserted on the ventral surface of body with oblique base which converge when folded back, and truncate free margin extending considerably behind the anal opening, the anal opening being situated somewhat in the middle between the origin of pelvics and their tip. Anal 11, 5, short, with oblique outer margin. Distance from vent to anal fin 1.44 (1.20—1.62) in that between anterior origins of pelvic and anal fins. Caudal fin lunate with unequal lobes, the lower being slightly longer, length of caudal peduncle 1.17 (1.00—1.47) in length of head, width 2.24 (1.83—2.72) in its own length.

Posterior chamber of air-bladder much reduced ; the inner surface of peritonium solid black ; stomach thick-walled lined with numerous fleshy, posteriorly directed papillae arranged in spiral rows. The basipterygium and the structures of the pharyngeal bone and teeth correspond entirely to those of *P. homaloptera* described by Hora and Mukherji¹.

Colour, in alcohol, pale olivaceous green above, paler below with a fairly broad lateral band along the lateral line from operculum to the root of the caudal fin and a similar band dorsally from the occiput to tail ; fins dusky.

Type-specimens.—Deposited in the Zoological Survey of India, Calcutta. *Holotype* : Reg. No. F1928/2, 96.0 mm. in standard length, from a stream 5 km. north of village Ghat in the Dudh Kosi drainage, about 2,950 metres, Solokumbhu District, Eastern Nepal. *A. K. Datta* Coll., 10. iv. 1958. *Paratypes* : Reg. No. F1929/2, 14 specimens, 35.0-92.5 mm. in standard length ; taken along with holotype and with the same data.

Relationships.—*Psilorhynchus pseudecheneis* is evidently closely related to *P. homaloptera* Hora and Mukherji, a species of the Brahmaputra drainage in Assam which resembles the Eastern Nepal form in general facies and build, in the naked ventral surface, the greatly reduced nature of the air-bladder, in the structures of the pharyngeal bone, teeth, and the basipterygium and the inner surface of the peritonium being black. *P. pseudecheneis* is, however, well differentiated from *P. homaloptera* in the larger number (10) of undivided rays in the pectoral fins, the increased number (48-50) of scales along the lateral line and in the presence of three pairs of transverse folds of skin on the belly.

Hora and Mukherji (*op. cit.*) indicated the gradual modifications undergone by the species of *Psilorhynchus*. The larger number of undivided rays in the pectoral fins and the transverse folds of skin along the ventral surface of *P. pseudecheneis* are further specialisations for adhering to rocks in rapid waters. The solid black peritoneal lining

¹ Hora & Mukherjee, *Rec. Indian Mus.*, Calcutta, 37, pp. 391-397 (1935).

of the fish indicates that the fish lives on surfaces of rocks almost in direct sunlight.

Key to the species of Psilorhynchus McClelland

- 1a. Body spindle-shaped ; eyes large, lateral in position
complete lepidosis on ventral surface behind base of
pectoral ; unbranched rays in the pectoral fin 4 *sucatio*
- 1b. Body not spindle-shaped ; eyes smaller, dorso-lateral in
position ; irregular lepidosis or naked ventral surface behind
base of pectoral ; unbranched rays in pectoral fin more
than 4
 - 2a. Body moderately elevated and *Garra*-like in appearance ;
irregular lepidosis on ventral surface ; unbranched
rays in pectoral fin 6 ; scales along lateral line less
than 40 *balitora*
 - 2b. Body depressed and flattened ; naked ventral surface
unbranched rays in pectoral fin more than 6 ; scales
along lateral line more than 40
 - 3a. Unbranched rays in pectoral fin 8 ; scales along lateral
line 42-44 *homaloptera*
 - 3b. Unbranched rays in pectoral fin 10 ; scales along
lateral line 48-50 *pseudecheneis*
sp. nov

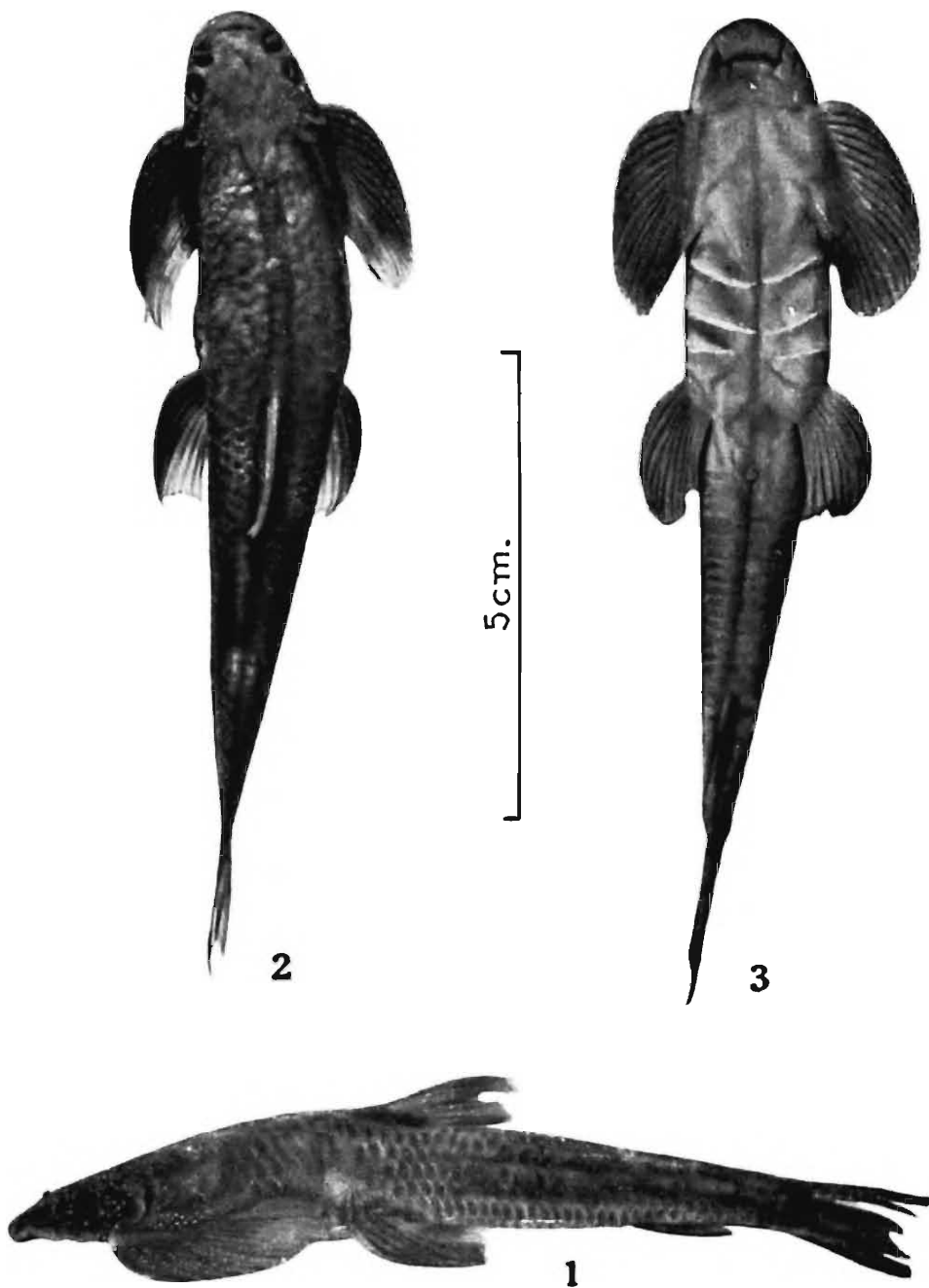
PLATE 16

Psilorhynchus pseudecheneis sp. nov.

FIG. 1.—Lateral view of the Holotype.

FIG. 2.—Dorsal view

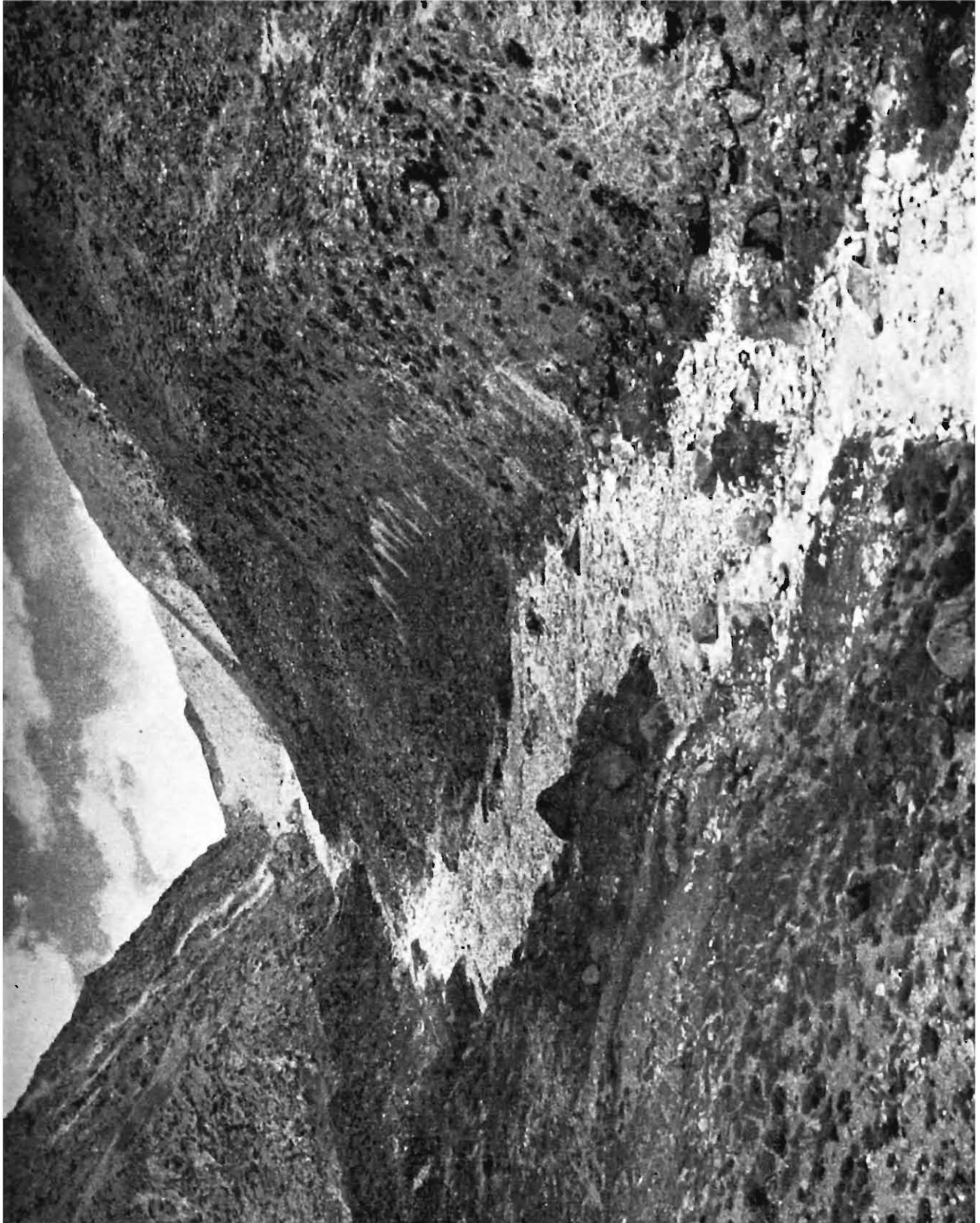
FIG. 3.—Ventral view



Psilorhynchus pseudecheneis sp. nov.

PLATE 17

A view of the Dudh Kosi drainage near village Ghat, 2,950 metres alt., Solokumbhu District, E. Nepal, where specimens of *Psilorhynchus pseudecheneis* were collected in April, 1958. [PHOTO A. K. DATTA]



A view of the Dudh Kosi drainage near Ghat.

ZOOLOGICAL RESULTS OF THE INDIAN CHO-OYU EXPEDITION (1958) IN NEPAL

PART 8.—ARACHNIDA

By

B. K. TIKADER

Zoological Survey of India, Calcutta
(With 6 Text-figures)

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I—INTRODUCTION

The present paper is based on a collection of spiders from the high altitude areas made by Dr. A. K. Datta of the Zoological Survey of India, during the Cho-Oyu Expedition of 1958. The collection contains nine species belonging to six genera distributed in five families. Of the nine species collected, six are new to science, as follows :—

Family 1. Agelenidae.

1. *Tegenaria lunakensis* sp. nov.

Family 2. Hahniidae.

2. *Hahnia alini* sp. nov.

Family 3. Gnaphosidae.

3. *Drassodes phagduaensis* sp. nov.

4. *Phaeocedus mosambaensis* sp. nov.

Family 4. Thomisidae.

5. *Xysticus roonwali* sp. nov.

Family 5. Lycosidae.

6. *Lycosa tatensis* sp. nov.

Though small, the collection is very interesting in so far as it throws considerable light on the distribution of spiders. The family Hahniidae is recorded here from the Indian region for the first time.

All holotypes and paratypes, etc., of the new species described here are deposited in the Zoological Survey of India, Calcutta, and carry the Registered Numbers of that collection.

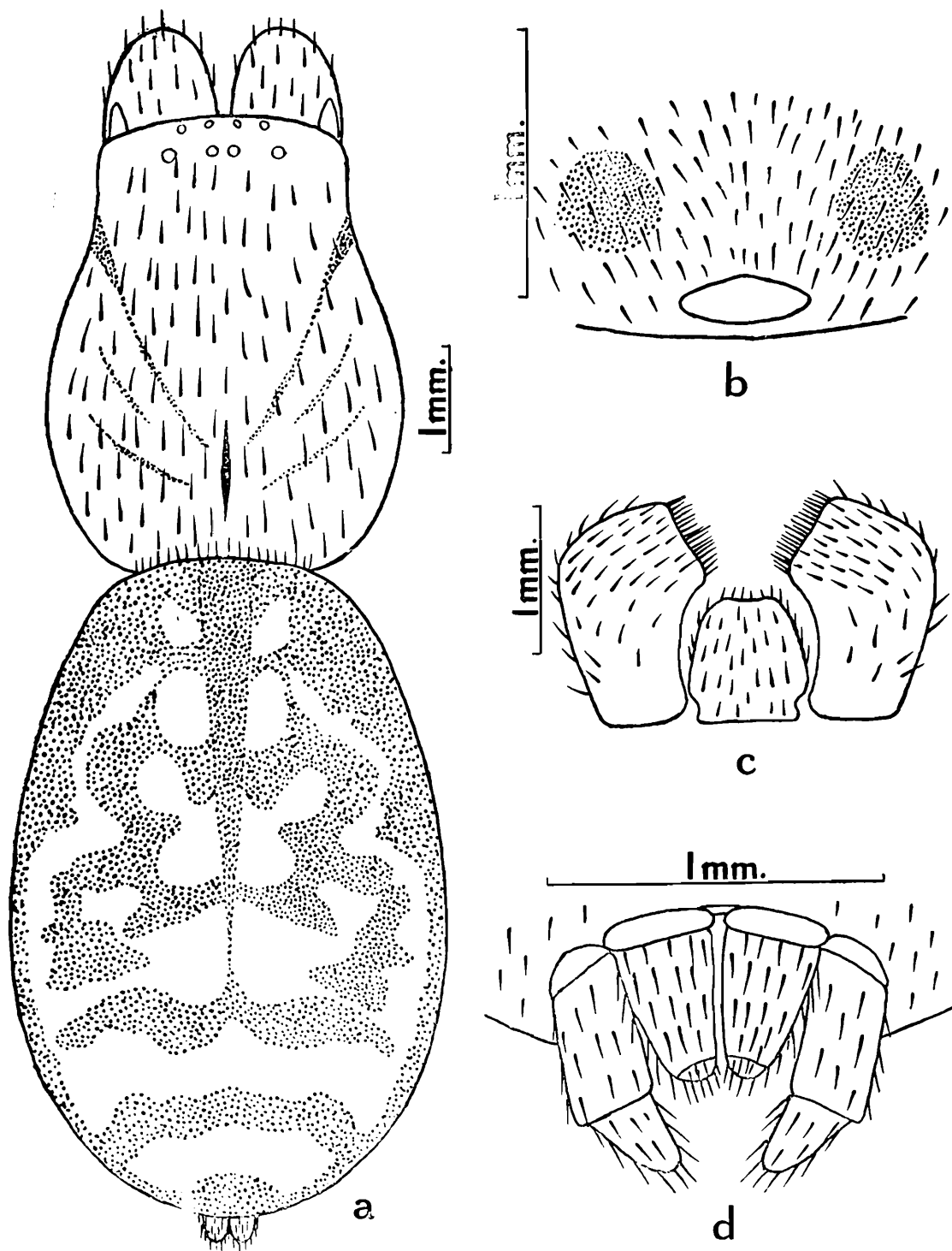
I gratefully acknowledge my thanks to Dr. M. L. Roonwal, Director, Zoological Survey of India, for providing me an opportunity to study this collection, for going through the manuscript and offering valuable suggestions.

II—SYSTEMATIC ACCOUNT

Family 1 AGELENIDAE

1. *Tegenaria lunakensis* Tikader, sp. nov.

Material.—5♀♀, 3♂♂. Sta. No. 32 B (Lunak, ca. 5, 181 m.) underneath rocks. 8.v.1958. Coll. A. K. Datta.



TEXT-FIG. 1.—*Tegenaria lunakensis* Tikader, sp. nov. Female. Holotype.

(a). Dorsal view of whole body. (b). Epigynum. (c). Maxillae and labium. (d). Spinners.

Description.—*General* : Cephalothorax and legs yellowish brown ; abdomen dirty white. Total length 12.20 mm. ; carapace 5.30 mm. long, 3.60 mm. wide ; abdomen 7.20 mm. long, 4.50 mm. wide.

Cephalothorax : Relatively broad in front, convex, clothed with fine hairs ; cephalic region high, thoracic region with a dark fovea and radiating striae. Eyes anterior row viewed in front, very slightly procurved ; medians smaller than laterals. Posterior row longer, slightly procurved, median eyes much closer to each other than to adjacent laterals ; eyes white, but with the bases encircled by black. Clypeus narrow. Sternum oval, pointed behind, clothed with spine-like hairs. Maxillae and labium as seen in Text-fig. 1c. Chelicerae deep brown, strong and nearly vertical ; two teeth on inner margin and three on the outer and the middle tooth larger. Legs clothed with spiny hairs, tibiae I and II with three pairs of ventral spine.

Abdomen : More or less elliptical, strongly narrowing in front slightly overlapping the posterior region of cephalothorax in front ; clothed with fine pubescence, many irregular small dark-brown spots or patches on the dorsum, connected with each other and forming a median longitudinal band. Ventral surface more uniform pale colour than dorsal surface. Epigynum and spinners as seen in Text-fig. 1b, d.

Type-specimens.—*Holotype* : 1 female (ZSI Reg. No. 2481/18). *Paratypes* : 3 females (ZSI Reg. No. 2489/18).

Type-locality.—Lunak, ca. 5,181 m. altitude, Central Himalaya, Nepal.

Geographical distribution.—Nepal. Known only from the type-locality.

Comparisons.—This species is very near *Tegenaria domestica* (Clerck), but is separable from it as follows :—(i) Inner margin of chelicerae with 2 teeth (in *T. domestica* with 4 teeth). (ii) Sternum oval, pointed behind (in *T. domestica* sternum heart-shaped, pointed behind). (iii) Epigynum simple, with an elliptical genital pore (in *T. domestica* epigynum slightly complicated with a transverse line like genital pore).

Family 2. HAHNIIDAE

Genus *Hahnia* Koch

2. *Hahnia alini* Tikader, sp. nov.

Material.—3 ♂♂, 4 ♀♀, Sta. No. 32-B (Lunak, ca. 5,181 m.) underneath rocks. 8. v. 1958. Coll. A. K. Datta.

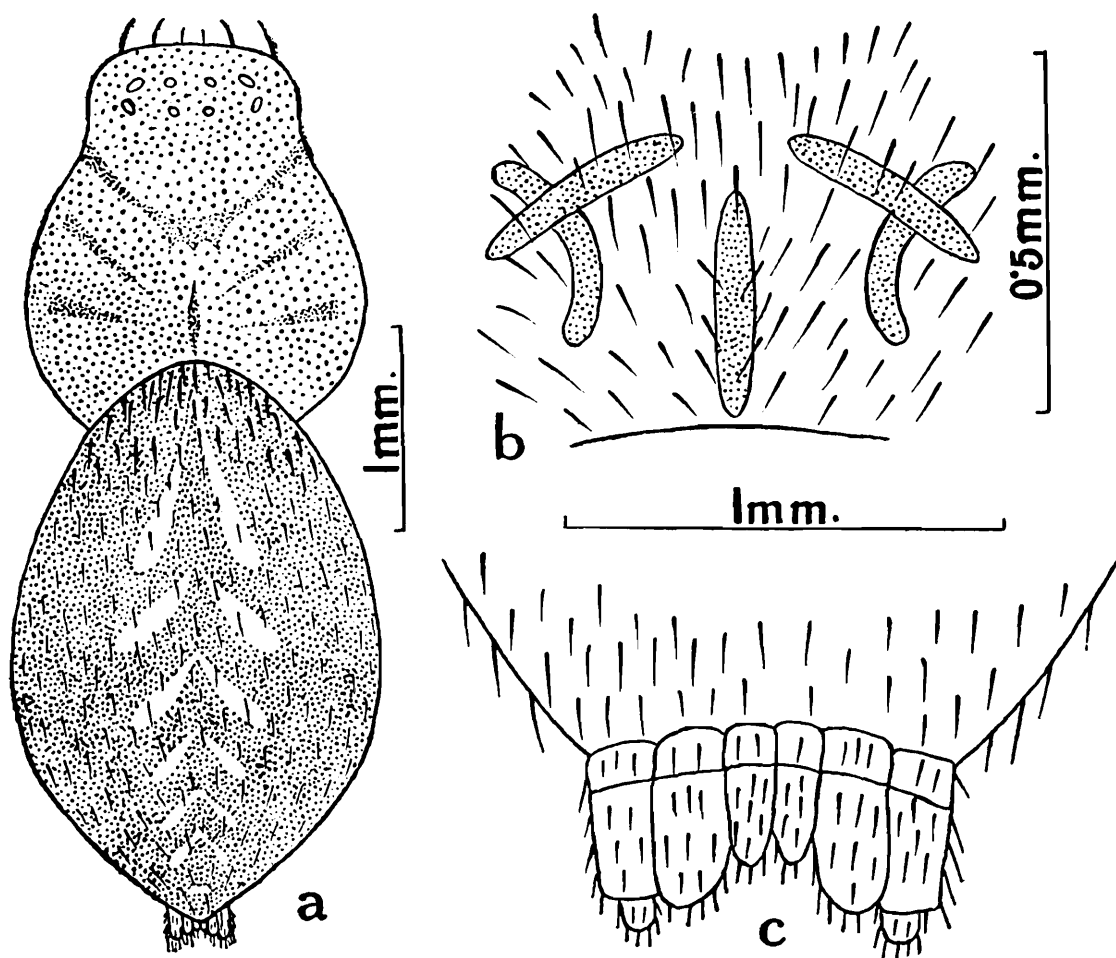
Description.—*General* : Cephalothorax dark reddish-brown ; abdomen dark-brown. Total length 4.40 mm. ; carapace 2.00 mm. long, 1.50 mm. wide ; abdomen 2.80 mm. long, 1.80 mm. wide.

Cephalothorax : Longer than wide, narrowing in front ; cephalic region high, thoracic region flat ; with a dark fovea and radiating striae. Clypeus moderate. Eyes white, anterior row procurved ; anterior

median eyes smaller than the others ; posterior row procurved and longer than the anterior row, eyes more or less equidistant from each other. Sternum heart-shaped, pointed behind. Labium wider than long. Legs stout, clothed with stiff hairs and a few spines.

Abdomen : Oval, clothed with fine hairs, slightly overlapping the posterior region of cephalothorax in front ; mid-dorsally a row of V-shaped white marking with apex of the "V" pointed forward ; remaining portion with white dots. Ventral surface uniform light colour. Epigynum and spinners as seen in Text-fig. 2*b, c*.

Type-specimens.—*Holotype* : 1 female (ZSI Reg. No. 2482/18). *Paratypes* : 3 females (ZSI Reg. No. 2488/18).



TEXT-FIG. 2.—*Hahnia alini* Tikader, sp. nov. Female. Holotype.

(a). Dorsal view of whole body. (b). Epigynum. (c). Spinners.

Type-locality.—Lunak, ca. ,181 m. Central Himalaya, Nepal.

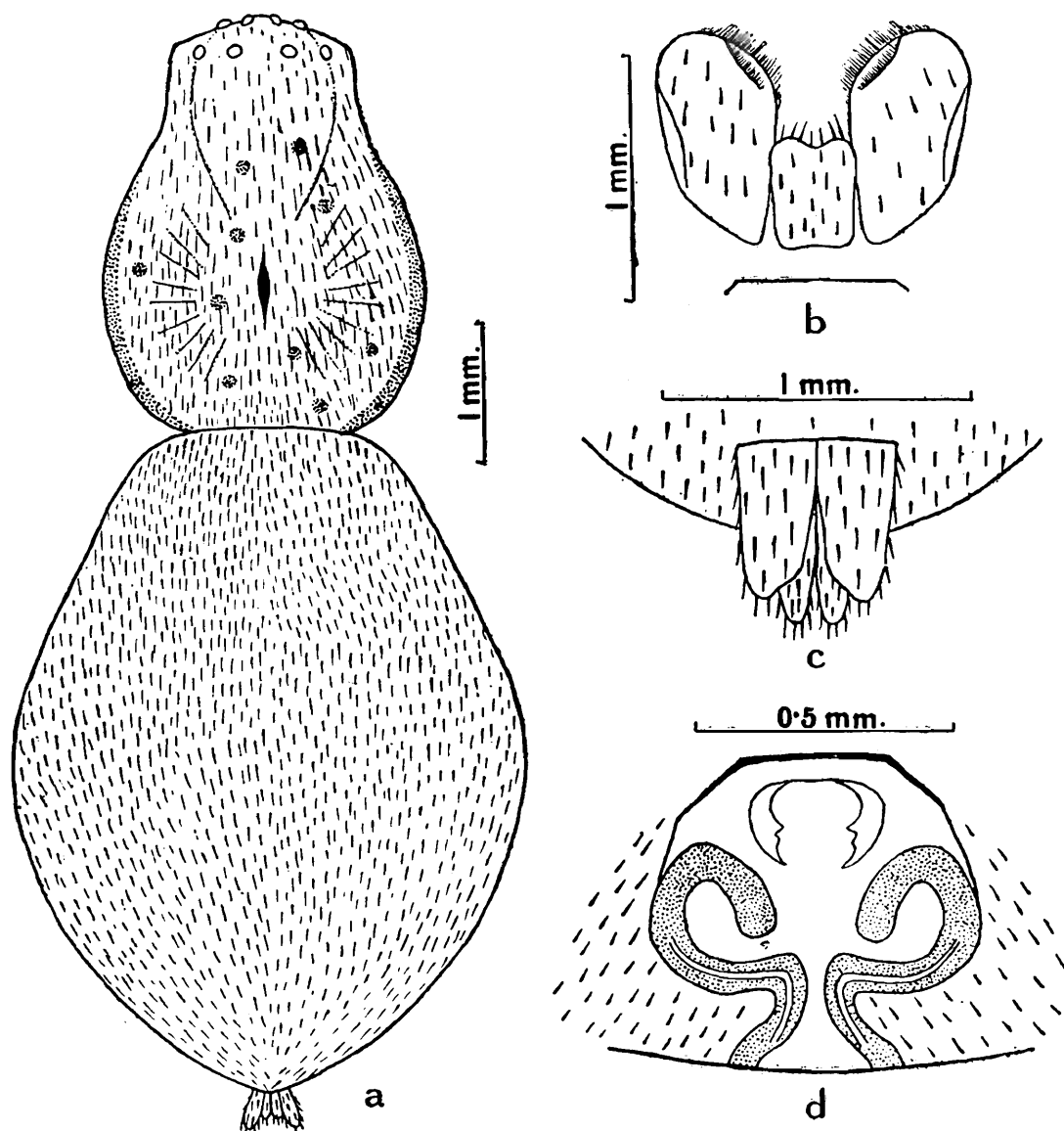
Geographical Distribution.—Nepal. Known only from the type-locality.

Comparisons.—This species resembles *Hahnia helveola* Simon, but is separated as follows :—(i) Cephalothorax dark reddish-brown (in *H. helveola* cephalothorax yellow-brown). (ii) Abdomen dark brown, with white chevrons (in *H. helveola* abdomen pale yellow with black chevrons).

Family 3. GNAPHOSIDAE

Genus *Drassodes* Westring3. *Drassodes phagduaensis* Tikader, sp. nov.

Material.—1 ♀, Sta. No. 48-A (Phagdua, ca. 4,267 m.), underneath loose rocks. 30. v. 1958. Coll. A. K. Datta.



TEXT-FIG. 3.—*Drassodes phagduaensis* Tikader, sp. nov. Female. Holotype.

(a). Dorsal view of whole body. (b). Maxillae and labium. (c). Spinners (d). Epigynum.

Description.—*General*: Cephalothorax deep yellowish-brown, legs, light yellowish-brown, abdomen reddish-brown. Total length 7.50 mm.; carapace 2.70 mm. long, 2.00 mm. wide; abdomen 5.10 mm. long, 3.90 mm. wide.

Cephalothorax: Heart-shaped, relatively broad in front, convex, with a fovea, clothed with fine hairs; a deep brown band encircles almost the entire margin of cephalothorax and irregular circular deep-brown dots on the cephalothorax. Eyes viewed from front, anterior row slightly procurved, medians smaller than the laterals. Posterior row longer, procurved, more or less equal and equidistant. Clypeus narrow.

Sternum heart-shaped pointed behind with circular deep-brown dots and with a narrow deep-brown margin. Maxillae and labium as seen in Text-fig. 3*b*. Chelicerae strong, nearly vertical, three small teeth on inner margin and four on the outer, but second, third and fourth jointed at the base. Legs long, stout, clothed with hairs and a few long spines, irregular deep-brown patches on the legs, tibiae I and II with two pairs of long ventral spines. Scopulae extend nearly up to the base of metatarsi I and II, and upto the base of tarsi III and IV.

Abdomen: Oval, clothed with fine grey pubescence, slightly overlapping the posterior region of cephalothorax in front. Ventral surface uniform pale colour. Spinners and epigynum as seen in Text-fig. 3*c, d*.

Type-specimen.—*Holotype*: 1 female (ZSI Reg. No. 2483/18).

Type-locality.—Phagdua, ca. 4,267 m. Central Himalaya, Nepal.

Geographical distribution.—Nepal. Known only from the type-locality.

Comparisons.—This species resembles *Drassodes neglectus* (Keyserling) but is separated as follows:—(i) Abdomen reddish-brown with smooth dorsum (in *D. neglectus* abdomen light grey with 4 spots on the muscle-impression). (ii) Abdomen without chevrons (in *D. neglectus* the hind half of abdomen with faint chevrons).

Genus *Phaeocedus* Simon

4. *Phaeocedus mosambaensis* Tikader, sp. nov.

Material.—1 ♀, on way to Mosamba lake, ca. 4,600 m. 12. v. 1958. Coll. A. K. Datta.

Description.—*General*: Cephalothorax and legs light reddish brown, abdomen dark-brown. Total length 6.60 mm.; Carapace 3.00 mm. long, 2.30 mm. wide; abdomen 3.70 mm. long, 2.40 mm. wide.

Cephalothorax: Longer than wide, slightly narrowed in front; clothed with fine hairs, convex with a fovea. Eyes anterior row straight (as seen from in front) and equal. Posterior row straight, slightly longer than anterior, medians irregular in shape, slightly larger than laterals and further from them than from each other. Clypeus moderate, margin bearing spines, directed forward. Sternum oval and narrowed behind. Maxillae and labium as seen in Text-fig. 4*b*. Legs long, stout, clothed with hairs and a few long spines, metatarsi I and II with one pair of ventral spines. Scopulae extend upto the base of metatarsi I and II.

Abdomen: Nearly oval, clothed with fine hairs, posterior half with deep-brown chevrons. Ventral surface uniform deep-brown. Spinners and epigynum as seen in Text-fig. 4*c, d*.

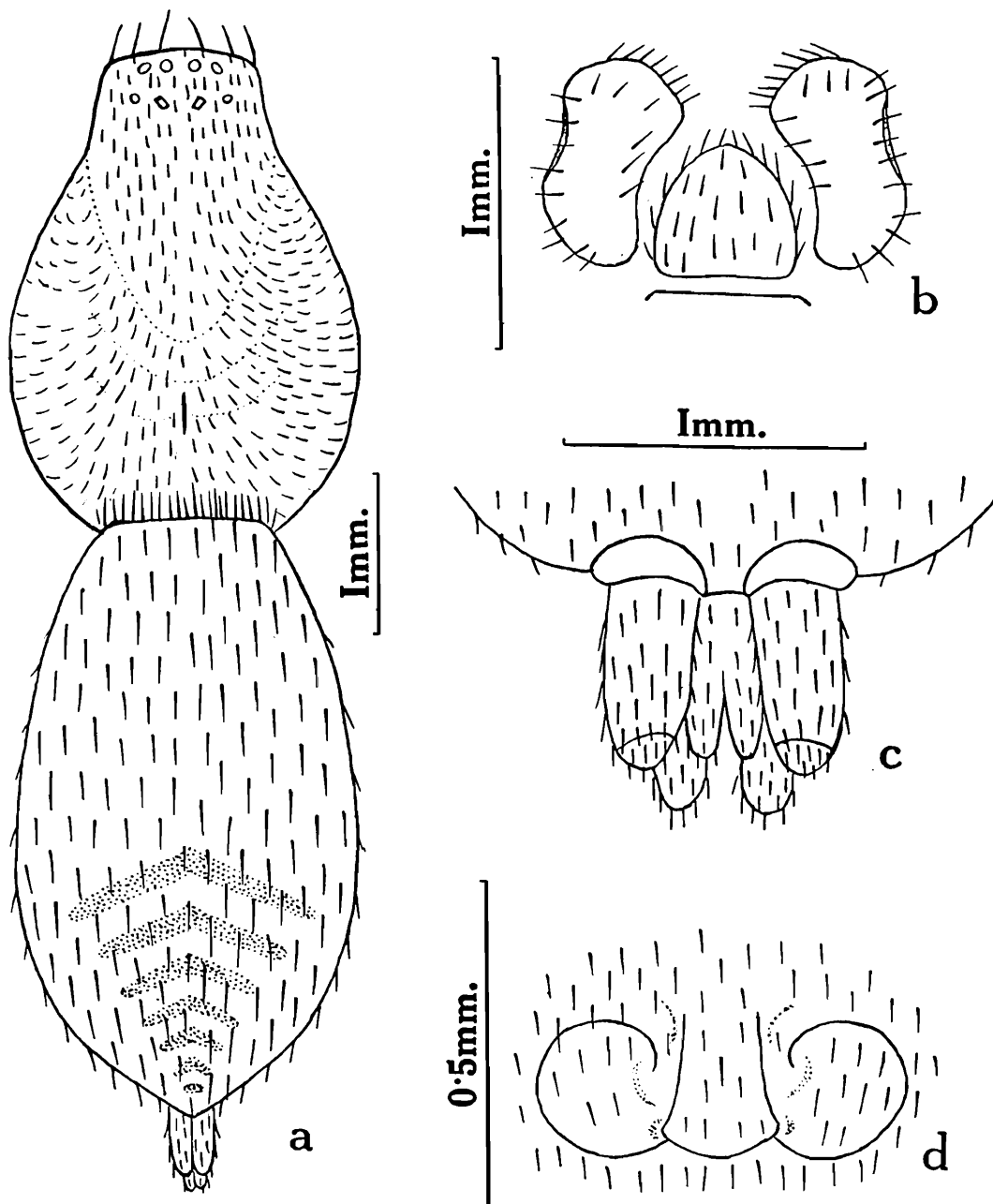
Type-specimen.—*Holotype*: 1 female (ZSI Reg. No. 2486/18).

Type-locality.—Near Mosamba lake, ca. 4,600 m. Central Himalaya, Nepal.

Geographical distribution.—Nepal. Known only from type-locality.

Comparisons.—This species resembles *Phaeocedus braccatus* (Koch) but it is separated as follows:—(i) Abdomen dark-brown, posterior half of dorsal surface with deep-brown chevrons (in *P. braccatus* abdomen gray to black without chevrons). (ii) Metatarsi I and II with one pair of

ventral spines (in *P. braccatus* metatarsi I and II without ventral spine).



TEXT-FIG. 4.—*Phaeocedus mosambaensis* Tikader, sp. nov. Female. Holotype. (a). Dorsal view of whole body. (b). Maxillae and labium. (c). Spinners. (d). Epigynum.

Family 4. THOMISIDAE

Genus *Xysticus* Koch

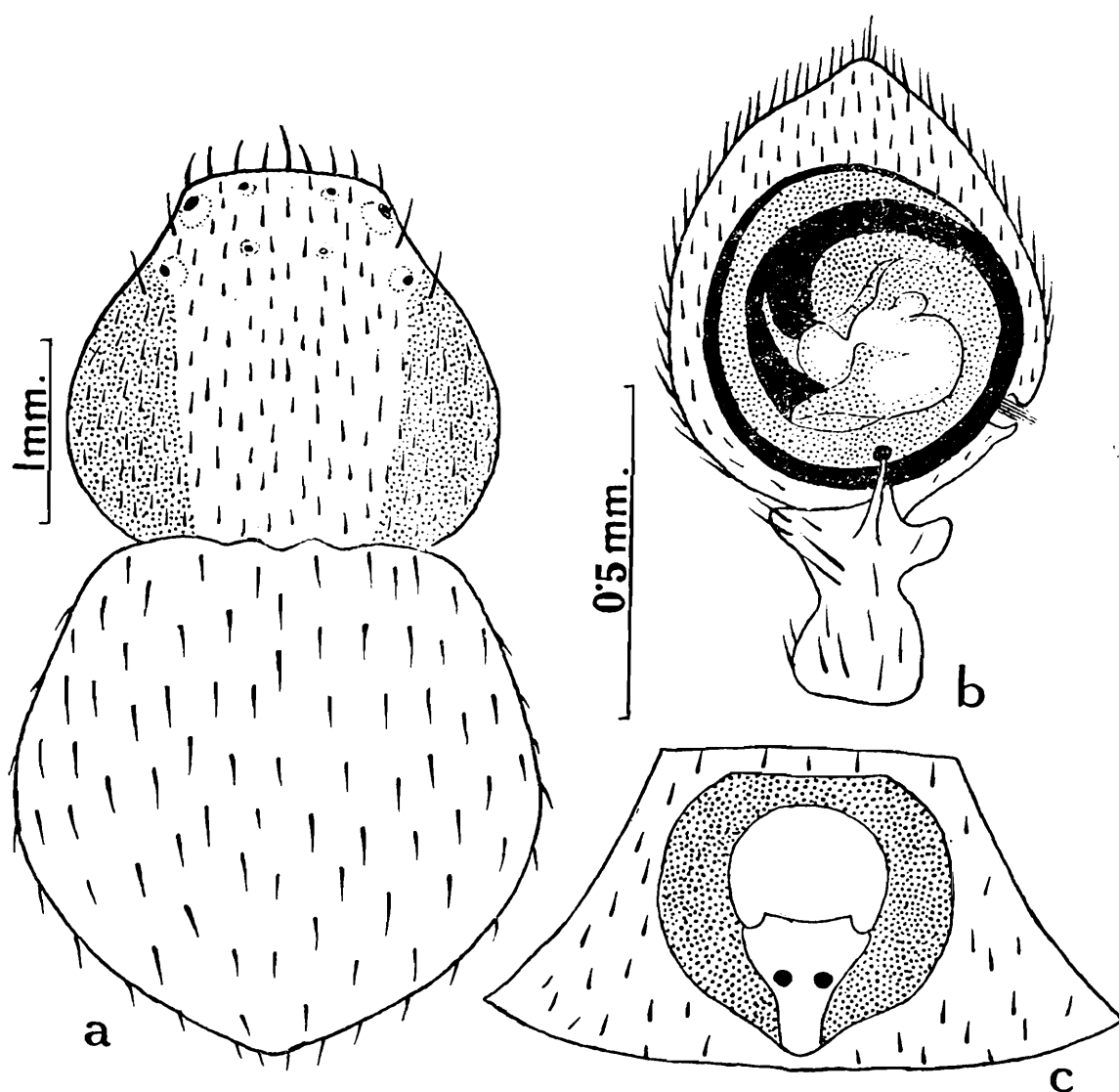
5. *Xysticus roonwali* Tikader, sp. nov.

Material.—1 ♀, Station Base Camp, ca. 5,151 m. on way to Everest Base Camp, underneath boulders. 24. v. 1958.

1 ♂, Station No. 32-B (Lunak, ca. 5,181 m.), underneath rocks, 8. v. 1958. Coll. A. K. Datta.

Description.—General: Cephalothorax, legs and clypeus pale brown ; eyes black, abdomen a little deeper-brown. Total length 4.70 mm. ; carapace 2.20 mm. long, 2.20 mm. wide, abdomen 2.60 mm. long, 2.60 mm. wide.

Cephalothorax: As long as wide, spined, the lateral margin with longitudinal dark brown broad patches ; clypeus moderate, margin with nine strong spines directed forward ; eyes round, ringed with dirty white tubercles ; ocular quad longer than wide, space of the anterior median eyes a little smaller than that of posterior ; lateral eyes larger, posterior median eyes smaller than anterior median eyes. Sternum heart-shaped, pointed behind, with black pigmented spots. Legs spined, strong and



TEXT-FIG. 5.—*Xysticus roonwali* Tikader, sp. nov. Female. Holotype.

(a). Dorsal view of the whole body. (b). Male padipalp. (c). Epigynum.

stout, spotted with black dots ; tibiae I and II with three pairs of ventral spines, three spines on the I femur in front.

Abdomen: Oval, as long as wide, dorsum spined, more conspicuously in front ; strongly overlapping the posterior region of cephalothorax in front. Ventral surface pigmented like sternum. Male palp and epigynum as seen in Text-fig. 5b, c.

Type-specimens.—Holotype: 1 female (ZSI Reg. No. 2484/18).

Allotype: 1 male (ZSI Reg. No. 2487/18.)

Type-locality.—Base Camp on way to Everest, *ca.* 5,151 m.

Geographical distribution.—Nepal. Known only from the type-locality.

Comparisons.—This species is closely related to *Xysticus ferox* (Hentz) but differs as follows :—(i) Lateral margin of cephalothorax with longitudinal dark-brown broad patches (in *X. ferox* the cephalothorax is yellowish in the middle and reddish brown on the sides). (ii) Abdomen uniform deep-brown (in *X. ferox*, abdomen brownish grey above and smoky-white on the sides and three pairs of transverse black bars on the dorsal side of the abdomen).

Family 5. LYCOSIDAE

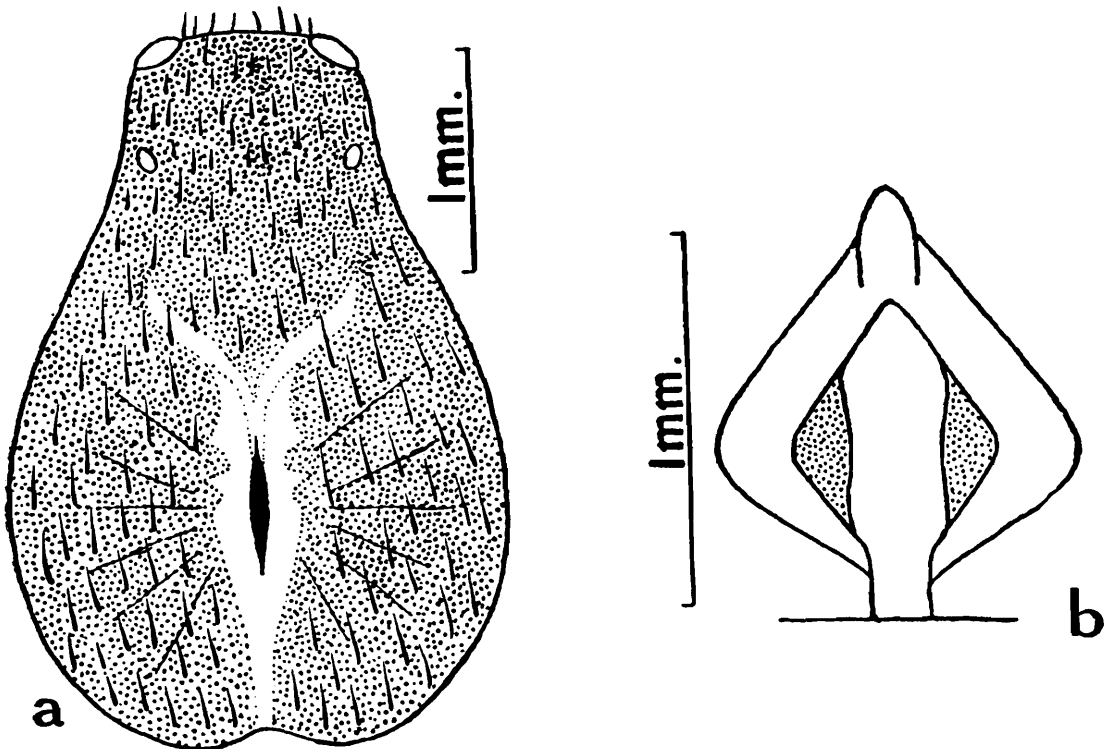
Genus *Lycosa* Latreille

6. *Lycosa tatensis* Tikader, sp. nov.

Material.—2 ♀♀, Sta. No. 45A. (Tate, *ca.* 4,419 m.). 27. v. 1958. Coll. A. K. Datta.

Description.—*General* : Cephalothorax, legs and abdomen very dark-brown or black. Total length 7·10 mm. ; carapace 3·40 mm. long, 2·50 mm. wide ; abdomen 3·60 mm. long, 2·50 mm. wide.

Cephalothorax : Longer than wide, relatively narrow in front, clothed with hairs and sparsely with spines ; thoracic region convex with dark fovea and radiating striae, a longitudinal more or less lance shaped light area surrounding the fovea. Eyes pale, posterior medians larger than



TEXT-FIG. 6.—*Lycosa tatensis* Tikader, sp. nov. Female. Holotype.

(a). Dorsal view of cephalothorax. (b). Epigynum.

the others. Anterior row of eyes straight and small. Clypeus moderate. Legs long, stout, clothed with hairs and long spines, irregular brownish patches on the legs.

Abdomen.—Longer than wide, broader posteriorly, clothed with hairs, a light longitudinal lance-shaped area on the dorsum in front. Ventral surface uniform light colour. Epigynum as seen in Text-fig. 6b.

Type-specimen.—*Holotype* : 1 female, (ZSI Reg. No. 2485/18.)

Type-locality.—Tate, ca. 4,419 m. Central Himalaya, Nepal.

Geographical distribution.—Nepal. Known only from the type-locality.

Comparisons.—This species is closely related to *Lycosa himalayensis* Gravely, but differs as follows :—(i) A light longitudinal lance-shaped area on the dorsal side of abdomen (in *L. himalayensis* abdomen uniform dark colour). (ii) Epigynum spear-shaped with a narrow base (in *L. himalayensis* epigynum spatulated with a wider base).

7. *Lycosa nigrotibialis* Simon

1884 *Lycosa nigrotibialis* Simon, *Ann. Mus. Genova*, Geneva, 20, p. 330, Fig. 3-C. (*Type-locality* Minhla, Burma).

Material.—2 ♀♀, Sta. No. 23C (Khumbu Glacier, ca. 5,334 m. underneath pebbles, 24. iv. 195. Coll. A. K. Datta.

Distribution.—India, Burma and Nepal ; Punjab, Bihar, Simla and Dharampur, ca. 5,000 ft. West Himalayas, Nepal Valley, 4,500—6,500 ft. Eastern Himalayas, Sukna, ca. 1,000 ft., Singla 1,500 ft., Kalimpong 2,000 ft., Darjeeling, Sibsagar and Garo Hills, Assam. Burma ; Rangoon, Tharrawaddy, Minhla, Tenasserim.

8. *Lycosa annandalei* Gravely

1924. *Lycosa annandalei* Gravely, *Rec. Indian Mus.*, Delhi, 26, p. 606. Fig. 4I. (*Type-locality* : Madras city.)

Material.—1 ♀, on way to Lunak, ca. 5,181 m. underneath stone boulders. 8. v. 1958. Coll. A. K. Datta.

Distribution.—India : Trivandrum, Travancore, Bangalore, Mysore, Ootacamund, Nilgiris, Madras City, Red Hills, Chingleput District, Horsleykonda ca. 3,000 to 4,100 ft., Chittoor District, West Khandesh, Bombay Presidency, Multan, Punjab, Siripur, Saran, Bihar, Gamtia, Birbhum District, Calcutta Salt Lake and Dum Dum near Calcutta, Berhampur Court, Bengal, Shillong ca. 4,700 to 4,800 ft., Darjeeling, Chittagong, Siliguri, Cachar.

9. *Lycosa himalayensis* Gravely

1924. *Lycosa himalayensis* Gravely, *Rec. Indian Mus.*, Delhi, 26, p. 603, Fig. 4 I.

Material.—1 ♀, on way to Lunak, ca. 5,181 m. underneath of stone boulders. 8. v. 1958. Coll. A. K. Datta.

Distribution.—India : Singla, *ca.* 1,500 ft., Ghumti *ca.* 2,500 ft., Pashok *ca.* 3,500 ft., Soom, *ca.* 4,000 ft., Kalimpong, Sitong Ridge, *ca.* 4,700 ft., and Nam Ting Pokri, Sitong Ridge, Sureil, *ca.* 5,000 ft., Darjeeling District, Sonarpur, Assam.

III—SUMMARY

Six new species of spiders are described in this paper. All the species were collected from high altitude areas of Central Himalaya in Nepal, during the Indian Cho-Oyu Expedition 1958. The new species belong to six genera distributed in five families as follows : —Agelenidae Hahniidae, Gnaphosidae, Thomisidae and Lycosidae.

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ZOOLOGICAL RESULTS OF THE INDIAN CHO-OYU EXPEDITION (1958) IN NEPAL

PART 9.—INSECTA

By

A. P. KAPUR

Deputy Director, Zoological Survey of India, Calcutta

(With 5 Text-figures and 2 Plates)

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I—INTRODUCTION

The collection of insects under report comes from altitudes between 700 m. and 5,334 m. and contains a little over one thousand specimens belonging to 79 species of the following ten different orders of insects.

Orders	No. of species represented
I—Ephemeroptera ..	4
II—Plecoptera ..	1
III—Orthoptera ..	16
IV—Dermaptera ..	1
V—Hemiptera ..	8
VI—Lepidoptera	2
VII—Trichoptera ..	1
VIII—Diptera ..	5
IX—Hymenoptera	8
X—Coleoptera ..	33
Total	79

In spite of its numbers, the collection represents only a fraction of the proverbially rich insect fauna of the Himalaya. It has further revealed that many species are more widely distributed than had been known previously. Over forty species are recorded for the first time from Nepal, several of which also constitute first records from the Himalaya.

Another interesting feature of the collection is that a few species are represented by long to fairly long series of examples showing wide range of variation in their colour patterns. An opportunity has been taken to record, and illustrate where possible, the variations in these species. The Lygaeid (Hemiptera), *Graptostethus quadratomaculatus* (Kirby) (Text-fig. 1), which is represented by 109 examples varied in length between 7.75 mm. and 9.35 mm., but showed a good degree of uniformity in the colour-pattern except for the pronotal spots which varied considerably in size. The seven-spotted lady-bird beetle, *Coccinella septempunctata* L. (Coccinellidae, Coleoptera), which is represented by 198 examples, contains as many as 44 examples (approximately 22.2 per cent.) which show confluence of two or more elytral spots. Although another lady-bird beetle, *Adonia variegata* (Goeze), is represented in the collection by only 10 examples, it shows six different elytral patterns as illustrated in text-figure 2. The Meloid (Coleoptera), *Mylabris macilenta* Marseul (Text-fig. 3), which is represented by a little over 500 examples, measures between 9.25 mm. and 13.25 mm. in length and shows considerable variation in the elytral patterns, six of which are shown in text-figure 4. Dissection of the male genitalia (Text-fig. 5) of a large number of examples of this species did not show any variation and apparently confirmed that the examples with different patterns belonged to the same species.

Four species of weevils (Curculionidae, Coleoptera) have been described as new. Two of these belong to the genus *Hyperomias* Marshall, a genus which was first described from the Himalaya and of which only one species was hitherto known. The other two species belong to the palaearctic genus *Dactylotus* Schon. of which the hitherto known species come mostly from Central Asia and North China.

The material of various species recorded in the paper has been arranged in the same manner as in other papers in the series. For further details of localities, etc., the reader is referred to the introductory paper by Dr. A. K. Datta. It may, however, be mentioned that the abbreviation "Sta. No." stands for the number given to the station or locality by the collector of the material in his field book; likewise "ex." and "exs." stand for example and examples, respectively, of the species collected. The expression "Z. S. I. collection" in the text stands for the National Zoological Collections at the Zoological Survey of India, Calcutta.

I am grateful to Dr. M. L. Roonwal, Director, Zoological Survey of India, for affording me the opportunity of studying the collections. I am also indebted to Mr. E. O. Pearson, Director, Commonwealth Institute of Entomology, London, for help in the identification of some of the species, especially of Diptera and certain Coleoptera. My thanks are also due to Dr. A. K. Datta, the collector of the material under report.

II—SYSTEMATIC ACCOUNT

1 Order EPHEMEROPTERA

Family BAETIDAE

Genus *Baetis* Leach

1815. *Baetis* Leach, *Brewster's Edin. Ency.*, 9(1), p. 137.

Baetis is a very widely distributed genus of which several species are known from various parts of India and Nepal. However, from the latter country, it is recorded from the nymphs only (*vide* Ueno¹). Geographical distribution and a key to Indian species (based on imagos), including several from other parts of the Himalaya are given by Kapur and Kripalani². The material of this genus under report consists of nymphs only and apparently belongs to two species. Examples of *Baetis* sp. I referred to below are characterised by the presence of three caudal filaments, while those of *Baetis* sp. II are with two caudal filaments each.

1. *Baetis* sp. I

Material.—3 nymphs, Sta. No. 3A, a stream *ca.* 3.2 km. N. of Dola-ghat, 710 m., 28. iii. 1958.

Remarks.—The three nymphs under report resemble the nymphs of *Baetis* sp. 1, described by Ueno (1955, pp. 303-305), on account of the presence of three filaments. These are, however, different from Ueno's material in the colouration and pattern on the abdominal tergites. The pairs of elongate dark patches on the 4th, 5th and 6th tergites present in Ueno's examples are entirely wanting in our material. The 7th gill in Ueno's examples is much smaller than the other gills whereas in our material the difference in size is not so marked.

2. *Baetis* sp. II

Material.—20 exs., nymphs only, Sta. No. 48, on way to Jumbesi, 2,700 m., 1 vi. 1958.

Remarks.—The individuals in this lot are in various stages of development, *i.e.*, smaller to larger nymphs are present, but are in a poor state of preservation. Although resembling *Baetis* sp. 2 of Ueno's (1955, p. 305) in having only two caudal filaments each, the examples under report are easily distinguishable from the latter by the pattern and colouration of the thoracic and abdominal tergites, and other morphological features.

¹UENO, M. 1955. *Fauna and flora of Nepal Himalayas, May fly nymphs*, pp. 301-316, 10 pls., Kyoto (Kyoto University).

²KAPUR, A. P. and KRIPALANI, M. B. 1962. *Rec. Indian Mus.*, 59, pp. 183-221.

Family EPHEMERELLIDAE

Genus *Ephemerella* Walsh

1862. *Ephemerella* Walsh, *Proc. Acad. nat. Sci. Philad.*, p. 377.

This holarctic genus was recorded earlier from Nepal by Ueno (1955) on the basis of nymphal material. Hora¹ and Traver² had also recorded it on the basis of nymphs from the North-West Himalaya, and Kapur and Kripalani (1962) described a species of it, on the basis of an imago, from the Kulu Valley in the Punjab. The material under report consists of nymphs only.

3. *Ephemerella* sp.

Material.—6 exs., nymphs only, Sta. No. 3A, a stream *ca.* 3.2 km. N. of Dolaghat, 710 m., 28. iii. 1958.

Remarks.—These specimens are characterised by the presence of a rather broad fore-femur having a number of spines, and by the paired dorsal spines which are directed backwards on the abdominal tergites 3 to 8 inclusive. The latter spines gradually increase in length successively from the 3rd to the 7th tergite. In contrast, the nymphs of *Ephemerella* sp. described by Ueno (1955, p. 302) do not possess a broad fore-femur and have paired spines upto the 9th tergite.

Family HEPTAGENIIDAE

Genus *Iron* Eaton

1883. *Iron* Eaton, *Trans. Linn. Soc. Lond.*, (2) *Zool.*, 3, pl. 24, fig. 44 ; 1885. *ibid*, pp. 235, 236, 244.

This is another holarctic genus which is known from the Himalaya so far from the nymphs only. Hora (1930) first recorded it from the "Himalaya" and Khasi Hills but did not describe the material in any detail. Traver (1939), and Kapur and Kripalani (1962) described the nymphs from Kashmir and Kulu Sub-Division in the Punjab, respectively. The genus is being recorded for the first time from Nepal.

4. *Iron* sp.

Material.—21 exs., Sta. No. 3A, a stream *ca.* 3.2 km. N. of Dolaghat, 710 m., 28. iii. 1958.

Remarks.—These nymphs have two caudal filaments and a triad of stout spines at the tip of galea-lacinia, but do not have a median row of long hairs on abdominal tergites. These are, however, distinct from the nymphs from Kulu, described by Kapur and Kripalani (1962, p. 212), on account of the conspicuous pattern on the abdominal sternites and the absence of submedian spines on the abdominal tergites. In the material from Kulu referred to above, and from Kashmir (Traver, 1939), the paired submedian spines on the abdominal tergites are present and the conspicuous pattern on the sternites is absent.

¹HORA, S. L. 1930 *Phil. Trans. R. Soc.*, London (B), 218, pp. 171-282.

²TRAVER, J. R. 1939. *Ann. Mag. nat. Hist.*, London (11) 4, pp. 32-56.

II. Order PLECOPTERA

Family NEMOURIDAE

5. *Rhabdiopteryx lunata* Kimmins

1946. *Rhabdiopteryx lunata* Kimmins, *Ann. Mag. nat. Hist.*, 13(11), pp. 722-724.

1958. *Rhabdiopteryx lunata* Kimmins, Jewett, *Proc. nat. Acad. Sci. India*, 28(4), p. 328.

Material.—(i) 1 ex., Sta. No. 18, on way to Thyangboche, 4,150 m., 17. iv. 1958. (ii) 1 ex., Sta. No. 19, on way to Pangboche, 4,572 m., 20. iv. 1958. (iii) 6 exs., Sta. No. 37, on way to Dob, 5,000 m., 15. v. 1958.

Remarks.—Originally recorded from Rongbuk in the Eastern Himalaya, this species appears to be widely distributed as it was collected by the present writer from the North-West Himalaya, *i.e.*, Lahaul Valley in the Kulu Sub-Division in the Punjab, and recorded by Jewett (1958).

III. Order ORTHOPTERA

Family TETTIGONIIDAE

6. *Mecopoda elongata* (Linnaeus)

1767. *Tettigonia elongatus* Linnaeus, *Syst. Nat.*, 1(2), p. 696 (12th ed.).

1873. *Mecopoda elongata* (Linn.), Walker, *Cat. Derm. Salt.*, B. M., Part 2, p. 457.

Material.—1 ex., Sta. No. 23A, Gorashan, 5,334 m., 25. iv. 1958.

Remarks.—Originally described from India, Walker (*loc. cit.*) recorded it further from Ceylon, China and Sarawak. In the Z. S. I. collection the species is represented from Assam, Uttar Pradesh (Bijnor Dist.) and Orissa (Chilka Lake) in India, and also from Ceylon and North Borneo.

Family GRYLLIDAE

7. *Gryllus bimaculatus* De Geer

1773. *Gryllus bimaculatus* De Geer, *Mem. Ins.*, 3, p. 521.

1936. *Gryllus bimaculatus* De Geer, Chopard, *Ceyl. J. Sci.*, B, 20, p. 22.

1954. *Gryllus bimaculatus* De Geer, Sandrasagara, *J. Bombay nat. Hist. Soc.*, 52, p. 544.

Material.—1 ex., Sta. No. 3A, near a stream *ca.* 4.8 km. N. of Dola-ghat, 710 m., 28. iii. 1958.

Remarks.—Chopard (1936) remarks that this species is one of the most common and widely spread Gryllids in all the tropical and sub-tropical regions of Africa and Asia. In the Z. S. I. collection, material from the Punjab and Darjeeling (West Bengal) is present. The two yellow marks at the base of the elytra are very small in the example before me which otherwise resembles the typical form of the species.

8. *Gryllulus mitratus* Burmeister

1838. *Gryllus mitratus* Burmeister, *Handb. Ent.*, 2, p. 734.
 1900. *Gryllus mitratus* Burm., Bolivar, *Ann. Soc. ent. Fr.*, 68, p. 795.
 1936. *Gryllus mitratus* Burm., Chopard, *Ceyl. J. Sci.*, 20, p. 24.

Material.—1 ex., Sta. No. 47, on way to Thanja, 3,600 m., 30.v.1958.

Remarks.—This species is common in the Oriental Region. The Z. S. I. collection contains examples from Java (Type-locality) and Sitong Ridge (ca. 1,432 m.), Darjeeling district. The present record from Nepal from an altitude of 3,600 m. is, therefore, of interest.

Family ACRIDIDAE

9. *Acrida gigantea* (Herbst)

1794. *Truxalis giganteus* Herbst, in : Fuessly, *Arch. Ins.*, p. 191, pl. 3, fig. 6.
 1910. *Acrida gigantea* (Herbst), Kirby, *Syn. Cat. Orth.*, 3(2), p. 93.
 1914. *Acrida gigantea* (Herbst), Kirby, *Fauna Brit. India, Orthoptera (Acridiidae)*, p. 98.

Material.—(i) 1 ex., Sta. No. 17, round about Namche Bazar, 3,500 m., 14. iv. 1958. (ii) 1 ex., Sta. No. 48, Jumbesi, 2,700 m., 1.vi.1958.

Remarks.—Kirby (1914) gives its distribution as “Nepal, Africa”. In the Z.S.I. collection the material from India comes from Varanasi (U. P.) and the vicinity of Mettur Dam, South India. Both the examples under report are females.

10. *Acrida exaltata* (Walker)

1859. *Truxalis exaltata* Walker, *Ann. nat. Hist.*, (3)4, p. 222.
 1910. *Acrida exaltata* (Walk.), Kirby, *Syn. Cat. Orth.*, 3(2), p. 94.
 1914. *Acrida exaltata* (Walk.), Kirby, *Fauna Brit. India, Orthoptera (Acridiidae)*, p. 99.

Material.—4 exs. (including 3 nymphs), Sta. No. 48, on way to Jumbesi, 2,700 m., 1. vi. 1958.

Remarks.—Recorded earlier from Ceylon, the species is fairly widely distributed, there being many examples of it from Mysore, Bombay, Bengal, and Assam in the Z.S.I. collection. The mature example from Nepal mentioned above is a female.

11. *Acridella nasuta* (Linnaeus)

1758. *Gryllus Acrida nasutus* Linnaeus, *Syst. Nat.*, (ed. 10), 1, p. 427.
 1914. *Acridella nasuta* (Linn.), Kirby, *Fauna Brit. India, Orthoptera (Acridiidae)*, p. 100.

Material.—(i) 1 ex., Sta. No. 38, round about Namche Bazar, 3,800 m., 16.v.1958. (ii) 1 ex. (nymph), Sta. No. 47, on way to Thanja, 3,600 m., 30.v.1958.

Remarks.—This is a widely distributed species which is recorded from South Europe, Africa, Western Asia, Baluchistan (West Pakistan), India, Ceylon and Burma (*vide* Kirby, 1914). In the Z.S.I. collection examples from Bengal and Assam, among the Indian material, are present. The two examples mentioned above are first records from Nepal. The one from Namche Bazar area is a female of medium size, while the other is apparently a nymph of the same species.

12. *Phlaeoba infumata* Brunner von Wattenwyl

1893. *Phlaeoba infumata* Brunner von Wattenwyl, *Ann. Mus. Civico Storia nat.*, Genova, (2)13, p. 124.
 1914. *Phlaeoba infumata* Brunn., Kirby, *Fauna Brit. India, Orthoptera (Acridiidae)*, p. 103.

Material.—1 ex., Sta. No. 44, on way to Chama, 3,000 m., 27.v.1958.

Remarks.—Previously recorded from Burma (Pegu ; Tenasserim), this is the first record from Nepal or the Himalaya. The example before me is a female.

13. *Trilophidia annulata* (Thunberg)

1815. *Gryllus annulata* Thunberg, *Mem. Acad. Petersb.*, 5, p. 234.
 1873. *Trilophidia annulata* (Thunbg.), Stal, *Recensio Orthopterorum*, 1, *Acridoidea*, p. 132.
 1910. *Trilophidia annulata* (Thunbg.), Kirby, *Syn. Cat. Orthoptera*, 3(2), p. 244.
 1914. *Trilophidia annulata* (Thunbg.) *Fauna Brit. India, Orthoptera (Acridiidae)*, p. 149.

Material.—(i) 2 exs., Sta. No. 47, on way to Thanja, 3,600 m., 30.v.1958. (ii) 1 ex., Sta. No. 48, on way to Jumbesi, 2,700 m., 1.vi. 1958.

Remarks.—This species is widely distributed in different parts of the Oriental Region, having been previously recorded from Ceylon, India, China, Japan, Java, Philippines, etc. In the Z.S.I. collection examples from Sikkim are also present. It is, however, being recorded from Nepal and from such high altitudes for the first time.

14. *Trilophidia turpis* (Walker)

1870. *Epacromia turpis* Walker, *Cat. Derm. Salt., B. M.*, 4, p. 775.
 1914. *Trilophidia turpis* (Walk.), Kirby, *Fauna Brit. India, Orthoptera (Acridiidae)*, p. 149.

Material.—2 exs., Sta. No. 4, near stream ca. 4.8 km. N.E. of Chaubas, 2,027 m., 29. iii. 1958.

Remarks.—Previously recorded from South India and Ceylon, this species is being recorded for the first time from Nepal or the Himalaya.

15. *Chrotogonus trachypterus* (Blanchard)

1836. *Ommexycha trachypterus* Blanch., *Ann. Soc. ent. Fr.*, 5, p. 618, pls. 22, fig. 6.
 1910. *Chrotogonus trachypterus* (Blanch.), Kirby, *Syn. Cat. Orth.*, 3(2), p. 300.
 1914. *Chrotogonus trachypterus* (Blanch.), Kirby, *Fauna Brit. India, Orthoptera (Acridiidae)*, p. 165.
 1954. *Chrotogonus trachypterus* (Blanch.), McE. Kevan, *Indian J. Fot.*, 16(2), p. 150.

Material.—3 exs., Sta. No. 4, near a stream ca. 4.8 km. N. E. of Chaubas, 2,021 m., 29. iii. 1958.

Remarks.—It is a species which occurs commonly in northern India where it has been known to be injurious to cultivated crops. Nothing is known, however, of its feeding habits from Nepal.

16. *Atractomorpha crenulata* (Fabricius)

1793. *Truxalis crenulatus* Fabricius, *Ent. Syst.*, 2, p. 28.
 1910. *Atractomorpha crenulata* (Fabr.), Kirby, *Syn. Cat. Orth.*, 3(2), p. 331.
 1914. *Atractomorpha crenulata* (Fabr.), *Fauna Brit. India, Orthoptera (Acridiidae)*, p. 181.

Material.—(i) 5 exs., Sta. No. 4, near a stream ca. 4.8 km. N.E. of Chaubas, 2,021 m., 29.iii.1958. (ii) 2 exs., Sta. No. 48, Jumbesi, 2,700 m., 1.vi.1958.

Remarks.—Recorded from India, Ceylon, Malaya, Java, Thailand, etc., the species is widely distributed. In India it is known from Bengal and Madhya Pradesh, the latter material being present in the Z.S.I. collection. The present record from Nepal is of interest.

17. *Spathosternum prasiniferum* (Walker)

1871. *Heteracris prasinifera* Walker, *Cat. Derm. Salt., B. M.*, 5, p.65.
 1910. *Oxya prasinifera* (Walk.), Kirby, *Syn. Cat. Orth.*, 3(2), p. 394.
 1914. *Spathosternum prasiniferum* (Walk.), Kirby, *Fauna Brit. India, Orthoptera (Acridiidae)*, p. 208.

Material.—2 exs., Sta. No. 4, near a stream ca. 4.8 km. N.E. of Chaubas, 2,021 m., 29.iii.1958.

Remarks.—This species, with variable markings on the tegmina, is apparently widely distributed in India, being known from Bombay, Bihar, etc. The examples before me measure 16-17 mm. in body-length and are with the black streak running through the entire length of the tegmina.

Genus *Catantops* Schaum

1853. *Catantops* Schaum, *Monatsber. Akad. Berlin*, p. 779.

18. *Catantops* sp.

Material.—7 exs., Sta. No. 10, Bhandar, 2,745 m., 4. iv. 1958.

Remarks.—This specimen, which is a female, comes very close to *Catantops humilis* (Serv.), but is decidedly more stout and with relatively shorter wings than is the case with the female examples of *C. humilis* present in the Z.S.I. collection.

19. *Catantops indicus* Bolivar

1902. *Catantops indicus* Bolivar, *Ann. Soc. ent Fr.*, 70, p. 626.
 1914. *Catantops indicus* Bol, Kirby, *Fauna Brit. India, Orthoptera (Acridiidae)*, p. 251

Material.—1 ex., Sta. No. 4, near a stream ca. 4.8 km. N.E. of Chaubas, 2,021 m., 29.iii.1958.

Remarks.—This species has been recorded from India (Kodaikanal), Ceylon, Korea, and China (Kirby, *loc. cit.*). In the Z.S.I. collection, examples are present from several parts of India of which the following may be mentioned : Calcutta, Siliguri, and Purnea (West Bengal), Parasnath Hills (Bihar), Barkuda Islands (Orissa), Naga Hills (Assam) and Kulu (Punjab).

20. *Catantops humilis* (Serville)1839. *Acridium humile* Serville, *Hist. nat. Inst., Orthoptera*, p. 662.1914. *Catantops humilis* (Serv.), Kirby, *Fauna Brit. India, Orthoptera (Acridiidae)*, p. 250.

Material.—2 exs., Sta. No. 4, near a stream *ca.* 4.8 km. N.E. of Chausbas, 2,021 m., 29. iii. 1958.

Remarks.—This is also a widely distributed species having been previously recorded from Sikkim, Assam, Bengal, Bombay and Ceylon. In the Z.S.I. collection there are specimens from Chota Nagpur (Bihar), and West Bengal (Darjeeling and Kurseong). The examples from Nepal are small males, measuring 22-24 mm. in body-length.

Genus *Euprepocnemis* Fieber1873. *Euprepocnemis* (ex. Fieber, 1853) Stal, *Recens Orth.*, 1, p. 75.21. *Euprepocnemis* sp. near *plorans* (Charpentier)

Material.—1 ex., Sta. No. 16, *ca.* 8.0 km. N. of Ghat, 3,200 m., 10.iv. 1958.

Remarks.—The single female example in the collection is in an imperfect condition and comes very near to *E. plorans* Charp. in its description. A close comparison between it and a few Japanese examples of *E. plorans* in Z.S.I. collection, however, reveal certain differences in colouration and female genitalia.

IV Order DERMAPTERA

Family FORFICULIDAE

22. *Forficula mogul* Burr1904. *Forficula mogul* Burr, *Trans. ent. Soc. Lond.*, p. 321.1907. *Forficula mogul* Burr, *ibid.*, p. 3.1908. *Forficula mogul* Burr, *Bull. Mus. Hist. nat., Paris*, p. 121.1910. *Forficula mogul* Burr, *Fauna Brit. India, Dermaptera*, p. 167.

Material.—2 exs., Sta. No. 47, on way to Thanja, 3,600 m., 30.v.1958.

Remarks.—The species was first described from Darjeeling from where a few examples are also present in the Z.S.I. collection. The collection under report constitutes the first record of the species from Nepal.

V Order HEMIPTERA

Family REDUVIIDAE

23. *Coranus emodicus* Kiritschenko1931. *Coranus emodicus* Kiritschenko, *Ann. Mag. nat. Hist.*, (10) 7, pp. 365, 383.

Material.—1 ex., Sta. No. 37, on way to Dob, 5,000 m., 15.v.1958.

Remarks.—This species was first described from the material collected by the Third Mount Everest Expedition, 1924, in Darjeeling and Sikkim, between 6,000 ft.—10,000 ft. (*ca.* 1,828 m.—3,048 m.) altitudes. The occurrence of the above mentioned specimen from Nepal at an altitude of 5,000 m., is, therefore, of interest.

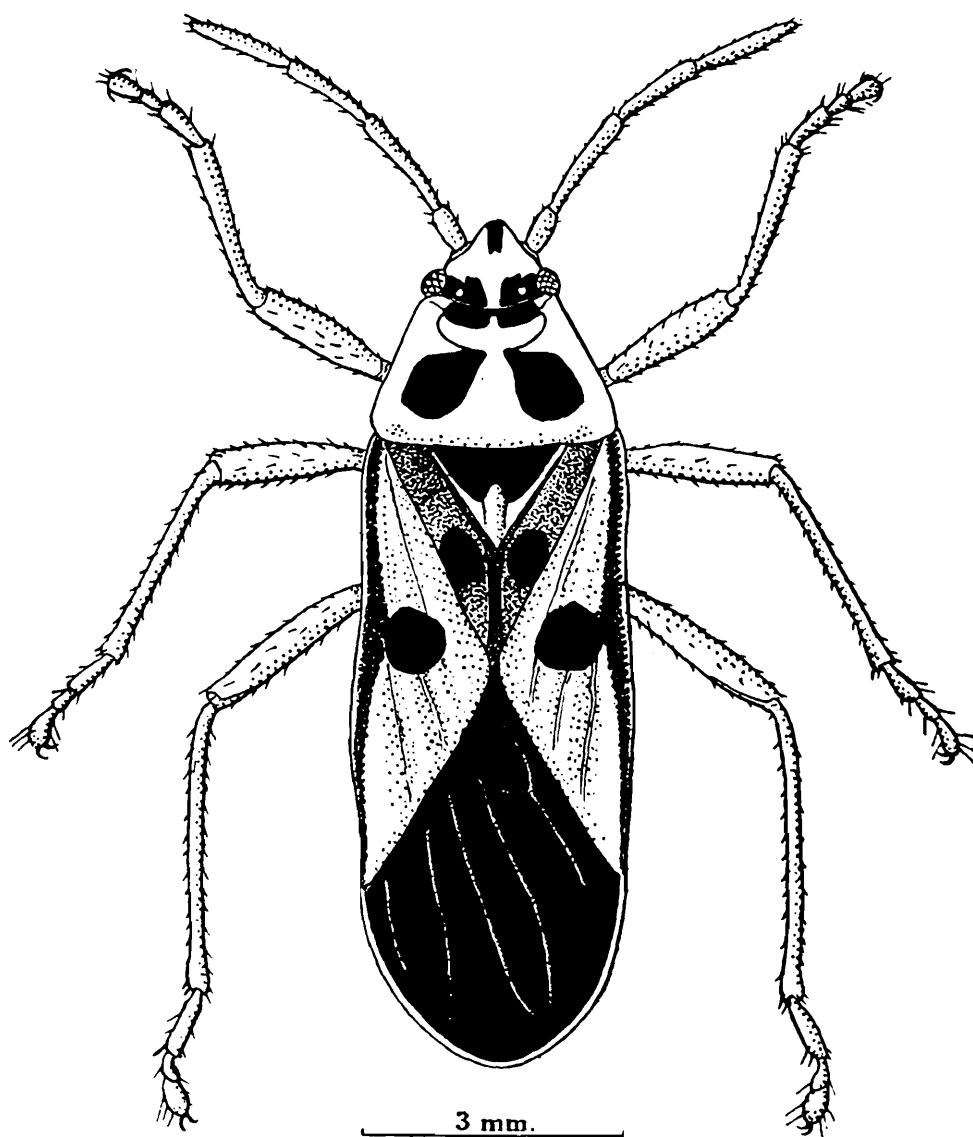
Family LYGAEIDAE

24. *Graptostethus quadratomaculatus* (Kirby)

(Text-fig. 1)

1891. *Lygaeus quadratomaculatus* Kirby, *J. Linn. Soc. (Zool.)*, **24**, p. 98.1901. *Graptostethus quadratomaculatus* (Kirby), Distant, *Ann. Mag. nat. Hist.*, (7)7, p. 537.1904. *Graptostethus quadratomaculatus* (Kirby), Distant, *Fauna Brit. India, Rhynchota-Heteroptera*, **2**, pp. 9-10.

Material.—(i) 5 exs., Sta. No. 16, near a stream ca. 8.0 km. N. of Ghat, 3,200 m., 10.iv.1958. (ii) 2 exs., Sta. No. 17A, from shrubby vegetation N. of Namche Bazar, 3,500 m., 15.iv.1958. (iii) 4 exs., Sta. No. 18A, on way to Thyangboche, 4,150m., 16.iv.1958. (iv) 17 exs., Sta. No. 19, on way to Pangboche, 4,572 m., 20.iv.1958. (v) 35 exs. (including 21 nymphs), Sta. No. 20, on way to Thaparma, 4,572m. 21.iv.1958. (vi) 1 ex. Sta. No. 21, on way to Phariche, 4,600 m., 22.iv.1958. (vii) 3 exs., Sta.



TEXT-FIG. 1.—*Graptostethus quadratomaculatus* (Kirby). The specimen was collected on way to Lukhla in Nepal at an altitude of 4,870 m.

No. 22, on way to Lobujeige, 4,876 m., 23.iv.1958. (viii) 4 exs., Sta. No. 23A, Gorashan, 5,334 m., 25.iv.1958. (ix) 4 exs., Sta. No. 31, on way to Chub, 5,000 m., 6.v.1958. (x) 3 exs., Sta. No. 32, round about Lunak, 5,100 m., 8.v.1958. (xi) 5 exs., Sta. No. 34, on way to Lehengo, 5,100 m., 11.v.1958. (xii) 5 exs., Sta. No. 35, on way to Mosamba Lake, 4,600 m., 12.v.1958. (xiii) 5 exs., Sta. No. 36A, on way to Dudh Pokhari, 5,000 m., 13.v.1958. (xiv) 5 exs., Sta. No. 31, on way to Dob, 5,000 m., 15.v.1958. (xv) 50 exs., (nymphs), Sta. No. 38, round about Namche Bazar, 3,800 m., 16.v.1958. (xvi) 14 exs., Sta. No. 41, on way to Lukhla, 4,870 m., 24.v.1958. (xvii) 1 ex., Sta. No. 44, on way to Chama, 3,000 m., 27.v.1958. (xviii) 8 exs., Sta. No. 46, on way to Jamnaso, 4,876 m., 29.v.1958. (xix) 3 exs., Sta. No. 48, on way to Jumbesi, 2,700 m., 1.vi.1958.

Remarks.—Hitherto known only from Ceylon, the discovery of this species in large numbers from Nepal is of great interest. The material shows remarkably constant colour pattern except for the posterior pair of subquadrate black pronotal spots in certain examples. In adult examples of the species before me certain variation in the size of specimens was also noticed. The smallest specimen in the series measured 7.75 mm. in length, while the largest 9.35 mm. Some examples out of the above-mentioned series were very kindly compared for me by the Commonwealth Institute of Entomology, London, with the examples of the species in the British Museum (N.H.), London. The occurrence of this species in Ceylon and Nepal shows that it is widely distributed, almost like the species that follows next.

25. *Aphanus sordidus* (Fabricius)

1787. *Cimex sordidus* Fabricius, *Mant. Ins.*, 2, p. 302.

1901. *Aphanus sordidus* (Fabr.), Distant, *Ann. Mag. nat. Hist.*, (7) 8, p. 501.

1904. *Aphanus sordidus* (Fabr.) Distant, *Fauna Brit. India, Rhynchota : Heteroptera*, 2, pp. 79-80.

Material.—5 exs., Sta. No. 38, round about Namche Bazar, 3,800 m., 16.v.1958.

Remarks.—This species is very widely distributed, having been recorded from Assam (Naga and Khasi Hills), West Bengal (Calcutta), Bihar (Ranchi), Maharashtra State (Bombay) in India, and from Ceylon, Burma and China among other countries. It is reported to have damaged sesamum crop near Calcutta (*vide* Distant, *loc. cit.*) but nothing is known of its feeding habit in Nepal.

Family PYRRHOCORIDAE

26. *Dysdercus evanescens* Distant

1902. *Dysdercus evanescens* Distant, *Ann. Mag. nat. Hist.*, (7) 9, p. 43.

1904. *Dysdercus evanescens* Distant, *Fauna Brit. India, Rhynchota : Heteroptera*, 2, p. 120.

1960. *Dysdercus evanescens* Distant, Kapur and Vazirani, *Rec. Indian Mus.*, 54, p. 164.

Material.—(i) 1 ex., Sta. No. 17A, from shrubby vegetation N. of Namche Bazar, 3,500 m., 15. iv. 1958. (ii) 1 ex., Sta. No. 37, on way to Dob, 5,000 m., 15.v.1958.

Remarks.—The species occurs in the hills and plains of northern India (Simla Hills and the Punjab; Kumaon Hills and Banaras in Uttar Pradesh ; Calcutta, Purnea, Darjeeling, Kalimpong and Kurseong in West Bengal), Sikkim, Nepal and Burma. It was only recently recorded from Chitlong and above Nah (15,500 ft., ca. 4,724 m.) in Nepal (Kapur and Vazirani, *loc. cit.*).

Family PENTATOMIDAE

27. *Palomena reuteri* Distant

1879. *Palomena reuteri* Distant, *Trans. ent. Soc. Lond.*, p. 122.

1904. *Palomena reuteri* Distant, *Fauna Brit. India, Rhynchota : Heteroptera*, 1, p. 156.

Material.—1 ex., Sta. No. 36A, on way to Dudh Pokhari, 5,000 m., 13.v.1958.

Remarks.—The species was hitherto known from Muree (Punjab, now West Pakistan) and Kashmir in the North-west Himalaya. Its present record from Nepal is, therefore, of interest.

28. *Dolycoris indicus* Stal

1876. *Dolycoris indicus* Stal, *Enumeratio Hemipterorum*, Sv. Ak. Handl. (n.f.), 14(4), pp. 28-130.

1904. *Dolycoris indicus* Stal, Distant, *Fauna Brit. India, Rhynchota : Heteroptera*, 1, p. 160.

Material.—1 ex., Sta. No. 36A, on way to Dudh Pokhari, 5,000 m., 13. v. 1958.

Remarks.—This species is recorded from Bangalore, Bombay, Calcutta, Darjeeling and Naga Hills and examples of it are also present in Z. S. I. collection from Allahabad, Purnea and Sikkim. Its occurrence in Nepal is, therefore, not surprising.

29. *Sciocoris funebris* Distant

1918. *Sciocoris funebris* Distant, *Fauna Brit. India, Rhynchota : Homoptera : Heteroptera*, 7, p. 126.

Material.—(i) 1 ex., Sta. No. 4, near a stream ca. 4.8 km. N. E. of Chaubas, 2,021m., 29. iii. 1958. (ii) 1 ex., Sta. No. 19, on way to Pangboche, 4,572 m., 20. iv. 1958. (iii) 1 ex., Sta. No. 37, on way to Dob, 5,000 m., 15. v. 1958. (iv) 1 ex., Sta. No. 38, round about Namche Bazar, 3,800 m., 16. v. 1958.

Remarks.—Originally described from "South India , Nilgiri Hills", the occurrence of this species in Nepal is of unusual interest. According to Distant there are six species of the genus in our zoogeographical area of which *S. indicus* Dall. is found both in northern and southern India. *S. funebris* must also be regarded to belong to the same category in

so far the geographical distribution is concerned. Of the other four species, two are known from southern India (Coonor), one from North Khasi Hills and one (*S. nepalensis* Distant) from Nepal. The material under report is distinct from the latter and agrees in most respects with Distant's description of *S. funebris* except for the generally large size ; the four examples mentioned above measure 4.38 mm., 5.00 mm., 5.38 mm., and 6.25 mm. in length.

Family NEPIDAE

30. *Laccotrephes ruber* (Linnaeus)

1764. *Nepa ruber* Linnaeus, *Mus. Lud. Ulr.*, p. 165.

1906. *Laccotrephes ruber* (Linn.), Distant, *Fauna Brit. India, Hemiptera*, 3, pp. 18-19.

Material.—1 ex., Sta. No. 5, a pool with rocky bed at Risingo, 2,200 m., 30.iii. 1958.

Remarks.—This is a very widely distributed species which has been recorded from Sind in West Pakistan to Naga Hills in north-eastern India and also from Ceylon, Burma, China, Taiwan, and Japan. In Nepal the habitat of the only example collected is a pool with rocky bed situated at an altitude of 2,200 m.

VI. Order LEPIDOPTERA

Family HESPERIDAE

Genus *Syrichtus* Boisduval

1834. *Syrichtus* Boisduval, *lc. Hist. Lepidopt. Europe*, 1 (21,22), p. 230.

31. *Syrichtus* sp.

Material.—1 ex., Sta. No. 38, round about Namche Bazar, 3,800 m., 16.v.1958.

Remarks.—The specimen is in an extremely bad state of preservation, with wings shrivelled up and most scales rubbed off. It is, therefore, not possible to place it with certainty in the genus *Syrichtus* Boisduval.

Family LIMOCODIDAE

Genus *Natada* Walker

1855. *Natada* Walker, *List specimens Lep. Ins. Brit. Mus.*, 5, p. 1108.

32. *Natada* sp.

Material.—1 ex., Sta. No. 34, on way to Lehengo, 5,100 m., 11.v. 1958.

Remarks.—This specimen is also in a very poor state of preservation and cannot be identified further. Members of this genus are commonly found in the hills, and plains of India and neighbouring countries.

VII. Order TRICHOPTERA

Family RHYACOPHILIDAE

Genus **Himalopsyche** Banks

1940. *Himalopsyche* Banks, *Proc. U. S. nat. Mus.*, **88**, No. 3079, p. 197.

33. **Himalopsyche** sp.

Material.—1 ex., Sta. No. 19, on way to Pangboche, 4,572 m., 20. iv.1958.

Remarks.—The specimen is a large one of which the fore-wing is 26.5 mm. long, and the colour is on the whole light brown with a few dark patches on the fore-wings. It is not in a good state of preservation but resembles closely another example of the genus in the Z.S.I. collection.

VIII. Order DIPTERA

Family BIBIONIDAE

34. **Penthetria japonica** Wiedemann

1830. *Penthetria japonica* Wiedemann, *Auss. Zweifl. Ins.*, **2**, p. 618.

Material.—5 exs., Sta. No. 4, near a stream ca. 4.8 km. N.E. of Choubas, 2,021 m., 29. iii. 1958.

Remarks.—This species is widely distributed and has been recorded from many parts in northern India, especially the Himalaya. It has been also recorded previously from Nepal. Outside these two countries it is known from Siberia, China and Japan. It is most probably the same species as has been noticed by Brunetti¹ under the name *Plecio-myia melanaspis* Wied.

Family TABANIDAE

Genus **Therioplectes** Zeller

1842. *Therioplectes* Zeller, *Isis* (Oken), p. 819.

35. **Therioplectes** sp.

Material.—7 exs., Sta. No. 38, round about Namche Bazar, 3,800 m., 16.v.1958.

Remarks.—A few species of this genus occur commonly in the Himalaya, especially in the Simla and Kumaon Hills. The examples of *T. hirtus* Walker, and *T. subcallosus* Ricardon from the above mentioned areas respectively, that are present in the Z.S.I. collection do not closely resemble the material under report. Owing, however, to the not very good state of preservation of the material, it is very difficult to determine it further.

¹BRUNETTI, E. 1912. *Fauna Brit. India, Diptera : Nematocera*, p. 161.

Family SYRPHIDAE

36. *Eristalis himalayensis* Brunetti

1908. *Eristalis himalayensis* Brunetti, *Rec. Indian Mus.*, **2**, p. 70.

1923. *Eristalis himalayensis* Brunetti, *Fauna Brit. India, Diptera*, **3**, p. 168.

Material.—1 ex., Sta. No. 34, on way to Lehengo, 5,100 m., 11.v.1958.

Remarks.—This is a very widely distributed species in the Himalaya and is already noted from Nepal by Brunetti (1923, *loc. cit.*) who further records it from the following other places : Phagu, (9,000 ft. or *ca.* 2,743 m.) Simla district ; Talpani, Gahrwal district ; Nainital ; Sikkim ; Darjeeling, (9,000ft.-12,000 ft. or *ca.* 2,743 m.-3,657m.) in India and Chittagong in East Pakistan. The writer has collected several examples of the species from Shillong in recent years. It is one of the largest species of the genus occurring in the Himalaya.

Family CALLIPHORIDAE

37. *Calliphora erythrocephala* (Meigen)

1826. *Musca erythrocephala* Meigen, *Syst. Besch.*, **5**, p. 62.

1940. *Calliphora erythrocephala* (Meig.), Senior White, Aubertin and Smart, *Fauna Brit. India, Diptera*, **6**, p. 33.

Material.—2 exs., Sta. No. 42A, on way to Lukhla, 4,870 m., 24.v.1958.

Remarks.—This blow fly is a very widely distributed species which is, according to Senior White, Aubertin and Smart (*loc. cit.*), recorded from "North America ; Europe ; Egypt ; India ; Beluchistan, Quetta, Nushki ; Northern India : Simla, Cherat, Mussoorie, Dehra Dun, Sikkim, Darjeeling ; Japan ; Australia ; New Zealand." Examples from Nainital are also present in the Z.S.I. collection. Its occurrence in Nepal is, therefore, not surprising.

The species is stated to breed in decaying matter of many kinds and there is considerable literature on its bionomics.

Family TACHINIDAE

Genus *Ernestia* Robineau-Desvoidy

1830. *Ernestia* Robineau-Desvoidy, *Mem. presentes Acad. Roy. Sci. Inst.*, France, **2**, p. 60.

38. *Ernestia* sp.

Material.—1 ex., Sta. No. 4, near stream *ca.* 4.8 km. N.E. of Chaubas, 2,021 m., 29.iii.1958.

Remarks.—The nearctic genus *Ernestia* is very widely distributed but is not represented in the Z.S.I. collection. The specimen mentioned above is in a very poor state of preservation and quite unsuitable for further identification.

IX. Order HYMENOPTERA

Family TENTHREDINIDAE

39. *Tenthredo pulchra* Jakovlev

1891. *Tenthredo pulchra* Jakovlev, *Hor. Soc. ent. ross.*, **26**, p. 61.

Material.—1 ex., Sta. No. 32, round about Lunak, 5,100 m., 8.v.1958.

Remarks.—The genus *Tenthredo* Linn. is extensively distributed in the palaearctic region and several species of it are found in the Himalaya. The species under report was hitherto known from China and is now being recorded from Nepal.

Family ICHNEUMONIDAE

Genus *Amblyteles* Wesmael

1845. *Amblyteles* Wesmael, *N. Mem. Acad. R. Brux.*, **18**, p.114.

40. *Amblyteles* sp.

Material.—1 ex., Sta. No. 18, on way to Thyangboche, 4,150 m., 17.iv.1958.

Remarks.—The genus is well distributed in the Himalaya, including Nepal. It has not been possible to identify further the above-mentioned example.

Family SCOLIIDAE

41. *Elis thoracica* (Fabricius)

1798. *Tiphia thoracica* Fabricius, *Ent. syst., Suppl.*, p. 254.

1897. *Elis thoracica* (Fabr.), Bingham, *Fauna Brit. India, Hymenoptera*, **1**, p. 99.

Material.—2 exs., Sta. No. 21, on way to Phariche, 4,600 m., 22.iv.1958.

Remarks.—Bingham (*loc. cit.*) records this species from Kumaon, Sikkim, Bangalore, Madras, Burma, Tenasserim, China, Java. Its present record from Nepal is not surprising. In the Z.S.I. collection examples from Tibet, Nainital, Siliguri, Calcutta, Bangalore and Borneo are present.

Family FORMICIDAE

42. *Oecophylla smaragdina* (Fabricius)

1775. *Formica smaragdina* Fabricius, *Syst. Ent.*, p. 828.

1894. *Oecophylla smaragdina* (Fabr.), Forel, *J. Bombay nat. Hist. Soc.*, **8**, p. 400.

1903. *Oecophylla smaragdina* (Fabr.), Bingham, *Fauna Brit. India, Hymenoptera*, **2**, p. 311.

Material.—1 ex., Sta. No. 38, round about Namche Bazar, 3,800 m., 16.v.1958.

Remarks.—This well-known species is distributed in the whole of India, Burma, Ceylon and from Malaya to New Guinea. Its occurrence in Nepal is probably quite common, although in the present collection it is represented by only a single worker.

Family POMPILIDAE

43. *Pompilus reflexus* Smith

1873. *Pompilus reflexus* Smith, *Trans. ent. Soc. Lond.*, p. 189.

1907. *Pompilus reflexus* Smith, *Rec. Indian Mus.*, 1, p. 15.

1897. *Pompilus reflexus* Smith, Bingham, *Fauna Brit. India, Hymenoptera*, 1, p. 159.

Material.—1 ex., Sta. No. 5, Risingo, 2,200 m., 30.iii.1958.

Remarks.—Originally described from Japan the species is also recorded from Sikkim and Burma. In the Z.S.I. collection examples from Kangra Valley (Punjab), Siliguri (West Bengal), Burma, and Nepal are present, besides the specimen under report.

Family SPHEGIDAE

44. *Ammophila vagabunda* Smith

1856. *Ammophila vagabunda* Smith, *Cat. Hymenoptera Ins.*, pt. 4, p. 218.

1897. *Ammophila vagabunda* Smith, Bingham, *Fauna Brit. India, Hymenoptera*, 1, p. 231.

Material.—1 ex., Sta. No. 18, on way to Thyangboche, 4,150 m., 17. iv.1958.

Remarks.—Recorded earlier by Bingham (*loc. cit.*) from "N. China, Sumatra, N. India" the collection of the species from Nepal is of some interest. There is also present an example of it from Leh, in the Z.S.I. collection.

Family APIDAE

Genus *Bombus* Latreille

1802. *Bombus* Latreille, *Hist. Nat. Fourmis*, etc., p. 437.

45. *Bombus* sp.

Material.—(i) 4 exs., Sta. No. 45, on way to Tate, 4,400 m., 28.v.1958.
(ii) 2 exs., Sta. No. 48, on way to Jumbesi, 2,700 m., 1. vi. 1958.

Remarks.—Since the material had been initially preserved in liquid (spirit) which has resulted, in the loss of colouration and damage to its pubescence, it is not possible to identify it further.

46. *Bombus terminalis* Smith

1870. *Bombus terminalis* Smith, *Trans. Zool. Soc. Lond.*, 7(3), p. 193.

1897. *Bombus terminalis* Smith, Bingham, *Fauna Brit. India, Hymenoptera*, 1, p. 552.

Material.—(i) 1 ex., Sta. No. 32, round about Lunak, 5,100 m., 8.v. 1958. (ii) 1 ex., Sta. No. 45, on way to Tate, 4,400 m., 28.v.1958.

Remarks.—According to Bingham (*loc. cit.*) it is distributed in the Himalaya from Simla to Sikkim. An example of it from Dalhousie (Punjab) is also present in Z.S.I. collection. Its occurrence from Nepal at such altitudes is worthy of note.

X. Order COLEOPTERA

Family CARABIDAE

47. *Carabus everesti* Andrewes

1929. *Carabus everesti* Andrewes, *Fauna Brit. India, Coleoptera, Carabidae*, 1, p. 76.

Material.—(i) 1 ex., Sta. No. 32, Lunak, 5,100 m., 8.v. 1958. (ii) 1 ex., Sta. No. 47, Thanja, 3,600 m., 30.v.1958.

Remarks.—Previously recorded from Rongshar Valley in Tibet, the present record from Nepal is of interest.

48. *Paropisthius indicus* (Chaudoir)

1864. *Opisthius indicus* Chaudoir, *Ann. Soc. ent. Fr.*, p. 449.

1929. *Paropisthius indicus* (Chaudoir), Andrewes, *Fauna Brit. India, Coleoptera, Carabidae*, 1, p. 104.

Material.—(i) 1 ex., Sta. No. 36A, on way to Dudh Pokhari, 5,000 m., 13. v. 1958. (ii) 2 exs., Sta. No. 47, Thanja, 3,600 m., 30. v. 1958.

Remarks.—The species is well distributed in north-eastern India, including Sikkim. It has also been recorded from several parts of Tibet (*vide* Andrewes, *loc. cit.*).

49. *Bembidion radians* Andrewes

1922. *Bembidion radians* Andrewes, *Ent. mon. Mag.* 58, p. 177.

1935. *Bembidion radians* Andrewes, *Fauna Brit. India, Coleoptera, Carabidae*, 2, p. 184-185, fig. 28.

Material.—1 ex., Sta. No. 36A, on way to Dudh Pokhari, 5,000 m., 13. v. 1958.

Remarks.—It is a widely distributed species, having been recorded from the Punjab (Simla Hills), Uttar Pradesh (West Almora, Nainital, etc.), Sikkim and West Bengal (Darjeeling, etc.). It is also recorded from several places in Tibet according to Andrewes (*loc. cit.*).

Genus *Amara* (ex. Bonelli) Stephens

1827. *Amara* (ex. Bonelli) Stephens, *Ill. Brit. Ent.*, p. 67.

50. *Amara* sp.

Material.—(i) 1 ex., Sta. No. 5B, Raisingo, 2,200 m., 30. iii. 1958. (ii) 1 ex., Sta. No. 19, on way to Pangboche, 4,572 m., 20. iv. 1958. (iii) 4 exs., Sta. No. 32, round about Lunak, 5,100 m., 8. v. 1958. (iv) 3 exs., Sta. No. 36A, on way to Dudh Pokhari, 5,000 m., 13. v. 1958. (v) 9 exs., Sta. No. 37, on way to Dob, 5,000 m., 15. v. 1958. (vi) 1 ex., Sta. No. 38, round about Namche Bazar, 3,800 m., 16. v. 1958. (vii) 1 ex., Sta. No. 46, on way to Jamnaso, 4,876 m., 29. v. 1958. (viii) 1 ex., Sta. No. 48, on way to Jumbesi, 2,700 m., 1. vi. 1958.

Remarks.—The above-mentioned series of 21 specimens belongs to the subgenus *Leiocnemis* Zimm., of the genus *Amara* Stephens and in description comes close to the species *Amara dichroa* Putz*, which is a palaearctic species recorded from Greece and Turkey, but of which I have no facility to examine a specimen. A comparison of our material with *A. (Leiocnemis) himalaica* Bates, shows it to be quite distinct and easily separable from the latter which is smaller in size and slightly different in the outline and sculpture of the pronotum.

51. *Pterosticus yunnanus* var. *aeneocupreus* (Fairmaire)

1887. *Platysma yunnanus* Fairmaire, *Ann. Soc. ent. Belg.*, **31**, p. 94.

1887. *Platysma aeneocupreus* Fairmaire, *ibid.*, p. 95.

1930. *Pterosticus yunnanus* var. *aeneocupreus* Fairm., Csiki, *Coleopt. Cat.*, Berl., 2(112), p. 627.

Material.—(i) 1 ex., Sta. No. 3A, ca. 3.2 km., north of Dulaghat, 710 m., 28. iii. 1958. (ii) 2 exs., Sta. No. 32, round about Lunak, 5,100 m., 8. v. 1958. (iii) 3 exs., Sta. No. 36A, on way to Dudh Pokhari, 5,000 m., 13. v. 1958. (iv) 5 exs., Sta. No. 37, on way to Dob, 5,000 m., 15. v. 1958. (v) 2 exs., Sta. No. 38, round about Namche Bazar, 3,800 m., 16. v. 1958. (vi) 3 exs., Sta. No. 45, on way to Tate, 4,400 m., 28. v. 1958.

Remarks.—Though originally described from Yunnan, this species has since been recorded from other parts of China, namely Szetshuan and Gans-su. It is for the first time being recorded from Nepal or any part of the Himalaya. In the long series before me the elytra are uniformly copper-coloured, while the head and pronotum are bluish green.

Genus *Agonum* (ex Bonelli) Stephens

1827. *Agonum* (ex Bonelli) Stephens, *Ill. Brit. Ent.*, **1**, p. 85.

52. *Agonum* sp.

Material.—3 exs., Sta. No. 35, on way to Mosamba Lake, 4,600 m., 12. v. 1958.

Remarks.—One of the three specimens is brownish and tennerial. The species belongs to the subgenus *Anchomenus* Stephens (1827) and is not comparable with any of the known Indian species or the material in Z. S. I. collection. It is, however, not being described because of the poor condition of the specimens.

53. *Agonum (Oxypselaphus) lissopterum* (Chaudoir)

1854. *Oxypselaphus lissopterum* Chaudoir, *Bull. Soc. Nat. Moscou*, **21** (1), p. 136.

1931. *Agonum* (sub-gen. *Oxypselaphus*) *lissopterum* Chaud., Csiki, *Coleopt. Cat.*, Berl., **2** (115), p. 865.

1958. *Agonum (Oxypselaphus) lissopterum* (Chaud.), Kapur, *Proc. 10th intern. Congr. Ent.*, Montreal, **1**, p. 778.

Material.—1 ex., Sta. No. 36A, on way to Dudh Pokhari, 5,000 m., 13. v. 1958.

* *Amara (Leiocnemis) dichroa* Putz. 1870, L. Abeille (1869-70) (*Monogr. Amar.*) p. 62, Csiki, 1929, *Coleopt. Cat.*, Berl., **2** (104), p. 449.

Remarks.—This species is very widely distributed, having been recorded earlier from Central Asia, Northern India, Sikkim and Tibet. I had collected a long series of this species from Kulu and Lahaul Valleys in the Punjab, mostly from 11,000-13,000 ft. (*ca.* 3,352-3,962 m.) altitudes (Kapur, 1958), and there are also examples of it from Simla in the Z. S. I. collection.

54. *Agonum (Anchomenus) viator* (Andrewes)

1931. *Anchomenus viator* Andrewes, *Ann. Mag. Nat. Hist.*, (10) 7, pp. 517-518.

1933. *Agonum (Anchomenus) viator* (Andrewes), Csiki, *Coleopt. Cat. Berl.*, 3 (126), p. 1671.

Material.—(i) 6 exs., Sta. No. 32, round about Lunak, 5,100 m., 8. v. 1958. (ii) 4 exs., Sta. No. 34, on way to Lehengo, 5,100 m., 11. v. 1958. (iii) 1 ex., Sta. No. 35, on way to Mosamba Lake, 4,600 m., 12. v. 1958. (iv) 1 ex., Sta. No. 41, on way to Thanja, 3,600 m., 30.v.1958.

Remarks.—Recorded from Uttar Pradesh (Mussoorie, 7,534 ft., or *ca.* 2,297 m. ; Dehra Dun ; Deoban) and the Punjab (Simla, Tal-roach, 10,000 ft., *ca.* 3,048 m., Jubbul) earlier, the present record from Nepal is of interest. The material before me agrees with the description given by Andrewes excepting the slightly darker colour of legs.

55. *Chydaeus obscurus* Chaudoir

1854. *Chydaeus obscurus* Chaudoir, *Bull. Soc. Nat. Moscou.*, 27(2), p. 344.

1926. *Chydaeus obscurus* Chaud., Andrewes, *Ent. mon. Mag.*, 62, p. 68.

1932. *Chydaeus obscurus* Chaud., Csiki, *Coleopt., Cat. Berl.*, 3(121) p. 1080.

Material.—1 ex., Sta. No. 36A, on way to Dudh Pokhari, 5,000 m., 13. v. 1958.

Remarks.—Previously known from Sikkim and Tibet, this species is being recorded for the first time from Nepal.

Family STAPHYLINIDAE

56. *Philonthus protenus* Schubert

1906. *Philonthus protenus* Schubert, *Dtsch. ent. Z.*, Berlin, 1906, p.382.

1932. *Philonthus protenus* Schubert, Cameron, *Fauna Brit. India. Coleoptera, Staphylinidae*, 3, p. 95.

Material.—6 exs., Sta. No. 36A, on way to Dudh Pokhari, 5,000 m., 13. v. 1958.

Remarks.—Originally described from Kashmir, the species has been further recorded by Cameron (*loc. cit.*) from Simla Hills, Mussoorie, and Chakrata, (5,000—8,000 ft. or *ca.* 1,524 m.—2,438 m.). The present record from such a high altitude in Nepal is of interest.

Family SCARABAEIDAE

Subfamily *GEOTRUPINAE*57. *Geotrupes (Phelotrupes) tenebrosus* Fairmaire

1901. *Geotrupes tenebrosus* Fairmaire, *Ann. Soc. ent. Fr.*, **4**, p. 267.

1912. *Geotrupes (Phelotrupes) tenebrosus* Fairm., Beucomout, *Coleopt. Cat.*, *Berl.*, **19(46)**, p. 30.

Material.—1 ex., Sta. No. 47, on way to Thanja, 3,600 m., 30. v. 1958.

Remarks.—Originally known from Sikkim the species is now being recorded from Nepal. The example before me is a female.

Subfamily *RUTELINAE*58. *Mimela pectoralis* Blanchard

1851. *Mimela pectoralis* Blanchard., *Cat. Coll., Ent. Mus., Paris*, (1850), p. 197.

1917. *Mimela pectoralis* Blanch., Arrow, *Fauna Brit. India, Coleoptera, Lamellicornia*, pt. 2, p. 107.

Material.—1 ex., Sta. No. 45, on way to Tate, 4,400 m., 27. v. 1958.

Remarks.—Already recorded from Lahore (West Pakistan) and Simla in the Punjab, this species is now being reported for the first time from Nepal.

59. *Popillia marginicollis* Hope

1831. *Popillia marginicollis* Hope, Gray's *Zool. misc.*, p. 23.

1915. *Popillia marginicollis* Hope, Arrow, *Fauna Brit. India, Coleoptera, Lamellicornia*, pt. 2, p. 64.

Material.—1 ex., Sta. No. 22, on way to Lobujeige, 4,866 m., 23. iv. 1958.

Remarks.—Originally described from Nepal, the species has also been subsequently recorded from Assam (Mangaldai Ghat and Cachar) and East Pakistan (Sylhet). The example before me is a female and has deep metallic green colour on the head and median part of the pronotum.

60. *Popillia puncticollis* Kraatz

1897. *Popillia puncticollis* Kraatz, *Dtsch. Ent. Z.*, Berlin, 1897, p. 329.

1915. *Popillia puncticollis* Kraatz, Ohaus, *Coleopt. Cat.*, *Berl.*, **20(66)**, p. 140.

1917. *Popillia puncticollis* Kraatz, Arrow, *Fauna Brit. India, Coleoptera, Lamellicornia*, pt. 2, p. 69.

Material.—1 ex., Sta. No. 16A, ca. 8.0 km. north of Ghât, 3,200 m., 10. iv. 1958.

Remarks.—Originally described from Sikkim, the present record from Nepal is of interest. The example before me is a female.

Subfamily *MELOLONTHINAE*Genus *Serica* MacLeay

1819. *Serica* MacLeay, *Horae Entom.*, 1(1), p. 146.

61. *Serica* sp.

Material.—1 ex., Sta. No. 46, on way to Jamnaso, 4,876 m., 29. v. 1958.

Remarks.—The example belongs to the genus *Serica* MacLeay which is a large genus with a good number of species known from the Himalaya and neighbouring areas. The present example is not present in the Z. S. I. collection and is not in a good state of preservation for further study.

62. *Holotrichia cavifrons* Brenske

1892. *Holotrichia cavifrons* Brenske, *Berl. Ent. Z.*, 37, p. 167.

1912. *Holotrichia cavifrons* Brenske, Dalla Torre, *Coleopt., Cat.*, 20(49), p. 201.

Material.—1 ex., Sta. No. 47, on way to Thanja, 3,600 m., 30. v. 1958.

Remarks.—This species is already recorded from Nepal and Darjeeling. The species is also referred to under the generic name *Lachnosterna* Hope (1837).*

Family ELATERIDAE

Genus *Hypnoidus* Dillwyn

1892. *Hypnoidus* Dillwyn, *Mem. Col. Ins., Swansea*, p. 32, (1892).

63. *Hypnoidus* sp.

Material.—1 ex., Sta. No. 32, round about Lunak, 5,100 m., 8. v. 1958.

Remarks.—The only example present is not preserved well enough for further identification.

Family CANTHARIDAE

Genus *Themus* Motschulsky

1857. *Themus* Motschulsky, *Etudes Ent.*, 6, p. 27.

64. *Themus* sp.

Material.—1 ex., Sta. No. 37, on way to Dob, 5,000 m., 15. v. 1958.

Remarks.—This example belongs to a large genus of which many species occur in the Himalaya and the palaearctic region. Further examples of the species would be required for further identification of the specimen.

65. *Themus stevensi* Champion

1926. *Themus stevensi* Champion *Ent. mon. Mag.*, 62, p. 132.

1939. *Thehms stevensi* Champ., Delkeskamp, *Coleopt. Cat.*, 9, p. 28.

Material.—1 ex., Sta. No. 11, on way to Shate, 2,700 m., 5. iv. 1958.

* Hope, F. W. 1837 *Coleopt. Manual*, 1, p. 100.

Remarks.—Originally described from Sikkim, this species is now being recorded from Nepal.

Genus **Discodon** Gorham

1881. *Discodon* Gorham, *Biol. Centr.—Amer. Col.*, 3 (2), p. 78.

66. **Discodon** sp.

Material.—1 ex., Sta. No. 37, on way to Dob, 5,000 m., 15. v. 1958.

Remarks.—This example belongs to a genus which has many species and is very widely distributed in the tropics of the world and neighbouring areas. Here also more examples would be required for further identification, as the present example is not well preserved.

Family CUCUJIDAE

67. **Cucujus bicolor** Smith

1851. *Cucujus bicolor* Smith, *List. Col. B. M.*, Part 1, p. 2.

1908. *Cucujus bicolor* Smith, Grouv, *Ann. Soc. Ent. Fr.*, 77, p. 460.

Material.—1 ex., Sta. No. 4, near a stream ca. 4.8 km. N. E. of Chaubas, 2,021 m., 29. iii. 1958.

Remarks.—The species is already recorded from Nepal and India. It is also represented in Z. S. I. collection by an example from Kumaon Hills in Uttar Pradesh.

Family COCCINELLIDAE

68. **Afissa mysticoides** (Sicard)

1912. *Solanophila mysticoides* Sicard, *Ann. Soc. Ent. Fr.*, 81, p. 507.

1931. *Epilachna* (subgen. *Solanophila*) *mysticoides* (Sicard), Korschevsky *Coleopt. Cat., Berl.*, 16(118), p. 30.

1947. *Afissa mysticoides* (Sicard), Dieke, *Smithson. Misc. Coll.*, 106(15), pp. 145-146.

1958. *Afissa mysticoides* (Sicard), Kapur, *Rec. Indian Mus.*, 53(3& 4), pp. 316-317, figs. 7, c, d. (genitalia).

Material.—1 ex., Sta. No. 37, on way to Dob, 5,000 m., 15.v. 1958,

Remarks.—The species is recorded from Darjeeling area (ca. 7,000 ft.—8,000 ft. or ca. 2,133 m.—2,438 m.) in India (*vide* Dieke, *loc. cit.*) from several places altitudes between 8,000 ft. and 11,000 ft. (or ca. 2,438 m.—3,352 m.) in Nepal (*vide* Kapur, *loc. cit.*).

69. *Coccinella septempunctata* Linnaeus

1758. *Coccinella 7-punctata* Linnaeus, *Systema Naturae*, (ed. 10), p. 365.

1932. *Coccinella septempunctata* Linn., Korschevsky, *Coleopt. Cat., Berl.*, 16 (120), p. 486.

1958. *Cocceinella septempunctata* Linn., Kapur, *Rec. Indian Mus.*, 53 (3 & 4), p. 328.

Material.—(i) 20 exs., Sta. No. 3B. on way to Phokda village, 700 m., 28. iii. 1958. (ii) 34 exs., Sta. No. 6, stream at Phoktey, 2,000 m., 31. iii. 1958. (iii) 10 exs., Sta. No. 7A. on way to Namdu, 2,030 m., 1. iv. 1958. (iv) 26 exs., Sta. No. 8, Sikri, 2,100 m., 2. iv. 1958. (v) 32 exs., Sta. No. 11, on way to Shate, 2,700 m., 5. iv. 1958. (vi) 7 exs., Sta. No. 29, on way to Thami, 4,000 m., 4. v. 1958. (vii) 7 exs., Sta. No. 31, on way to Chub, 5,000 m., 6. v. 1958. (viii) 2 exs., Sta. No. 34, on way to Lehengo, 5,100 m., 11. v. 1958. (ix) 6 exs., Sta. No. 35, on way to Mosamba Lake, 4,603 m., 12. v. 1958. (x) 7 exs., Sta. No. 38, round about Namche Bazar, 3,800 m., 16. v. 1958. (xi) 1 ex., Sta. No. 44, on way to Chama, 3,000 m., 27. v. 1958. (xii) 2 exs., Sta. No. 47, on way to Thanja, 3,600 m., 30. v. 1958.

Remarks.—This species is already known from Nepal and other parts of the Himalaya. Although a palaearctic species, it extends beyond this region and is also found in the plains of India.

69a. *Coccinella septempunctata* Linnaeus var. *confusa* Wiedemann

1823. *Coccinella confusa* Wiedemann, *Zool. Mag.*, 2(1), p. 72.

1932. *Coccinella septempunctata* Linn. var. *confusa* Wied., Korschevsky, *Coleopt. Cat., Berl.*, 16(120), p. 488.

Material.—(i) 8 exs., Sta. No. 3B, on way to Phokda village, 700 m., 28. iii. 1958. (ii) 9 exs., Sta. No. 6, stream at Phoktey, 2,000 m., 31. iii. 1958. (iii) 4 exs., Sta. No. 7A, on way to Namdu, 2,030 m., 1. iv. 1958. (iv) 7 exs., Sta. No. 8, near a fast flowing stream with rocky bed at Sikri, 2,100 m., 2. iv. 1958. (v) 7 exs., Sta. No. 11, stream, on way to Shate, 2,700 m., 5. iv. 1958. (vi) 2 exs., Sta. No. 35, on way to Mosamba Lake, 4,600 m., 12. v. 1958. (vii) 5 exs., Sta. No. 38, round about Namche Bazar, 3,800 m., 16. v. 1958. (viii) 2 exs., Sta. No. 47, on way to Thanja, 3,600 m., 30. v. 1958.

Remarks.—In the examples of this variety under report, the elytral spots are generally enlarged and become confluent in several ways. The discal spot of the elytron may join the scutellar (common to both elytra), lateral or the apical spot or all the three spots at the same time. The incidence of confluence of spots in the populations of two species is maximum in the eastern Himalaya, as has been shown in another paper by the writer, read before the First All-India Congress of Zoology, Jabalpur, in 1958. The incidence of the variety *confusa* in the samples of the populations of *C. septempunctata* under report is, as stated earlier, about 22.2 per cent in a total of 198 examples.

70. *Adonia variegata* (Goeze)

1777. *Coccinella variegata* Goeze, *Ent. Beyrt.*, **1**, p. 247.

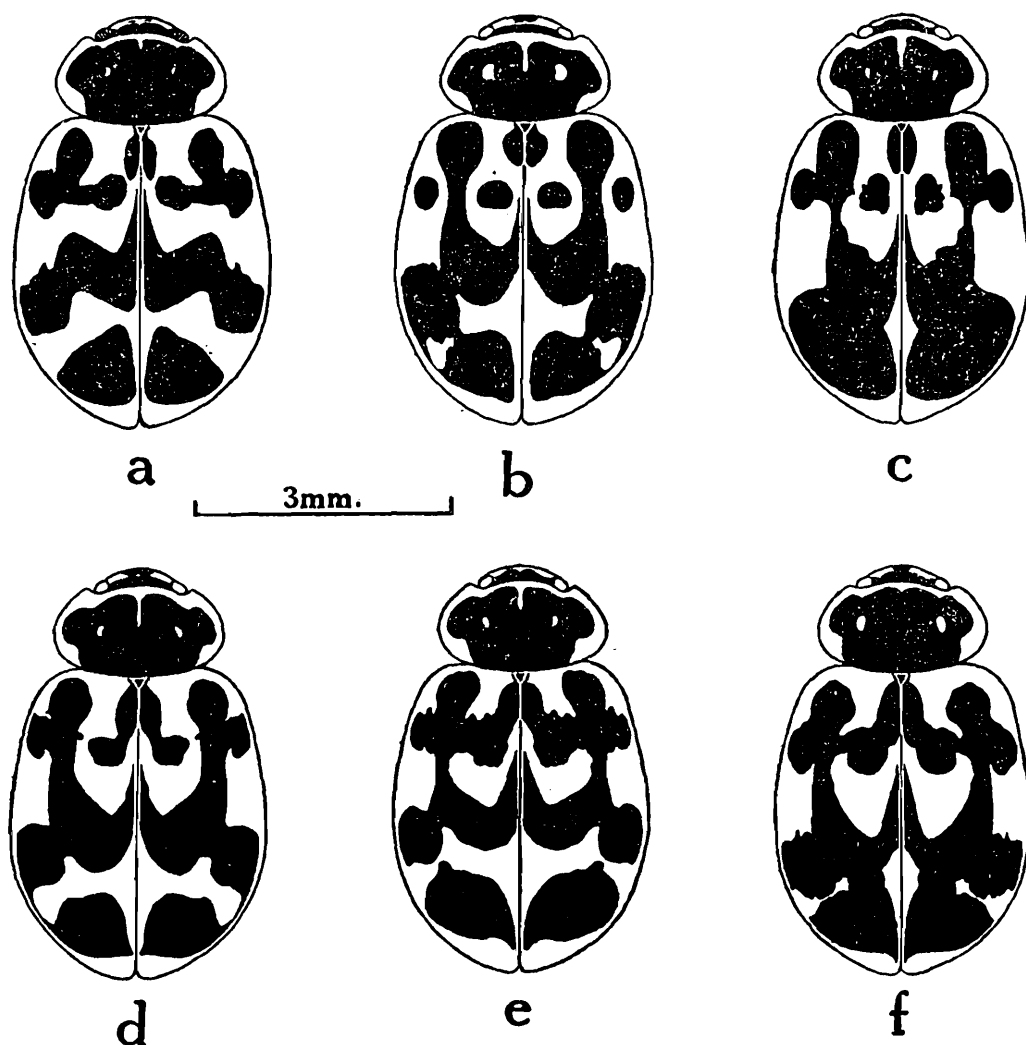
1846. *Adonia variegata* (Goeze), Mulsant, *Histoire naturelle des coleopteres de France : Sulcicolles—Securipalpes*, p. 39.

1932. *Adonia variegata* (Goeze), Korschefsky, *Coleopt. Cat., Berl.*, **16** (120), p. 346.

1958. *Adonia variegata* (Goeze), Kapur, *Rec. Indian Mus.*, **53**(3-4), pp. 325-326.

Material.—(i) 9 exs., Sta. No. 38, round about Namche Bazar, 3,800 m., 16.v.1958. (ii) 1 ex., Sta. No. 47, on way to Thanja, 3,600 m., 30.v.1958.

Remarks.—This palaearctic species is already recorded from Nepal (*vide*, Kapur, *loc. cit.*). It also occurs in such parts of the Ethiopian and Oriental region as are close to the Palaearctic region. It is very variable in its elytral pattern, in the examples under report, six different patterns present among only nine examples, are shown in text-figure 2.



TEXT-FIG. 2.—*Adonia variegata* (Goeze). Variation in the colour-pattern in the examples collected from environs of Namche Bazar (alt. 3,800 m.) the patterns in the other three specimens collected are more or less like those seen in figures a, b and e.

Family TENEBRIONIDAE

71. *Blaps ladakensis* Bates

1879. *Blaps ladakensis* Bates, *Cist. Ent.*, 2, p. 472.

1910. *Blaps ladakensis* Bates, Gebien, *Coleopt. Cat., Berl.*, 18 (22), p. 232.

Material.—1 ex., Sta. No. 47, on way to Thanja, 3,600 m., 30.v.1958.

Remarks.—Hitherto known from Ladakh (Kashmir) in the western Himalaya, the present record of this species from Nepal extends its range eastwards.

72. *Pseudanemia brevicollis* (Wollaston)

1864. *Anemia brevicollis* Wollaston, *Cat. Can. Col.*, p. 493.

1867. *Anemia brevicollis* Woll., *Col. Hesper.*, p. 199.

1875. *Pseudanemia brevicollis* (Woll.), Mars., *Abeille*, 12, p. 126.

1910. *Pseudanemia brevicollis* (Woll.), Gebien, *Coleopt. Cat., Berl.*, 18(22), p. 317.

Material.—1 ex., Sta. No. 48, on way to Jumbesi, 2,700 m., 1.vi.1958.

Remarks.—Distributed in North Africa, the occurrence of this species in Nepal is rather surprising. However, the example has been very kindly determined by Mr. E. Duffy at the British Museum (N. H.).

Family MELOIDAE

73. *Epicauta nepalensis* (C. O. Waterhouse)

1871. *Cantharis nepalensis* C.O. Waterhouse, *Trans. Ent. Soc. Lond.* (3), pp. 405-406.

Material.—1 ex., Sta. No. 45, on way to Tate, 4,400 m., 28.v.1958.

Remarks.—This species is already recorded from Nepal. In the Z. S. I. collection an example from Sangoo in Nepal is also present.

74. *Mylabris macilenta* Marseul

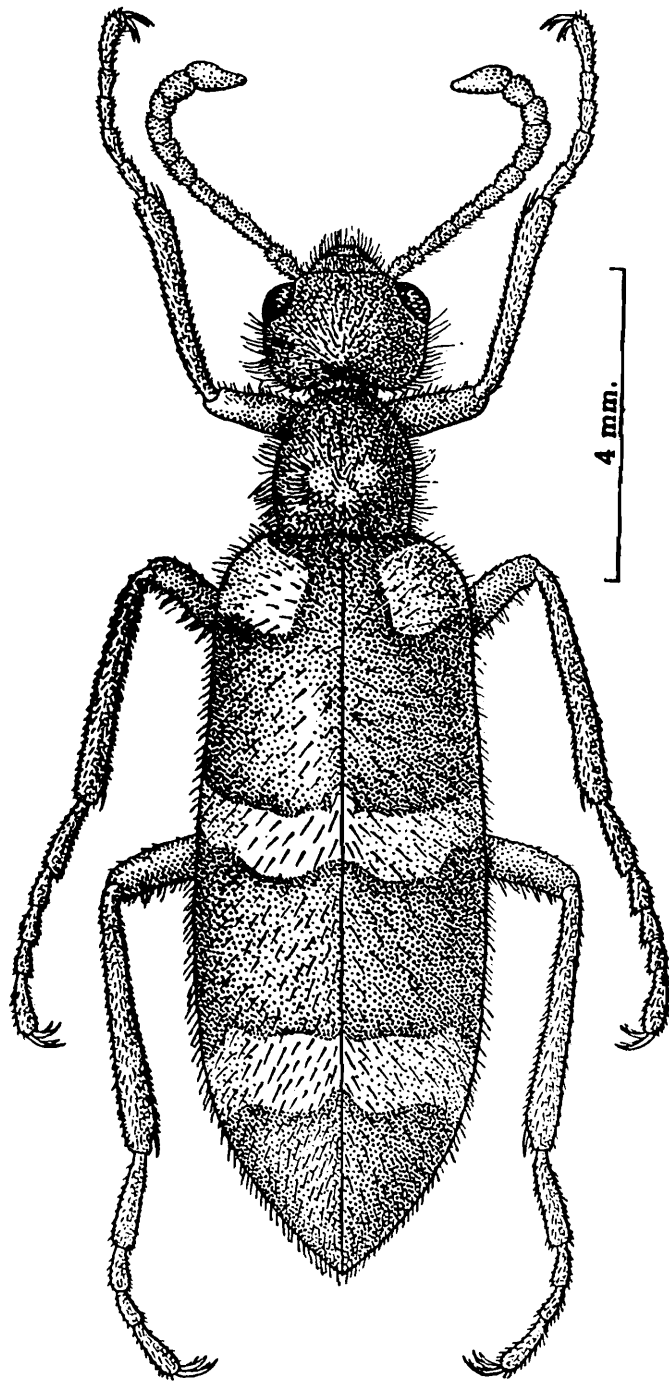
1872. *Mylabris macilenta* Marseul, *Monogr. des mylabrides*, pp. 129-131.

1873. *Mylabris macilenta* Mars., *Mem. Soc. Liege*, (2)³, p.489.

Material.—(i) 13 exs., Sta. No. 16A, stream ca. 8.0 km. N. of Ghat, 3,200 m., 10.iv.1958. (ii) 26 exs. Sta. No. 17A, from shrubby vegetation N. of Namche Bazar, 3,500 m., 15.iv.1958. (iii) 11 exs., Sta. No. 18A, on way to Thyangboche, 4,150 m., 16.iv.1958. (iv) 17 exs., Sta. No. 19, on way to Pangboche, 4,572 m., 21.iv.1958. (v) 35 exs., Sta. No. 21, on way to Phariche, 4,600 m., 22.iv.1958. (vi) 41 exs., Sta. No. 22, on way to Lobujeige, 4,876 m., 23.iv.1958. (vii) 21 exs., Sta. No. 23A, Gorashan, 5,334 m., 25.iv.1958. (viii) 13 exs., Sta. No. 29, on way to Thami, 4,000 m., 4.v.1958. (ix) 34 exs., Sta. No. 30, on way to Marlung, 4,500 m., 5.v.1958. (x) 62 exs., Sta. No. 31, on way to Chub, 5,000 m., 6.v.1958. (xi) 18 exs., Sta. No. 32, round about Lunak, 5,100 m., 8.v.1958. (xii) 37 exs., Sta. No. 34, on way to Lehengo, 5,100 m., 11.v.1958. (xiii) 22 exs.,

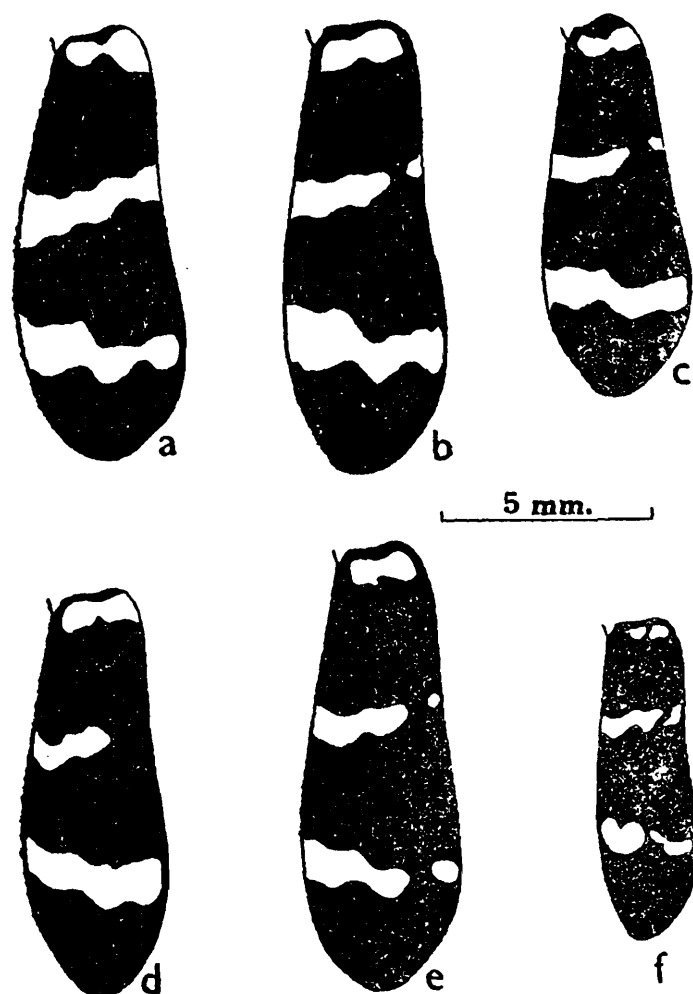
Sta. No. 35, on way to Mosamba Lake, 4,600 m., 12.v.1958. (xiv) 55 exs., Sta. No. 36A, on way to Dudh Pokhari, 5,000 m., 13.v.1958. (xv) 35 exs., Sta. No. 41, on way to Lukhla, 4,870 m., 24.v.1958. (xvi) 13 exs., Sta. No. 44, on way to Chama, 3,000 m., 27.v.1958. (xvii) 20 exs., Sta. No. 46, on way to Jamnaso, 4,876 m., 29.v.1958. (xviii) 24 exs., Sta. No. 47, on way to Thanja, 3,600 m., 30.v.1958. (xix) 23 exs., Sta. No. 48, on way to Jumbesi, 2,700 m., 1.vi.1958.

Remarks.—A total of 523 examples of the species offered opportunity for a study of the variation in the elytral pattern of the species. One of the most predominant pattern in the material is shown in text-fig. 3,



TEXT-FIG. 3.—*Mylabris macilenta* Marseul. It was collected on way to Gorashan in Nepal at an altitude of 5,334 m. (Note the well-developed claws With which the beetle holds the plants.)

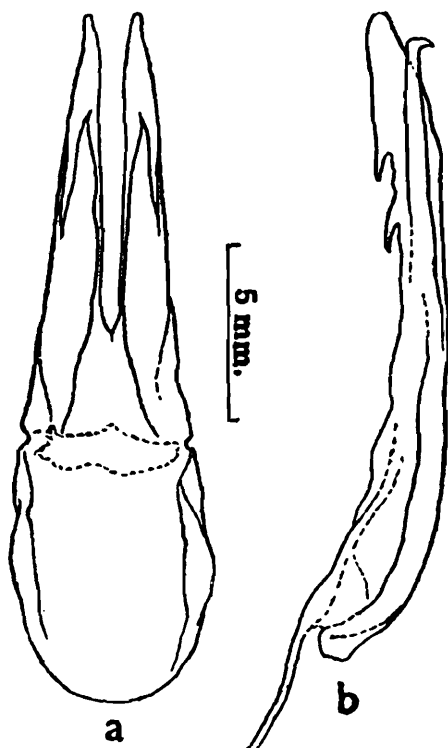
another commonly found pattern is similar to the latter except for slightly reduced humeral yellowish testaceous spot, yet another common pattern is like that shown in figure *a* of the text-fig. 4. The remainder of the



TEXT-FIG. 4.—The right elytra of *Mylabris macilenta* Marseul, showing variation in the elytral pattern. (*a*) comes from Ghat (3,200 m.) ; (*b*) was collected on way to Chama (3,000 m.) ; (*c*) Dudh Pokhari (5,000 m.), (*d*) Jamnaso (4,876 m.) ; (*e*) Lukhla (4,870 m.) ; and (*f*) Chama (3,000 m.), all in Nepal.

patterns shown in the latter text-figure are rather rare. Some time different elytral patterns in different species of the genus have been employed in the identification of the species. While this practice is not wholly incorrect for practical reasons, it seems necessary also to employ other morphological characters for the purpose. Besides the shape of the antennal segments in the male, the male genitalia also offer reliable characters. In view of the variability in the elytral pattern referred to above, a large number of examples were dissected for a study of their male genitalia which are sketched in text-figure 5. These proved to be uniform in the various examples and confirmed the conclusions arrived at on the basis of other external morphological characters that the examples

under report belonged to one and the same species. The material also showed some variation in size ; the larger examples were about 13.00 mm.—13.25 mm. and the smaller 9.50 mm.—9.25 mm. in length.



TEXT-FIG. 5.—Male genitalia of *Mylabris macilenta* Marseul. (a) basal piece and paramere ; (b) aedeagus.

Originally described from the “Indes orientales, Himalaya” the species is represented in the Z. S. I. collection from Gilgit Road (*ca.* 8,100 ft., or *ca.* 2,468 m. Yarkand Expedition) and from Nainital and Mussoorie in Uttar Pradesh. It is now being recorded for the first time from Nepal.

Family CHRYSOMELIDAE

Subfamily HALTICINAE

75. *Phyllotreta downesi* Baly

1877. *Phyllotreta downesi* Baly, *Trans. Ent. Soc. Lond.*, 1877, p. 300.

1926. *Phyllotreta downesi* Baly, Maulik, *Fauna Brit. India, Coleoptera, Chrysomelidae (Chrysomelinae and Halticinae)*, p.380.

Material.—1 ex., Sta. No. 18, from shrubby vegetation, Thyangboche, 4,150 m., 17. iv. 1958.

Remarks.—The species was originally recorded by Baly (*loc. cit.*) from Bombay and subsequently by Maulik (*loc. cit.*) from Tavoy, Tenasserim (Burma). The example under report in every detail agrees with the description of the material from Tenasserim.

Family CURCULIONIDAE

Subfamily *BRACHYDERINAE*

Tribe Blosyrini

76. *Dactylotus rugosus* sp. nov.

(Pl. 19, Fig. 3)

♂. Almost black except the legs which are piceous brown and the antennae and tarsii which are brown, moderately shiny, with sparse, greyish pubescence.

Head separated from the rostrum by a well-marked, deep stria, and constricted behind the eyes, the vertex rather finely coriaceous, the forehead moderately convex except in the anterior middle part where it is impressed, with rather sparse and fine punctures intermixed with coarse punctures; pubescence short, subdepressed and coarse. *Rostrum* nearly as long as broad, with a transverse ridge in the middle and a median longitudinal ridge extending from its base to nearly three-fourths the length of the rostrum, the remainder one-fourth the ridge bifurcates to enclose a small triangular and shiny area, surface on the whole rough, the punctures being medium to coarse and the pubescence very sparse and short. *Antennae* with the first segment of the funicle stouter than the second which is slightly longer, 3-6 much shorter than the second, bead-like, and nearly equal to one another, 7 also similar but slightly larger; the club fusiform, more pointed at the apex than at the base, covered densely with fine and short pubescence, the other antennal segments being sparsely provided with long and grey hair. *Prothorax* transverse (2 : 3), convex, moderately rounded at the sides, widest in the middle; smooth along the narrow, incomplete, longitudinal median line and at the small discal area which has only a few, mostly minute, punctures, the remainder of the surface rugose, more so and almost granulose on the sides; punctation of the mixed type, coarser punctures impressed and more common than the fine punctures; pubescence short, coarse to medium, and subdepressed, a post-discal pair of depressions present on the thorax. *Scutellum* small, triangular, and smooth. *Elytra* almost subglobose (4 : 5), being less convex on the discal area, rounded at the anterior and posterior angles, less so at the sides, widest in the middle, rather shallowly striate, with separated punctures that are both larger and shallower than those on the prothorax; the intervals between striae also moderately rugose and together with the punctures on the striae give the elytra a rugose appearance; pubescence short, rather coarse, sparse, depressed, and mostly present along the striae, especially on the discal area, elsewhere similar but not so sparse or confined to striae. *Abdomen* (♂) with 2-4 sternites subequal in length. *Male genitalia* with the aedeagus 0.75 mm. long and 0.6 mm. broad, subrounded at the apex, with its pair of struts very slender and nearly twice as long as the aedeagus, the tegminal strut also very long, this together with the aedeagus measure 3.0 mm. in length.

Length 7.3 mm., breadth 4.0 mm.

Holotype.—A male from NEPAL, on way to Jamnaso, ca. 4,876 m., 29.v.1958 (*A.K.Datta*); genitalia dissected and mounted with the type specimen, in the Z.S.I. collection (Regd. No.14603/H4).

Remarks.—No species of *Dactylotus* Schonh., is known from Nepal or India before. These are ground weevils which have lost the second pair of wings and are unable to fly, like many typical high-altitude Coleoptera. The species now described is easily distinguishable from *Dactylotus clavus* Marshall, which comes from S. Kansu, China, and which is also without scales, by the presence of a deep transverse stria that separates the rostrum from the head and by its larger size. Amongst the other species that are without scales, it comes close only to *Dactylotus egenus* Faust, from Central Asia, on account of its large size, but is distinguishable from *egenus* by several characters. The latter species is glabrous, the prothorax is widest anterior to the transverse median line, and has only minute granules as against the large granulations in *D. rugosus*. Similarly the elytral surface in *egenus* has minute punctures and is coriaceous at the interspaces instead of having coarser puncture and being rugose as in *D. rugosus*.

77. *Dactyllotus nepalensis* sp. nov.

(Pl. 19, Fig. 4)

♂♀ Ficeous brown except for the chestnut brown legs and antennae, moderately shiny, with very sparse, short, and greyish pubescence.

Head separated in front from the rostrum by a moderately deep stria which does not extend to the sides, moderately constricted behind the eyes, the vertex coriaceous, with several fine and a few coarse punctures, the front slightly convex, with a few fine and a fair number of coarse punctures, each of the latter with oblique and backwardly directed opening and accommodating a short, rather stout, depressed, and grey seta. *Rostrum* nearly as long as broad, with a semicircular emargination at the median half of the apex, the front with a Y-shaped tridentate ridge with the arms slightly bent; the punctures and pubescence similar to or slightly coarser than those on the front of the head. *Antennae* with the first segment of the funicle equal in length to second but thicker, the remainder segments of the funicle smaller, bead-like in appearance, and almost subequal, the scape and the funicle with sparse, moderately long and pale brown pubescence, the club fusiform slightly more elongate than in the preceding species but like it covered mainly with fine and short pubescence. *Prothorax* transverse (8:11), moderately convex and rounded on the sides, surface on the whole smooth, provided with rather moderately coarse punctures (less coarse than those on the head or rostrum) which are sparse at the disc and fairly close towards the lateral and anterior margins but which do not give a granulose appearance; pubescence sparse, depressed and short. *Scutellum* small, triangular and smooth. *Elytra* subglobose (4:5), being uniformly convex in the discal area also, rounded at the anterior and posterior angles, moderately so laterally, widest in the middle, very shallowly striate, with separated punctures that are ill-defined and shallower than those on the prothorax; the intervals generally smooth, slightly coriaceous, especially in the ♀; pubescence sparse, almost non-existent on the disc, elsewhere short and depressed. *Abdomen* with the second sternite slightly longer than the third and fourth sternites in both the sexes. *Male genitalia* with the aedeagus a little more elongate than in the preceding species, 0.75 mm. long, 0.5 mm. broad, widely round at the apex, with the struts of aedeagus slender and about 1.0 mm. long, the tegminal

strut not very long, this together with the aedeagus measure about 2.0 mm. in length. *Female genitalia* are characterised by short apically filiform ovipositor and by well-chitinated spermatheca which is straight and narrow at the proximal one-thirds of its length, thence bent at right angle and partly swollen and recoiled on itself in the distal two-thirds.

Length ♂ 5.5—6.2 mm., ♀ 6.2—6.4 mm. Breadth ♂ 2.9—3.3 mm., ♀ 3.2—3.3 mm.

Holotype.—♂, NEPAL, round about Lunak, ca. 5,100 m., 8. v. 1958 (A. K. Datta) ; genitalia dissected and mounted between two coverslips and attached to the specimens ; in the Z.S.I. collection (Regd. No. 14,604/H4).

Allotype.—♀, with the same data as the holotype, genitalia dissected and mounted as above, in the Z.S.I. collection (Regd. No. 14,605/H4).

Paratypes.—2 ♂♀, with the same data as the type (in one paratype, however, the body colour is dark chestnut instead of piceous brown), 1 ♀, NEPAL, on way to Pangboche, ca. 4,572 m., underneath stones with vegetation, 20. iv. 1958. 2 ♀♀, NEPAL, round about Namche Bazar, ca. 3,800 m., 20. v. 1958 ; all collected by A. K. Datta and deposited in Z.S.I. collection.

Remarks.—This species is easily distinguishable from the preceding species and *D. cgenus* Faust by its smaller size, the incomplete transverse stria separating the head and rostrum, and the relatively fine punctures and smooth body-surface. From the other non-squamose species like *D. semipubens* Faust, from Central Asia and *D. nitidulus* Faust, from Kuku-noor, it is distinctly larger and has shallower elytral stria and punctures. It is also easily distinguishable by several characters from *D. roborovskyi* Faust with which it resembles in size. *D. roborovskyi* is black and glabrous and has coarser punctures almost amounting to granules on the sides of prothorax ; the elytral punctures are also coarser than is the case in *D. nepalensis*.

Subfamily BRACHYDERINAE

Tribe Tanymecini

78. *Hyperomias dattai* sp. nov.

(Pl. 19, Fig. 1)

♂♀. Derm bronze-black, the head and rostrum with fairly dense, grey scale in the male, and grey to light bronze-black scale in the female, except for the medium light grey streak in the head. The prothorax also with fairly dense scales which, in the male, are greyish excepting some white ones situated along the median longitudinal line and on the sublateral areas on either side, in the female the scales are light grey, greyish-green or bronze-black, the latter forming two pairs of longitudinal, rather ill-defined, vittae on either side of the median longitudinal greyish line. Scutellum black. The elytra with grey and dark-grey scales in the male, arranged in irregular and ill-defined patches in the male, and grey, greenish-grey or bronze-black scales in the female, in the latter also arranged in irregular but rather well-defined patches which on the whole, give a darker colouration to it than is the case in the male. The sparse, short hairs in the apical part of the elytra greyish in both sexes.

Head moderately convex, with the eyes lateral, moderately prominent, and circular ; forehead as broad as the base of the rostrum which is longer than the head, subparallel at the sides, plain above, with a longitudinal, deep, median stria and a scarcely emarginate apex. *Antennae* short and stout, with rather dense, short, greyish scale ; first basal segment of scape distinctly longer and the second slightly so than the other segments. *Prothorax* slightly wider than long (♂, 1.4×1.8 mm. ; ♀, 1.3×1.7 mm.) sides rounded, apical margin narrower than the basal margin, much less so in the female than in the male ; upper surface smooth without a median longitudinal furrow or the setae. Scutellum very small but distinct. *Elytra* subelliptical in the male, slightly broader in the female except towards apex where these are acuminate ; the striae narrow and finely and impressedly punctate, the intervals almost plain and devoid of setae except for a few short ones towards the apex. *Legs* relatively slender in the male than in the female, with median to short setae as well as scales, the latter becoming gradually reduced in number being absent on the distal tarsi ; the inner edges of tibiae fringed with fine hairs and a number of spine-like bristles which are fewer in the male.

♂ *genitalia* with the aedeagus for the most part like a flattened tube, 1.5 mm. long, strongly curved, almost like a semicircle, in the median part, and slightly curved in the opposite direction in the distal one-fourth which is subrounded at the apex ; cornutus-like structure (transfer apparatus?) in the aedeagus rather deeply bilobed distally. ♀ *genitalia* are characterised by the rather acutely pointed, conical ovipositor and a narrow spermatheca with the distal end pointed and bent double in the middle over the basal half and with the ramus short and stumpy.

Length ♂ 5.7 mm., ♀ 6.0 mm., Breadth ♂ 2.3 mm., ♀ 2.7 mm.

Holotype.—♂, NEPAL, round about Lunak, ca. 5,100 m., 8. v. 1958 (A. K. Datta); *genitalia* dissected and mounted with the type specimen, in the Z.S.I. collection (Reg. No. 14,611/H4).

Allotype.—♀, with the same data as the holotype, in the Z.S.I. collection, *genitalia* dissected and mounted between the two coverslips (Reg. No. 14,612/H4).

Paratype.—1 ♀, with the same data as the holotype ; *genitalia*, dissected and mounted as above, also in Z.S.I. collection.

Remarks.—Members of the genus *Hyperomias* Marshall are also flightless ground weevils. This species is distinguishable from *Hyperomias aenescens* Marshall*, the only species hitherto known of the genus, by the relatively larger size (In *H. aenescens*, length of the male is 4.5 mm., and of the female 5.75 mm.) and the differences in the colouration and the detailed structures of the rostrum, head, prothorax, legs, etc. *H. dattai* further shows greater degree of sexual dimorphism than either *H. aenescens* or the succeeding species.

The species is named after Dr. A. K. Datta, the collector of the material under report.

*Marshall, G. A. K. *Fauna Brit. India, Coleoptera, Curculionidae*, part 1, p. 195 (1916).

79. *Hyperomias roonwali* sp. nov.

(Pl. 19, Fig. 2)

♂♀. Derm bronze-black ; the heads and rostrum densely beset with scales of greyish, bronze-black, and grey with faint green, intermixed irregularly in both the sexes. The prothorax also similar in both sexes, with dense scales of the same colour as the above but arranged somewhat as follows : the oblong area along the longitudinal middle line has greyish-bronze scales and is surrounded on either side by a relatively broad area having grey and greenish-grey scales ; the latter areas interrupted by four patches with bronze-black scales, each patch situated near the anterior and posterior angles of the prothorax, the lighter area is sharply demarcated laterally by bronze-black areas and which are not easily visible from above. The scutellum usually black, sometime with a grey scale or two. The elytra with the grey, greenish-grey and bronze-black scales, arranged in irregular and ill-defined patches ; on the whole in the male the grey and the greenish-grey colours predominate, while in the female the patches with bronze-black scales are relatively more common than is the case in the male. The sparse, short, hair in apical part of the elytra greyish in both the sexes.

Head moderately convex, the eyes lateral, moderately prominent and circular forehead as broad as the base of rostrum, without even a faint longitudinal stria, the rostrum with the sides subparallel, apparently narrower in the male than in the female and with the apex slightly emarginate ; a median longitudinal stria present on the rostrum. *Antennae* short and stout, with moderately dense, short, and grey setae, the funicle with the first segment a little and the second slightly, longer than the others, the club compact and pointed at the apex. *Prothorax* slightly broader than long (1.9 mm. long ; 2.2 mm. broad) in the male, and distinctly broader than long (1.8 mm. long ; 2.4 mm. broad) in the female ; sides rounded, apical margin narrower than the basal margin in the female, much less so in the male ; upper surface plain but with a median, longitudinal, impressed stria which runs throughout the length of the prothorax. The scutellum very small but distant. *Elytra* in the male subelliptical (4.2 mm. long ; 2.8 mm. broad), similar but slightly broader (4.8 mm. long ; 3.3 mm. broad), and distinctly acuminate towards the apex, in the female ; the stria narrow, with fairly close and impressed punctures, the intervals almost plain and devoid of setae except for a few short ones towards the apex. Legs relatively longer and rather more slender in the male than in the female ; covered sparsely with median to short setae throughout and small scales upto the femur and proximal tarsii ; inner edge of the tibiae fringed with fine hairs and a number of spine-like bristles which are fewer in the male.

♂ *genitalia* with the aedeagus for the most part like a flattened tube, narrower and relatively longer (1.8 mm.) than that of *H. dattai*, besides it is moderately curved in the middle, with the distal one-fourth straight ; apex subrounded to somewhat subtruncate at the extreme tip ; cornutus-like structure (transfer apparatus) in the aedeagus more shallowly bilobed at the apex than is the case in the preceding species. ♀ *genitalia* with the spermatheca bent in the middle at about 80° angle, with the distal half gradually, narrowed to a pointed apex, and with the ramus which is nearly twice as long as wide and much narrower than is the case in the *H. dattai*.

Length ♂ 6.9—7.0 mm., ♀ 7.0—7.5 mm. Breadth ♂ 2.7—3.0 mm., ♀ 3.2—3.5 mm.

Holotype.—♂, NEPAL, round about Namche Bazar, Sta. No. 16, ca. 3,800 m., 16. v. 1958 (A. K. Datta) ; genitalia dissected, in a small tube attached to the specimen, in Z.S.I. collection (Regd. No. 14,614/H4).

Allotype.—♀, with the same data as the holotype, genitalia mounted between two coverslips, and attached to the specimen, in Z.S.I. collection (Regd. No. 14,615/H4).

Paratypes.—1♂, with the same data as holotype dissected, partly on card, abdomen and ♂ genitalia in a tube. 1♂, NEPAL, on way to Pangboche, ca. 4,572 m., underneath stones with vegetation, 20. iv. 1958. 1♂, NEPAL, on way to Namche Bazar, ca. 3,810 m., 28. iv. 1958. 1♀, NEPAL, on way to Dudh Pokhari, ca. 5,000 m., 13. v. 1958. 1♀, NEPAL, on way to Dob, ca. 5,000 m., 15. v. 1958 ; all collected by A. K. Dutta and deposited in Z.S.I. collection.

Remarks.—This species is easily distinguishable from *H. aenescens* Marshall and *H. dattai*, by its larger size (see remarks given under the latter species) ; in colouration, especially of the prothorax as described above, and in other structural details. The longitudinal central stria on the forehead is always present in this species as a continuation of the stria on the rostrum while in the case of *H. dattai* the stria is absent on the forehead and only sometimes present in *H. aenescens*. Whereas the prothorax in the latter has a shallow central stria, in the case of *H. roonwali* the stria runs throughout the length of the prothorax ; in the case of *H. dattai* thoracic stria is altogether absent. The aedeagus is relatively shorter, broader and more curved in the latter species than is the case in *H. roonwali*, as described in detail above. Likewise, the female examples of the two species are easily distinguished from each other by the structure of the spermatheca which is very pointed and bent almost double in the middle in the case of *H. dattai* and only slightly bent (ca. 80° angle) in the case of *H. roonwali*.

This species is named after Dr. M. L. Roonwal who took great interest and initiative in getting the zoological collections of the Indian Cho-Oyu Expedition worked out.

III—SUMMARY

The insect collections brought by the Indian Cho-Oyu Expedition—1958, in Nepal, contain a little over one thousand examples belonging to 79 species of ten different orders. Four new species of ground weevils are described, these being *Dactylotus rugosus*, *D. nepalensis*, *Hyperomias dattai* and *H. roonwali*. Some 43 other species are recorded for the first time from Nepal ; out of these nearly 15 also constitute first records from the Himalaya.

PLATE 18

FIG. 1.—*Gryllus bimaculatus* De Geer (Gryllidae, Orthoptera)

FIG. 2.—*Elis thoracica* (Fabricius) (Scoliidae, Hymenoptera)

FIG. 3.—*Carabus everesti* Andrewes (Carabidae, Coleoptera)

FIG. 4.—*Agonum (Anchomenus) viator* Andrewes (Carabidae)

FIG. 5.—*Amara* sp. (Carabidae)

FIG. 6.—*Paropisthius indicus* (Chaudoir) (Carabidae)

FIG. 7.—*Epicauta nepalensis* (C. O. Waterh.) (Meloidae, Coleoptera)

FIG. 8.—*Themus stevensi* Champion (Cantharidae, Coleoptera)

FIG. 9.—*Themus* sp. (Cantharidae)

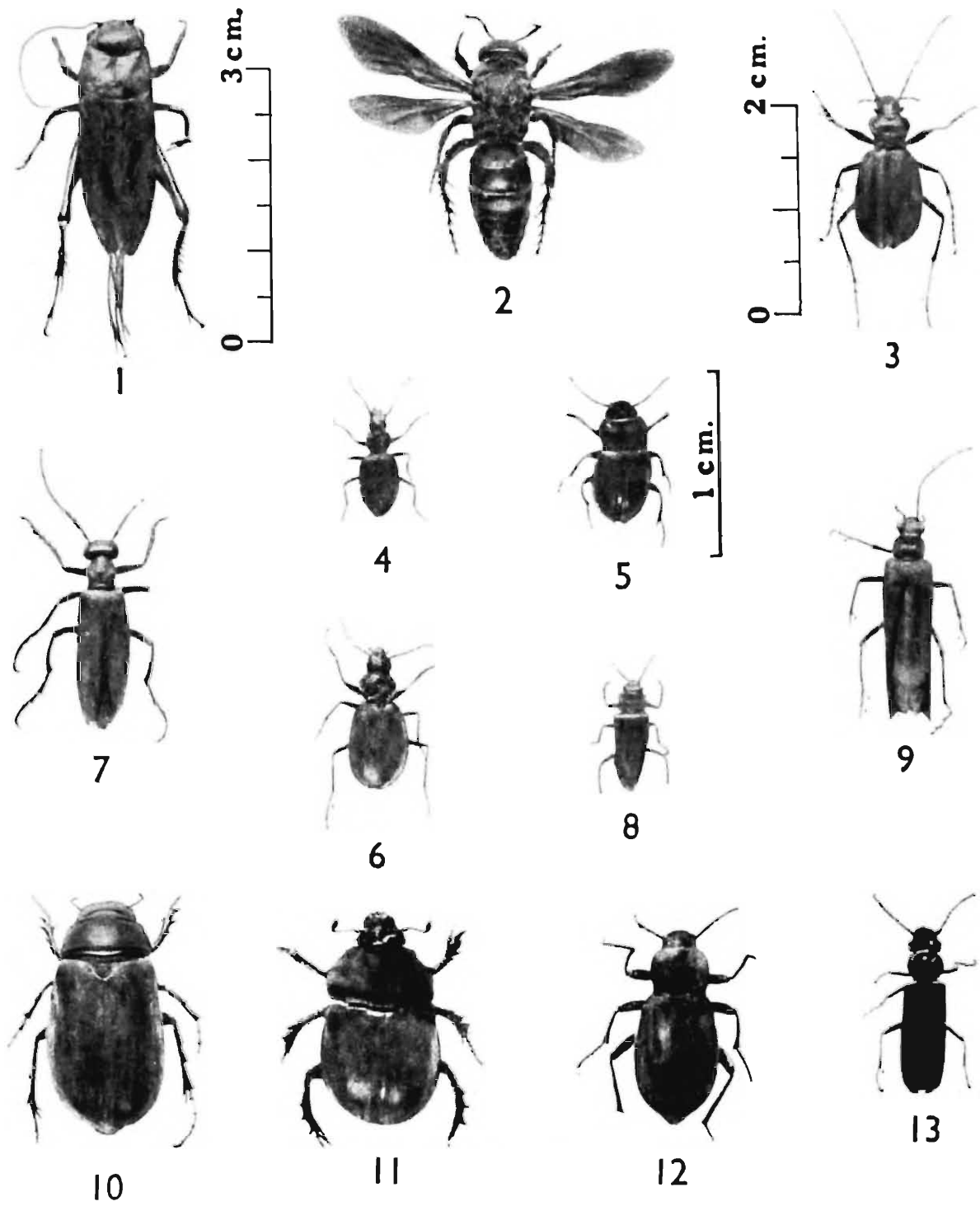
FIG. 10.—*Holotrichia cavifrons* Brenske (Melolonthinae, Scarabaeidae, Coleoptera)

FIG. 11.—*Geotrupes temebrosus* Fairmaire (Geotrupinae, Scarabaeidae, Coleoptera)

FIG. 12.—*Blaps ladakensis* Bates (Tenebrionidae, Coleoptera)

FIG. 13.—*Cucujus bicolor* Smith (Cucujidae, Coleoptera)

N.B.—1 cm. scale for figs 5 and 7; 2 cm. scale for figs. 2, 3, 4, 8, 9 11—13; 3cm. Scale for figs. 1, 6 and 10).



Insects: Indian Cho-Oyu Expedition (1958).

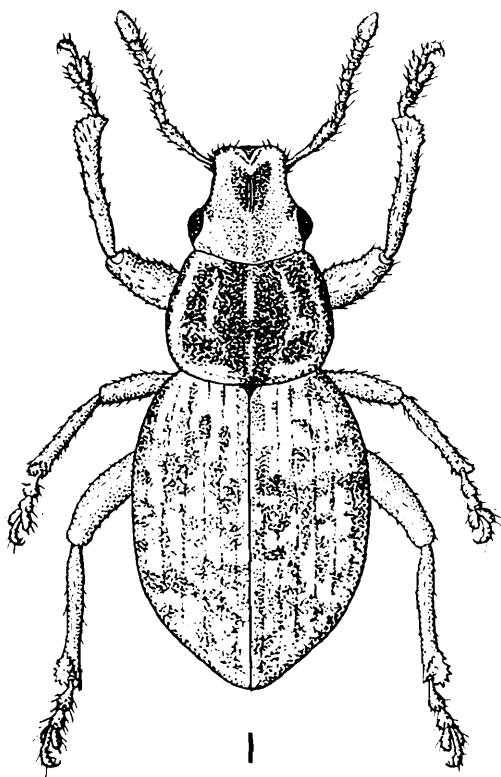
PLATE 19

FIG. 1.—*Hyperomias dattai* sp. nov. (♀).

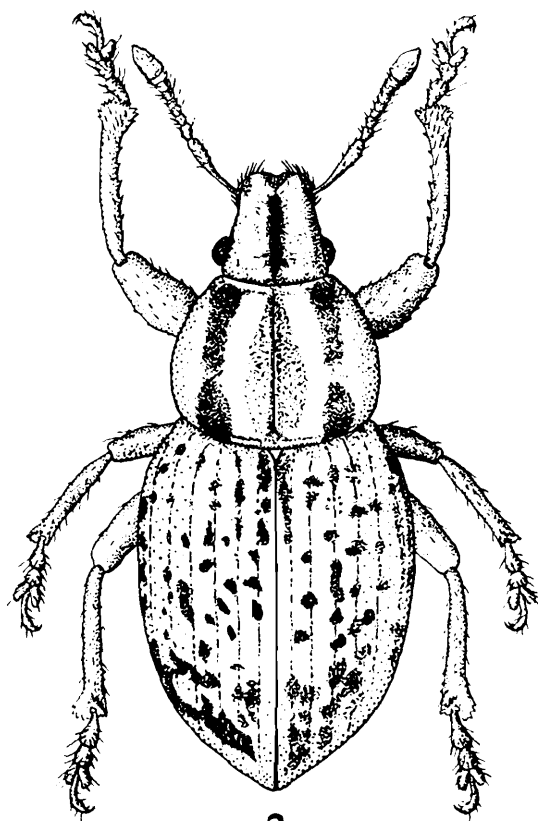
FIG. 2.—*Hyperomias roonwali* sp. nov. (♀).

FIG. 3.—*Dactylotus rugosus* sp. nov. (♂).

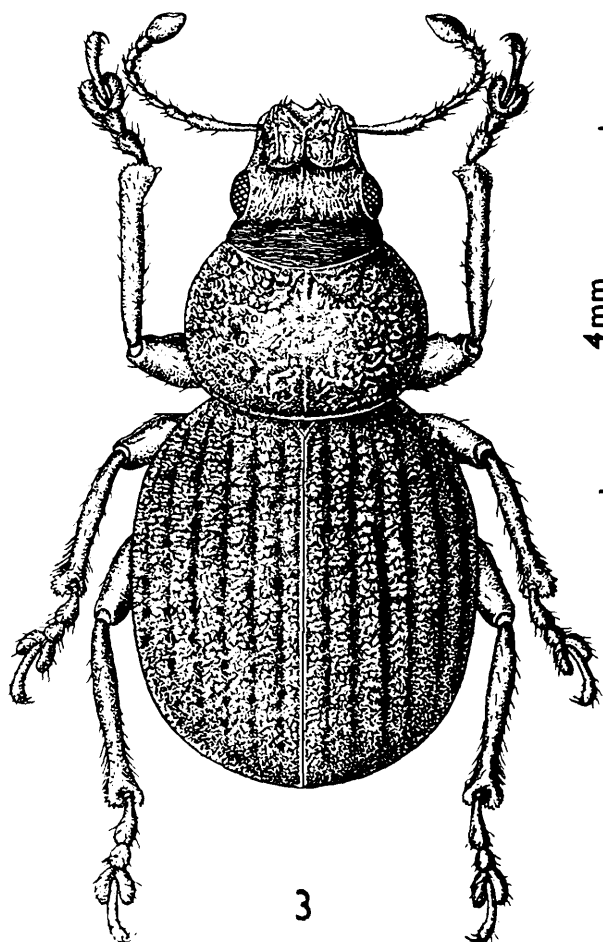
FIG. 4.—*Dactylotus nepalensis* sp. nov. (♀).



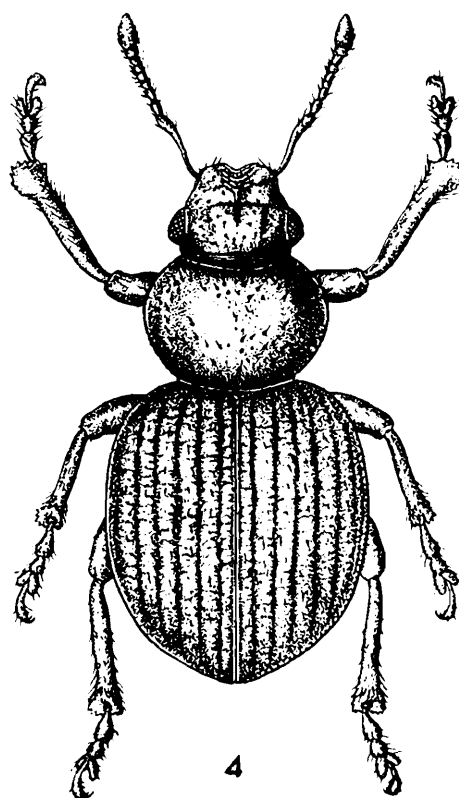
1



2



3



4

1. *Hyperomias dattai* sp. nov. (♀).
3. *Dactylotus rugosus* sp. nov. (♂).

2. *Hyperomias roonwali* sp. nov. (♀).
4. *Dactylotus nepalensis* sp. nov. (♀).

ZOOLOGICAL SURVEY OF INDIA

34, CHITTARANJAN AVENUE,

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5. Desert and Gangetic Plains Regional Station, Z.S.I., Jodhpur	Zoologist : Dr. A. K. Datta	Dr. A. K. Datta (Officer-in-Charge)
6 Southern Regional Station, Z.S.I., Madras	Zoologist : Shri G. T. Vazirani	Shri T. G. Vazirani (Officer-in-Charge) On transfer from Headquarters

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SCOPE.—Articles embodying original research as well as critical reviews of modern researches by specialists in the field of zoology (including the natural history of animals) in the widest sense, but specially systematics, ecology and zoogeography of the Indian Region, will be published in the *Records of the Indian Museum*.

MANUSCRIPTS FOR PUBLICATION.—Manuscripts must be type-written double-spaced with ample margins, on one side only of the page and should have all the pages numbered. Manuscripts should not be offered to any other journal for prior or simultaneous publication.

The manuscripts must be drastically condensed by authors. Long historical introductions and lengthy discussions will not be accepted for publication. The tables should be numbered serially in Arabic numerals. Only such tables and illustrations as are essential will be published. Papers must conform to the usage of the *Rec. Indian Mus.* in all typographical matters. They must be accompanied by a Table of Contents, and must end with a short Summary which should not be of a general character, but should resume, one by one, all the principal facts and conclusions given in the paper. One proof is sent to authors and as few alterations as possible should be made in it. Care should be taken to replace words and/or phrases removed, by others of equal length, thus avoiding disturbance of type.

The title should include the Phylum, Order and Family of the animals dealt with. Generic and specific names of animals, which should be underlined, must be given at least once according to the international rules of binominal nomenclature adopted at the 10th International Congress of Zoology (1927) and include the name(s) of author(s).

The metric system should be used for measures and weights ; measures in other systems may, if desired, be given in brackets. Temperatures should be given in degrees Centigrade, with, if desired, the Fahrenheit reading in brackets.

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ANNANDALE, N. 1909. Report on a small collection of sponges from Travancore.—*Rec. Indian Mus.*, Calcutta, 3, pp. 101—104, 2 pls.

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ERRATA SLIP

Records of the Indian Museum, Vol. 59, Part 3.

ages Nos. 227, 229, 231 and 233.—For ‘A. K. DATTA : *Pisces*’
read ‘A. K. DATTA : *Collecting Stations*’

age No. 236.—For ‘Subfamily 2. MICROTINE ’ ad ‘Subfamily
2. MICROTINAE’.

age No. 299.—For ‘77. *Dactylotus nepalensis*n sp. nov.’ read
‘77. *Dactylotus nepalensis* sp. nov.’