

Records of the Zoological Survey of India

**BUTTERFLIES FROM HAZARIBAGH NATIONAL PARK
(SOUTH BIHAR)
(LEPIDOPTERA : RHOPALOCERA)**

By
**R. K. Varshney
B. Nandi
S. C. Nahar**

Issued by the Director
Zoological Survey of India, Calcutta

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ON A COLLECTION OF BUTTERFLIES FROM HAZARIBAGH NATIONAL PARK AND NEARBY AREAS IN SOUTH BIHAR (LEPIDOPTERA : RHOPALOCERA)

By

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(With one map)

INTRODUCTION

On account of the shrinking forests and dwindling Wild Life, the National Parks and Sanctuaries have of late been paid greater attention throughout the world. However, study of the smaller fauna in these forests has been neglected. Butterflies are one such group which is although included in the list of threatened animals, but on which no detail study has so far been made from any National Park or Sanctuary in India. The present paper is a list of butterflies of the Hazaribagh National Park, collected in 3 trips during wet and dry seasons. It is not an exhaustive list, because the collection period was small in all trips, nevertheless it is hoped that this list will pave way for further such studies.

Literature revealed that no list of butterflies has been published for any area of South Bihar as yet, except one by Morrison-Godfrey (1948) of which most of the material was collected from Topchanchi (Rajdaha Reservoir). Since Topchanchi is situated very near to Hazaribagh, frequent reference is made to Morrison-Godfrey's list in the present paper. A preliminary list of the butterflies collected during dry season only from Hazaribagh National Park was published earlier by authors (Varshney & Nandi, 1976). In the present report a consolidated detail account of all species collected from the Park and nearby areas, during 3 trips in 1970, 1973 and 1975 in both dry and wet seasons is provided.

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DESCRIPTION OF THE AREA

Hazaribagh National Park is located in South Bihar on the slopes from south to north of the Hazaribagh range of eastern elevations in the Central India, at lat. $24^{\circ}6'$ N., long. $85^{\circ}23'$ E. This National Park was created by an executive order of the Govt. of Bihar, in 1954, and comprises of the old reserve forests of Raja of Ramgarh. It spreads over approximately 75 sq. miles, in somewhat square shape. It is a dry deciduous type forest, having sal (*Shorea robusta*) as the common tree species. A list of plants in this Park is given in the end (Appendix-II). The average height of the Park is 1700 ft. above sea-level.

The main gate of the Park, called Pokharia gate, is situated about 25 km north of the Hazaribagh town and about 28 km south of Barhi, on the National Highway called Patna-Ranchi Road. From Pokharia gate a motorable road goes westwards to the central place of the Park, ca 10 km away, called Rajderwa. It is here where all visitors to the Park are led to. A Forest Rest House, many tourist accommodations and an Island canteen, are located at Rajderwa, which is somewhat in the middle of the Park (see, Map Fig. 1).

The western part of the Park is better, dense and rich in fauna, although interspersed with some villages and cultivation fields. The kutcha road leading to Bahimar gate, and the main road (road no. 1) and by-pass road (road no. 2) leading to Pokharia gate, provided good spots for butterfly collections. Areas near watch towers no. 3, 5 and 6; the dam site near Dumri; the flower-beds near Island canteen and the loop roads were also good spots for butterfly collections, in the western part.

The eastern part of the Park is quite and less disturbed. Unfortunately, it presents very denuded look, because of the heavy deforestation already taken place here. Paddy cultivation fields are common on both sides of the road in Sijhua area. The average slope of this part of the Park is greater than the western part. Collections of butterflies were made near the watch tower no. 1, Sijhua dam and its river and hill sides.

Jamal Ara (1960, 1966) may be referred for details about this Park, particularly on topography, forest ecology and the distribution of mammals and birds.

MATERIAL AND METHODS

This study was made on the material brought by three survey parties in the leadership of senior author, sent by the Gangetic Plains Regional Station of the Zoological Survey of India, in 1970, 1973 and 1975. The temperature varied from 18° C to 24° C in dry season collection period, and from 24.5° C to 28.5° C in wet season collection period at the Park.

Altogether 34 species under 25 genera and 9 families have been studied. These belong to both the dry and wet season catches, having been collected in Feb.-March and Sept.-Oct. months. All material have been deposited at the Gangetic Plains Regional Station, Zoological Survey of India, Patna.

In the account below, the families are arranged according to Wynter-Blyth (1957), and genera, species and subspecies are arranged in the alphabetical order. The following works have been followed for the systematic treatment : Seitz (1927), Evans (1932), Peile (1937) and Wynter-Blyth (1957) for Nymphalidae and Erycinidae ; Talbot (1939) for Papilionidae and Pieridae, with subsequent corrections by Talbot (1947) ; Talbot (1947) for Danaidae, Satyridae and Acraeidae ; Evans (1932) and Cantlie (1962) for Lycaenidae ; and Evans (1932, 1949) for Hesperiidae. Hemming (1967) along-with some other recent papers have been followed for valid nomenclature.

It may be stated that instead of measuring the total wing expanse for both wings, as given by earlier workers, the recent method of measuring length of one forewing only, from base to apex (in mm), has been adopted here.

ABBREVIATIONS USED

HNP	—	Hazaribagh National Park
FW	—	Fore wing, length of.....
HW	—	Hind wing
DSF	—	Dry season form
WSF	—	Wet season form
L	—	Left
R	—	Right
ex (s).	—	number of specimens

UP	—	Upper (i.e. above or dorsal) side of wing
UN	—	Under (i.e. below or ventral) side of wing

KEYS TO THE SPECIES RECORDED FROM SOUTH BIHAR

Family DANAIDAE

- | | | | | | | |
|----|---|-----|-----|-----|-----|--------------------------|
| 1. | Wings black or very dark brown | ... | ... | ... | ... | 2 |
| — | Wings orange or tawny | ... | ... | ... | ... | 3 |
| 2. | Elongate wings with 2 rows of white spots on border of both wings | ... | | | | |
| | ... | ... | ... | ... | ... | <i>Euploea core</i> |
| — | Wings with numerous white large semitransparent spots and stripes | ... | | | | |
| | ... | ... | ... | ... | ... | <i>Danaus limniace</i> |
| 3. | Veins on wings prominently marked with black | ... | | | | <i>Danaus genutia</i> |
| — | Veins on wings not heavily marked with black | ... | | | | <i>Danaus chrysippus</i> |

Family SATYRIDAE

- | | | | | | | |
|-----|--|-----|-----|-----|-----|--------------------------|
| 1. | Larger butterflies with FW length 35 mm and above ; broad dark brown falcate wings | ... | ... | ... | ... | <i>Melanitis leda</i> |
| — | Medium to small size butterflies with FW length smaller than 35 mm | ... | | | | 2 |
| 2. | Medium size ; brown wings with FW length 22 mm and above | ... | | | | 3 |
| — | Smaller size ; wings with FW length lesser than 22 mm | ... | | | | 7 |
| 3. | FW with prominent eyes | ... | ... | ... | ... | 4 |
| — | With no eyes on FW | ... | ... | ... | ... | 6 |
| 4. | UPFW ocellus not ringed or absent ; UNHW ocellus in 4 out of line | ... | | | | |
| | ... | ... | ... | ... | ... | <i>Mycalesis perseus</i> |
| — | UPFW ocellus with a prominent dark yellow ring | ... | | | | 5 |
| 5. | FW length 20-25 mm ; UPHW brand salmon - pink or brown in male | ... | | | | |
| | ... | ... | ... | ... | ... | <i>Mycalesis mineus</i> |
| — | FW length 23-28 mm ; UPHW brand pale brown in male | ... | | | | <i>Mycalesis visala</i> |
| 6. | UNHW with no discal band | ... | ... | ... | | <i>Lethe europa</i> |
| — | UNHW with a discal band ; apical ocellus much larger than in area 2 | ... | | | | |
| | ... | ... | ... | ... | ... | <i>Lethe rohria</i> |
| 7. | A straight white discal band on UN across both wings | ... | | | | <i>Orsotrioena medus</i> |
| — | UN finely marked with short brown striations | ... | | | | 8 |
| 8. | UNHW with single apical ocellus in area 6 | ... | ... | ... | | 9 |
| — | UNHW with two apical ocelli | ... | ... | ... | | <i>Ypthima baldus</i> |
| 9. | UNHW with one apical ocellus and two tornal ocelli, which are not in line ; UPHW with ocellus in area 2 only | ... | ... | | | <i>Ypthima inica</i> |
| — | UNHW with one apical and three tornal ocelli, none on a dark band ; UPHW has ocelli in areas 2 and 3 | ... | ... | ... | ... | 10 |
| 10. | UPHW tornal half white | ... | ... | ... | | <i>Ypthima ceylonica</i> |

— UPHW tornal half not white *Ypthima huebneri*

Family NYMPHALIDAE

- 1. Larger specimens with FW length 38 mm or above 2
- Medium size specimens with FW length 22 to 38 mm 8
- 2. UP dark violet blue ; FW apex and HW tornus produced ; UN leaf like ...
... .. *Kallima inachus*
- Not as above 3
- 3. Black or very dark brown ; prominent oval white centred iridescent blue patch on disc of both wings ; female is mimic of *Euploea core* ...
... .. *Hypolimnias bolina*
- Brown to tawny orange ; no iridescent blue patch on disc of wings ... 4
- 4. Large size ; FW length 45-56 mm ; UPFW tawny markings on tornus near border in male DSF ; UPHW narrow black border or spots *Charaxes polyxena*
- Specimens in the range of FW length 30-38 mm ; UPFW with out tawny markings 5
- 5. Dark brown wings 6
- Reddish - brown to tawny orange wings 7
- 6. Yellow border with a pale yellow discal broad band of varying length on both wings *Eriboea athamas*
- Marginal band of well defined and separate black spots on UPHW ; UPFW with a complete row of 2-6 white discal spots *Euthalia garuda*
- 7. Prominent white discal band on both wings ; two pale wavy lines on terminal border on UPFW ; 2 rows of black spots on UPHW *Limenitis procris*
- Black termen and narrow black outer discal line ; large black spot at base of vein 2 and 3 on UPFW and on mid costa on UPHW *Euthalia nais*
- 8. Black with 3 white horizontal bands on wings (1 FW, 1 HW, 1 common) 9
- Without black & white horizontal bands 15
- 9. Bodies robust ; wings less elongate ; a white or yellow band at junction of the thorax and abdomen 10
- Bodies slender ; wings rather long, narrow and somewhat produced 11
- 10. Prominent spot in area 3 on UPFW ; on UNFW inner apical white spots separate and triangular spot well separated *Pantoporia selenophora*
- On UPFW cell streaks in 3 portions excluding the triangular spot beyond ; UPHW with prominent row of spots on inner edge of outer discal band ; UN bright yellow *Parathyma perius*
- 11. UPFW cell streak and spot beyond it conjoined ; UP markings yellow ; UN finely streaked with brown *Neptis hordonia*
- UPFW cell streak always divided into a basal streak and a spot beyond ; markings on UP white 12
- 12. UPFW discal spots in areas 2 and 3 in line with discal spot in area 5 ... 13

- UPFW discal spots in areas 2 and 3 not in line with spot in area 5 ... 14
13. UPHW with prominent outer discal band made of separate white spots ...
 *Neptis columella*
- UPHW without row of white spots ; UNFW and UNHW with prominent dark chest-nut spots and streaks *Neptis jumbah*
14. UNFW end cell spot well separated from basal streak ; UNHW inner discal band and other markings black edged *Neptis hylas*
- UNFW cell streak and spot beyond often joined ; UNHW markings not black edged ; all markings narrow, broken in spots ; UP dirty white, UN very dark *Neptis soma*
15. Presence of ocelli on the outer discal areas 16
- No such ocelli is usually found 22
16. Black and dark brown with a scarlet band on FW ; pinkish red with black markings *Cynthia cardui*
- UP blue, yellow, tawny, grey or brown ; discal ocelli on both wings ... 17
17. Brown or tawny 18
- Yellow or blue 21
18. Ocelli in areas 2 and 5 19
- No ocelli in areas 2 and 5 20
19. UPFW with numerous lemon spots *Precis lemonias*
- No lemon spots ; a large ocellus in area 5 in UPHW ; DSF leaf like and WSF ocellated on UN *Precis almana*
20. UP grey with brown lines ; a complete row of outer discal ocelli on both wings *Precis atlites*
- UP brown with obscure dark brown bands ; HW with a row of small ocelli and slightly produced *Precis iphita*
21. UP bright yellow and black FW apex black with yellow markings ; HW with a prominent shining blue patch near base *Precis hierta*
- UP blue and black ; FW basal two-third black, disc shining blue ; two variegated ocelli on HW *Precis orithya*
22. Medium size specimens with map like markings on both wings ... 23
- No map like markings 24
23. Pale green, with faint vertical lines ; outlines of both wings much rounded *Cyrestis cocles*
- White broad wings, with fine black map-like markings ; outlines of wings irregular *Cyrestis thyodamas*
24. Bluish-black with prominent oval white centred iridescent blue patches on both wings ; female tawny with white spotted black apex on UPFW ...
 *Hypolimnas misippus*

- Tawny or dark reddish brown, without white centred iridescent blue patches on wings 25
- 25. Tawny ; transverse rows of black spots on UP both wings ; UN without silver markings *Phalanta phalantha*
- Dark reddish brown ; numerous fine black lines across both wings ; without any ocellus on UPFW *Ergolis ariadne*

Family ACRAEIDAE

- 1. Brick-red coloured wings with dark termen on FW and black termen with white spots on HW *Acraea violae*

Family ERYCINIDAE

- 1. HW prominently toothed in area 5 ; UP brown in female and purplebrown in male *Abisara echerius*

Family LYCAENIDAE

[Key to this Family leads to genera only, because the no. of species reported from South Bihar by Morrison-Godfrey (1948) is large. They are listed in the Appendix-I].

Subfamily LYCAENINAE (The Weak Blues)

- 1. UN dark markings from extreme base of wings usually a dark streak on both wings and at least a streak along base vein 8 on HW ; tailed ... 2
- UN no dark markings at extreme base 4
- 2. Eyes smooth 3
- Eyes hairy ; veins 11 and 12 free on FW *Syntarucus*
- 3. FW end vein 11 opposite end cell *Tarucus*
- FW end vein 11 well before end cell *Castalius*
- 4. Markings on UN not white edged ; eyes large, smooth or finely haired ; FW cell not longer than half length of wing *Lycaenopsis*
- Markings on UN white edged 5
- 5. Tailless HW 6
- Tailed HW 7
- 6. UNHW discal spot in area 6 out of line *Chilades*
- UNHW post discal spots in areas 5-7 in line *Zizeeria*
- 7. Eyes smooth catenulated discal spots on a grey UN ; spots at UNHW tornus crowned metallic and orange *Euchrysops*
- Eyes densely hairy 8
- 8. FW veins 11 and 12 free 9

—	FW veins 11 and 12 connected by a short spur	...	...	11
9.	HW cilia prolonged and form 3 short tails at veins 1, 2, 3	...		<i>Anthene</i>
—	HW with long tail only at vein 2	...	...	10
10.	UN with catenulated bands and some spots	...	...	<i>Catochrysops</i>
—	UN marked with white lines ; only tornal spots on HW	...		<i>Lampides</i>
11	HW tailed	...	...	<i>Jamides</i>
—	HW tailed or tailless ; UNHW with a black tornal spot ; UN markings less wide, ground less pale	...	...	<i>Nacaduba</i>

Subfamily THECLINAE (The Strong Blues)

1	Palpi hairy ; tailed	...	...	...	<i>Chaetoprocta</i>
—	Palpi smooth	...	...	...	2
2.	Veins 5 and 6 are wide apart, no lobes or tail but wings highly angled ; eyes hairy	...	...	...	<i>Curetis</i>
—	Veins 5 and 6 approximate	...	...	...	3
3.	Eyes hairy	...	...	...	4
—	Eyes smooth	...	...	...	5
4.	Both sexes with slender tail at vein 2	...	...	...	<i>Deudorix</i>
—	Male tuft sometimes missing ; veins 5 and 6 separate	...			<i>Rapala</i>
5.	Veins 5 and 6 approximate, 7 and 6 separate	...	...		6
—	Veins 5 and 6 well separated ; FW veins 6 and 7 separate at origin, vein 8 absent UPHW without brand in male	...	...		<i>Tajuria</i>
6.	In both sexes veins 5 and 6 arise from a point	...	...		<i>Iraota</i>
—	In both sexes veins 5 and 6 approximate, but not arising from a point	...			7
7.	HW tailed at vein 1 b	...	...	...	<i>Amblypodia</i>
—	HW tailed at veins 1 b, 2 (largest) and 3	...	...	...	8
8.	Female ovipositor short and blunt	...	...	...	<i>Narathura</i>
—	Female ovipositor long and tapered	...	...	...	9
9.	HW not produced sharply	...	...	...	10
—	HW sharply angled and produced at vein 4	...	...		<i>Rathinda</i>
10.	HW always tailed at veins 1b and 2 and sometimes at 3	...	...		11
—	HW with no tail at vein 1b, but always with a tooth on vein 2, sometimes at 3 and even 4	...	...	...	12
11.	HW lobe prominent ; tails at veins 1b and 2 nearly equal	...			<i>Spindasis</i>
—	HW veins 1b and 2 equal in male, in female an additional short tail at vein 3	...	...	...	<i>Zezius</i>
12.	Vein 2 absent or very short in HW, vein 3 also very short	...			<i>Surenara</i>
—	HW produced and with a long tail at vein 2 ; FW vein 9 present	...			<i>Loxura</i>

Family PAPILIONIDAE

1.	Tailed specimens ; mostly black or deep brown	...	...	2
—	Tailless specimens ; may or may not be black	...	...	6
2.	FW elongated, apex produced ; caterpillars feeding upon plants of Aristolochiaceae	...	...	3
—	FW not conspicuously elongated	...	...	4
3.	Long white spots around middle of HW	...	<i>Atrophaneura aristolochiae</i>	
—	Two white bands on FW ; HW with numerous bright red spots	...	...	
	...	...	<i>Atrophaneura hector</i>	
4.	Larger specimens with heavily scaled black wings ; with a row of cream coloured spots across HW and on margin of FW	...	<i>Papilio polytes</i>	
—	Wings thinly scaled, semitransparent at least in costal part of FW ; green and bluish bands on UP and sometimes also on UN	...	...	5
5.	FW pointed, with rows of bright green spots	...	<i>Graphium agamemnon</i>	
—	UP white ; UPFW with broad dark margin with a row of round white spots, 4 dark bars in cell and one at apex ; UPHW with outer black band containing white crescents	...	<i>Graphium nomius</i>	
6.	Tailless or at most toothed specimens ; with transparent bluish green bands broken into spots across both wings ; FW pointed	...	<i>Graphium doson</i>	
—	Tailless specimens ; without transparent bands on wings and FW not produced	...	...	7
7.	Specimens resembling danaids (e. g. <i>Euploea core</i>) ; abdomen with rows of white spots ; rich dark brown with cream coloured markings on UP	...	...	
	...	...	<i>Chilasa clytia</i>	
—	Specimens rarely resembling danaids ; abdomen without white dots	...	...	8
8.	Mostly black or dark-brown, with most of HW pale blue ; large specimens	...	<i>Papilio polymnestor</i>	
	...	...	...	
—	Almost as much yellow as black ; ground black with numerous yellow spots and bands ; tornal red spot and apical black & blue spot on UPFW	...	<i>Papilio demoleus</i>	
	...	...	...	

Family PIERIDAE

1	The Whites ; HW with well developed precostal vein which is curved to distal end	...	...	2
—	The Yellows ; HW with precostal vein absent or very short which is directed to basal end	..	...	6
2.	Very pale blue and black specimens ; with veins and border black ; female heavily marked, looks like <i>Danaus limniace</i> ; large	...	<i>Valeria valeria</i>	
—	Mainly white specimens, with little or no blackening of veins ; smaller	..	...	3
3.	UPFW with black apex and a large black discal spot ; UNHW finely streaked with greenish lines ; small specimens with wings weakly attached	...	<i>Leptosia nina</i>	
	...	...	...	

- UPFW produced with dark or faint black apex ; specimens not fragile ... 4
- 4. With black terminal borders and some veins blackened in female ; UNHW pale or dark yellow with green veins *Cepora nerissa*
- Generally white and black marginal and apical markings on FW ; male with pointed FW 5
- 5. FW with apex acute ; UP apical black very narrow or absent in male ; UP with edge of dark basal area distinctly incurved in female ... *Appias albina*
- HW with UN without a dark chocolate marginal border in male ; and with a black or brown discal stripe on UNHW in female ... *Appias libythea*
- 6. Fairly large to medium size sulphur pale yellow specimens ; FW length between 22 to 38 mm 7
- Small size bright yellow specimens smaller than or upto 22 mm FW length 10
- 7. UN marked with transverse reddish brown closely streaked lines ... 8
- UN not marked with any transverse reddish brown closely streaked lines ... 9
- 8. UPFW below apex with marginal dark, broad and continuous border ; monsoon fliers *Catopsilia pyranthe*
- UPFW below apex with macular marginal dark but narrow border, sometimes brown abundant in winter and DS *Catopsilia florella*
- 9. Antennae black ; UPFW greenish yellow, sulphur at bases ; below apex and HW with marginal continuous dusky black line ... *Catopsilia crocale*
- Antennae red ; UPFW sulphur yellow at bases ; below apex with a macular marginal narrow black border ; UN with a small reddish discocellular ocellus ; a prominent spot at end cell in female ... *Catopsilia pomona*
- 10. UN of both wings with large disco-cellular ring-spots ; UPFW apex and termen with black border, which is usually excavated between veins 2 and 4 ; rusty markings UN in DSF *Eurema* hecabe*
- UN of both wings without disco-cellular ring-spots ; UPFW without cell spots, with black border not continued along vein 1a 11
- 11. UNFW with two minute black spots end cell ; UP with broad black borders having inner edge evenly rounded *Eurema brigitta*
- UNFW with a single or three minute discocellular spots 12
- 12. UPFW apex pointed and termen sharply cut and straight in DSF ; FW apical and terminal black border abruptly ending at vein 2 in DSF, but unevenly rounded in WSF *Eurema laeta*
- UNFW with three black spots in cell ; DSF with rusty markings on UN ; UPFW with apical broad black border tapering at both ends *Eurema blanda*

* Genus *Eurema* has been left out in 'Key to genera' in the *Fauna* volume by Talbot (1939, p. 488).

Family HESPERIIDAE
Subfamily COELIADINAE

1. UP dark brown with paler bases ; FW very long and narrow with slender whitish elongated semitransparent spot in cell, 2 and 3, and also in 1b, in female *Badamia exclamationis*

Subfamily PYRGINAE

1. Wings angular in both sexes 2
— Wings not angular 3
2. UNHW white with 3 rows of conspicuous black spots ... *Caprona agama*
— UNHW almost unmarked white ; black spot in area 7 conspicuous ; wings in WSF dark brown ; UPHW with central and marginal yellow areas and small white spots, UPHW with central yellow brown area divided by dark veins *Caprona ransonnetti*
3. UP dark brown with numerous white spots ; fringe prominently chequered *Spialia galba*
... ..
— Not as above 4
4. Male without a hair pencil on hind tibiae ; female with anal tuft ... 5
— Male with a hair pencil on hind tibiae ; UPHW with a pale central area ; UPHW with a pale spot in 1b *Daimio bhagava*
5. UP black fading to dark brown, UPHW with outer two-third white except for costa and apex ; prominent black marginal spots *Tagiades litigiosa*
... ..
— UP dark golden brown ; FW with white or semitransparent large spots and marginal row of yellow opaque spots ; UPHW having separate and prominent black spots *Coladenia indrani*

Subfamily HESPERIINAE
(ASTICTOPTERUS Group)

- 1 Brown ; UPHW with an upper and a lower cell spot ; UNHW with a broad continuous irregular white band *Halpe porus*

(ANCISTROIDES Group)

- 1 UP black with large semitransparent white spots ; FW with a spot across cell and one irregularly disposed discal spot in each interspace ; HW with a large semitransparent white area *Udaspes folus*

(PLASTINGIA Group)

1. Very clearly distinguished from all other skippers by its UNHW markings, having brown overlaid with grey and bearing a variable number of black spots *Suastus minuta*
— Not as above 2

2. UP chocolate brown and unmarked ; HW fringe grey or pale yellow ...
 *Matapa aria*
- UP brown and UN mostly yellow ; UPFW with a yellow streak along costa,
 and both wings with a broad central yellow band ... *Cupitha purreea*

(TARACTROCERA Group)

1. Dark brown with an orange discal band on UP of both wings on FW inside
 the band another black band in centre *Telicota ancilla*

(GEGENES Group)

1. Antennae equal to at least half costa, reaching to spots end cell ... 2
 — Antennae very short 5
2. UPHW never spotted 3
 — UPHW usually spotted 4
3. UPFW with 2 spots in cell, with one or two non-transparent spots in 1b ...
 *Baoris farri*
- UPFW with no spot end cell ; overlaid with ochreous green scales ...
 *Pelopidas subochracea*
4. No spot in 1b, and with a brand on UPFW in male ; spots often small on UPFW
 *Pelopidas mathias*
- A spot in 1b present in both sexes. and no brand on UPFW in male ; two
 separate cell spots in UPFW *Pelopidas conjuncta*
5. UPFW white spots in 2 and 3, but no spot in cell or 1 b ; UNHW spot in 4
 and 5 *Parnara naso*
- UPFW white prominent spot in 1b and two cell spots UNHW spots in 2, 3
 and 6, but not in 4 *Borbo cinnara*

SYSTEMATIC ACCOUNT

(i) Family DANAIDAE

1 *Danaus chrysippus chrysippus* (Linn.)

1758. *Papilio chrysippus* Linnaeus, *Syst. Nat* ed. x : 471.

1932. *Danais chrysippus* : Evans, *Identification of Indian Butterflies* : 88.

1947. *Danaus chrysippus chrysippus* : Talbot, *Fauna Brit. India, Butterflies*,
 2 : 20.

Common name.—The Plain Tiger.

Material examined.—(i) 1 ex., HNP, deforested land by the
 side of Main road, near mile 1 stone from Rajderwa, 4. iii. 1970 ;
 (ii) 1 ex., HNP, Main road, 26. ii. 1973 ; (iii) 1 ex., HNP, By-pass

road, 27. ii. 1973.*

FW range.—35 to 40 mm.

Remarks.—Morrison-Godfrey (1948) has erroneously put all Danaid butterflies including this species, under the family Pieridae.

This species is common everywhere in India. Peile (1937) states that it is very common in desert regions, where Ak plant (*Calotropis*) flourishes, but scarce in the forest-clad hills.

2. *Danaus genutia* (Cr.)

1758. *Papilio plexippus* Auct. non Linnaeus, *Syst. Nat.*, ed. x : 471.

1779. *Papilio genutia* Cramer, *Pap. Exot.*, **3** : 23.

1932. *Danais plexippus* : Evans, *Identification of Indian Butterflies* : 88.

1947. *Danaus plexippus plexippus* ; Talbot, *Fauna Brit. India, Butterflies*, **2** : 25.

1960. *Danaus genutia* : Editors, *J. Bombay nat. Hist. Soc.*, **57** (1) : 230-231

Common name.—The Common Tiger.

Material examined —(i) 3 exs., HNP, Road to watch tower no. 3, 6. iii. 1970 ; (ii) 2 exs., HNP, Main road, 26. ii. 1973 ; (iii) 2 exs., HNP, By-pass road, 27. ii. 1973 ; (iv) 1 ex., HNP, By-pass road, 28. ix. 1975, (v) 5 exs., HNP, Main road, 29. ix. 1975.

FW range.—34 to 45 mm.

Remarks.—Some specimens collected by us are smaller than the range of wing expanse (75-95 mm.) recorded for this species by Peile (1937).

This species is "*plexippus*" of most of the authors, including Talbot (1947). However, it is now well known that the North American monarch butterfly is also named as *plexippus* and that Linnaeus's types are from that region, hence, the Asiatic species ought to be called by the next available name given to it, *genutia* Cramer. International Commission of Zoological Nomenclature has approved this change.

This is a very common butterfly in India, except in the desert region.

*Collector : R. K. Varshney & party, of all material reported in this paper.

3. *Danaus limniace leopardus* (But.)

1866. *Danaus limniace* var. *leopardus* Butler, *Proc. zool. Soc. Lond.*, **1866** : 52.
1932. *Danaus limniace mutina* : Evans, *Identification of Indian Butterflies* : 87.
1947. *Danaus limniace leopardus* : Talbot, *Fauna Brit. India, Butterflies*, **2** : 31

Common name —The Blue Tiger.

Material examined.—(i) 1 ex., HNP, By-pass road, 27 ii. 1973 ; (ii) 1 ex., HNP, By-pass road, 28. ix. 1975 ; (iii) 1 ex., HNP, Rajderwa, 30. ix. 1975 ; (iv) 2 exs., Parasnath hill, 3. x. 1975.

FW range.—43 to 47 mm.

Remarks.—Morrison-Godfrey (1948) reported it common before and after the rains. We also found it more common in rainy season. However, one specimen collected by us in Feb. suggests that it may be found throughout the year.

It is a common species in the Indian region.

For change in generic name from *Danaus* to *Danaus*, Varshney (1973 b) may be referred. In some works the subspecies occurring in plains has been cited as *mutina* Fruhst.

4. *Euploea core core* (Cr.)

1780. *Papilio core* Cramer, *Pap. Exot.*, **3** 133.
1932. *Euploea core core* : Evans, *Identification of Indian Butterflies* : 90.
1947. *Euploea core core* : Talbot, *Fauna Brit. India, Butterflies*, **2** : 67, fig. 25.

Common name.—The Indian Crow.

Material examined.—(i) 2 exs., HNP, Loop road to watch tower no. 6, 4. iii. 1970 , (ii) 8 exs , HNP, Main road, 26. ii. 1973 ; (iii) 1 ex., HNP, By-pass road, 27. ii. 1973 ; (iv) 4 exs., HNP, Main road, 29. ix. 1975 ; (v) 1 ex., Isri, near Paresnath Rly. Stn., 4. x. 1975.

FW range.—42 to 48 mm.

Remarks.—It is not reported by Morrison-Godfrey (1948) from

any part of South Bihar, so this is the first record of this butterfly from this region. We found it in our all trips.

It is a common butterfly, of which the recorded distribution is throughout India to Himalayas.

(ii) Family SATYRIDAE

5. *Mycalesis mineus polydecta* (Cr.)

1777. *Papilio polydecta* Cramer, *Pap. Exot* 2: 76.

1932. *Mycalesis mineus polydecta* : Evans, *Identification of Indian Butterflies* : 98.

1947. *Mycalesis mineus polydecta* : Talbot, *Fauna Brit. India, Butterflies*, 2 : 136.

Common name.—The Dark-brand Bushbrown.

Material examined.—(i) 3 exs., HNP, deforested land by the side of Main road, near mile 1 stone from Rajderwa, 4. iii. 1970 ; (ii) 4 exs., HNP, By-pass road, 27. ii. 1973.

FW range.—20 to 24 mm.

Remarks.—Peile (1937) records its distribution from Travancore to Central Provinces, and Talbot (1947) from Ceylon and Peninsular India to Bengal. Very common.

6. *Ypthima baldus* (Fabr.)

1775. *Papilio baldus* Fabricius, *Syst. Ent.*, (3) 1 : 829.

1932. *Ypthima baldus baldus* : Evans, *Identification of Indian Butterflies* : 122.

1947. *Ypthima baldus baldus* : Talbot, *Fauna Brit. India, Butterflies*, 2 : 337.

Common name.—The Common Four-ring.

Material examined.—1 ex., HNP, By-pass road, 27. ii. 1973 (damaged).

FW.—18 mm.

Remarks.—This specimen is having damaged body and HW, so it is not mounted on pin. The FW is entire and on its basis the species is identified as *baldus*. However, because of the damaged HW, the subspecies is not mentioned here, which appears to be nominotypical *baldus baldus*. Talbot (1947) records the distribution

of the latter in N. W. Himalayas (Chamba) to Assam and Burma. Specimen reported here is evidently from much south and thus, interesting.

Morrison-Godfrey (1948) has not found this species from any part of South Bihar, hence, it is a new record.

7. *Ypthima inica* Hew.

1865. *Ypthima inica* Hewitson, *Trans. ent. Soc. Lond.*, (3) 2 : 284.

1932. *Ypthima inica* : Evans, *Identification of Indian Butterflies* : 120.

1947. *Ypthima inica* : Talbot, *Fauna Brit. India, Butterflies*, 2 : 319.

Common name.—The Lesser Three-ring.

Material examined.—1 ex., HNP, By-pass road, 27. ii. 1973.

FW.—16 mm.

Remarks.—This species is not listed by Morrison-Godfrey (1948), so it is reported as a new record for South Bihar here. However, the recorded distribution for this species is N. W. Frontier to Bengal. Not common.

(iii) Family NYMPHALIDAE

8. *Euthalia nais* (Forst.)

1771 *Papilio nais* Forster, *Nov. Spec. Ins. Cent* 1 : 73.

1932. *Euthalia nais* : Evans, *Identification of Indian Butterflies* : 157.

1937. *Euthalia nais* : Peile, *Guide to collecting Butterflies of India* : 118.

1970. *Euthalia nais* : Nadkerny, *J. Bombay nat. Hist. Soc.*, 67 : 189.

Common name.—The Baronet.

Material examined.—(i) 1 ex., HNP, deforested land by the side of Main road, near mile 1 stone from Rajderwa 4. iii. 1970 ; (ii) 9 exs, HNP, Bahimar road, 27 ix. 1975 ; (iii) 1 ex., HNP, By-pass road, 28. ix. 1975 ; (iv) 6 exs., HNP, Main road, 29. ix. 1975 ; (v) 1 ex., Paresnath hill, 3. x. 1975.

FW range.—26 to 30 mm.

Remarks.—This butterfly flies low and is easy to collect.

It is distributed over Dehra Dun to Sikkim, Madhya Pradesh, Saurashtra, Konkan, South India and Sri Lanka. Not rare.

9. *Hypolimnas bolina bolina* (Linn.)

1758. *Papilio bolina* Linnaeus, *Syst. Nat.*, ed. x : 479.
 1869. *Diadema bolina* : Wallace, *Trans. ent. Soc. Lond.*, : 278.
 1871. *Hypolimnas bolina* : Kirby, *Syn. cat. Diur. Lep.* : 224.
 1881. *Apatura bolina* : Moore, *Lep. Cey.*, **1** : 58, pl. 30.
 1905. *Hypolimnas bolina* : Bingham, *Fauna Brit. India, Butterflies*, **1** : 386.

Common name.—The Great Egg fly.

Material examined.—(i) 1 ex. (♀), HNP, Old loop road, 27. ix. 1975 ; (ii) 1 ex. (♂) HNP, By-pass road, 28. ix. 1975 ; (iii) 1 ex. (♀), HNP Main road, 29. ix. 1975.

FW range.—42 mm (♂), 45 and 49 mm (♀).

Remarks —Although we got this species in wet season only, it occurs in dry season also and the DSF and WSF are different, particularly on underside. Bingham also recorded ♀ larger than ♂ in wing expanse.

10. *Limenitis procris procris* (Cr.)

1777. *Papilio procris* Cramer, *Pap. Exot.*, **2** : pl. 106, figs. E, F.
 1905. *Moduza procris* : Bingham, *Fauna Brit. India, Butterflies*, **1** : 291.
 1932. *Limenitis procris* : Evans, *Identification of Indian Butterflies* ; 161.
 1957. *Limenitis procris* : Wynter-Blyth, *Butterflies of Indian Region* : 180.

Common name.—The Commander.

Material examined.—1 ex., HNP, Main road, 26. ii. 1973.

FW.—34 mm.

Remarks.—Morrison Godfrey (1948) reported that it appears after the rains in South Bihar. The specimen reported here was collected during the spring season, suggesting that perhaps it occurs throughout the year.

This is the most widely distributed species of its genus in India. According to Evans (1932) this subspecies occurs from Dehra Dun to Burma. South Bihar is added in its range here. Not rare.

11. *Neptis hylas astola* Moore

1872. *Neptis astola* Moore, *Proc. zool. Soc. Lond.* **1872** : 560.
 1905. *Neptis eurynome* : Bingham, *Fauna Brit. India, Butterflies*, **1** : 323.

1932. *Neptis hylas astola* : Evans, *Identification of Indian Butterflies* : 166.

1937. *Neptis hylas astola* : Peile, *Guide to collecting Butterflies in India* : 124.

Common name.—The Common Sailer.

Material examined.—(i) 1 ex., HNP, Main road, near Rajderwa, 4. iii. 1970 ; (ii) 1 ex. (LFW broken), HNP, Old loop road, 27 ix. 1975 ; (iii) 1 ex. (♀), HNP, By-pass road, 28. ix. 1975 ; (iv) 1 ex. (HW broken), Parasnath hill, 3. x. 1975.

FW range.—24 to 29 mm.

Remarks.—Morrison-Godfrey (1948) got *N. hylas varmona* (Moore) from South Bihar. In the specimen collected by us in March, there are no veins on HW beyond cell prominently blackened, hence, it is assigned to subspecies *astola*. This is first record of this subspecies from this region.

Evans (1932) gives Kashmir to Karens (Burma) as distribution of this subspecies. Common.

12. *Parathyma perius* (Linn.)

1758. *Papilio perius* Linnaeus, *Syst. Nat.*, ed. x : 471

1905. *Athyma perius* : Bingham, *Fauna Brit. India, Butterflies*, 1 : 315.

1932. *Pantoporia perius* : Evans, *Identification of Indian Butterflies* : 164.

1937. *Parathyma perius* : Peile, *Guide to collecting Butterflies in India* : 122.

Common name.—The Common Sergeant.

Material examined.—1 ex., HNP, Hill of watch tower no. 6, 4. iii. 1970.

FW.—30 mm.

Remarks.—Morrison-Godfrey (1948) got it from Rajdaha Reservoir area only and stated it a rare butterfly.

The recorded distributional range for this species is, however, wide, *i.e.*, South India-Simla-Burma. Not rare.

13. *Phalanta phalantha phalantha* (Drury)

1770. *Papilio phalantha* Drury, *Exot. Ins.*, 1 : 41, pl. 21, figs. 1, 2.

1932. *Atella phalantha* : Evans, *Identification of Indian Butterflies* : 187.

1937. *Phalanta phalantha* : Peile, *Guide to collecting Butterflies in India* : 150.

1967. *Phalanta phalantha phalantha* : Donahue, *J. Bombay nat. Hist. Soc.*, **64** : 38.

Common name.—The Common Leopard.

Material examined.—(i) 1 ex., HNP, Bahimar gate, western extremity of Park, 25. ii. 1973 ; (ii) 2 exs., HNP, Bahimar road, 27 ix. 1975 ; (iii) 3 exs., HNP, By-pass road, 28 ix. 1975 ; (iv) 3 exs., HNP, Main road, 29. ix. 1975 ; (v) 2 exs., Parasnath hill, 3. x. 1975.

FW range.—27 to 31 mm. Wings broken in many exs.

Remarks.—This species is distributed over throughout India, Sri Lanka, Baluchistan and Burma. Common.

The generic name has been revised to *Phalanta* in a recent treatment (Fox, 1964).

14. *Precis almana almana* (Linn.)

1758. *Papilio almana* Linnaeus, *Syst. Nat.*, ed x, **1** : 472.

1819. *Vanessa almana* ; Godart, *Enc. Meth.*, **9** : 313.

1905. *Junonia almana* : Bingham, *Fauna Brit. India, Butterflies*, **1** : 361.

1927. *Precis almana* : Seitz, *The Macrolepidoptera of the World*, **9** *The Indo-Australian Rhopalocera* : 519.

Common name.—The Peacock Pansy.

Material examined —(i) 1 ex., HNP, By-pass road, 28. ix. 1975 ; (ii) 2 exs. (antennae and LHW broken in one ex.), HNP, Main road, 9. ix. 1975.

FW range.—25-26 mm.

Remarks.—Our material belongs to WSF, where the upperside is similar to DSF markings except the black markings deeper and heavier in colour, but underside are quite different in the two seasonal forms. Very common.

15. *Precis hierta hierta* (Fabr.)

1798. *Papilio hierta* Fabricius, *Ent. Syst.*, Suppl. : 424.

1932 *Precis hierta hierta* : Evans, *Identification of Indian Butterflies* : 176.

1967. *Precis lintingensis lintingensis* : Donahue, *J. Bombay nat. Hist. Soc.*, **64** : 35.

Common name.—The Yellow Pansy.

Material examined.—(i) 2 exs., HNP, Rajderwa canteen area, 4. iii. 1970 ; (ii) 2 exs., HNP, Bahimar road, 27. ix. 1975 ; (iii) 3 exs., HNP, By-pass road, 28. ix. 1975 ; (iv) 5 exs., HNP, Main road, 29. ix. 1975.

FW range.—21 to 23 mm. (DSF)
25 to 29 mm. (WSF)

Remarks.—The specific name of this species is well known as *hierta*, although it is preceded by *lintingensis* Osbeck, 1765, and *oinone* Cramer, 1775. Donahue (1967) reports that Corbet in 1945 has shown priority of *lintingensis* over *hierta*. However, the International Commission found that the former name should be considered as *nomen oblitum*, thus suppressed *Papilio lintingensis* Osbeck, 1765, under plenary powers, *vide* Opinion No. 842 (1968).

This species is very common throughout India.

In some of the WSF collected, the antennae and/or RHW are broken.

16. *Precis lemonias* (Linn.)

1758. *Papilio lemonias* Linnaeus, *Syst. nat.*, ed. x, 473.
1806-16. *Hamadryas lemonias* Hübner, *Samml. Ex. Schmett.* **1** : pl 1.
1819. *Vanessa lemonias* : Godart, *Enc. Meth.*, **9** : 310.
1857. *Junonia lemonias* Horsfield and Moore, *Cat. Lep. Mus. E. I. C.*, **1** : 139.
1905. *Junonia lemonias* : Bingham, *Fauna Brit India, Butterflies*, **1** : 357.
1927. *Precis lemonias* : Seitz, *The Macrolepidoptera of the World* **9**, *The Indo-Australian Rhopalocera* : 520.

Common name.—The Lemon Pansy.

Material examined— i) 1 ex., HNP, Old loop road, 27 ix. 1975, (ii) 4 exs., HNP, By-pass road, 28. ix. 1975 ; (iii) 2 exs., HNP, Main road, 29. ix. 1975 ; (iv) 1 ex., HNP, Rajderwa, 30. ix. 1975. Wings and/or antennae broken in some exs.

FW range.—23 to 29 mm.

Remarks.—Except two specimens having 29 mm FW, all other exs. have 23 to 25 mm FW, which is much shorter than the lowest in range of expanse mentioned for both wings (56-62 mm) by Bingham (1905). Very common.

17. *Precis orithya swinhoi* But.

1758. *Papilio oritya* Linnaeus, *Syst. Nat.*, ed. x : 473.
 1842. *Cynthia orithya* : Donovan's *Ins. China* (new edition) : 64, pl. 35, fig. 2.
 1816. *Junonia orithya* : Hübner, *Verz. bek. Schmett.*, : 34.
 1819. *Vanessa orithya* : Godart, *Enc. Meth.*, **9** : 317.
 1849. *Junonia orithya* : Doubleday, *Gen. Diurn. Lep.*, **1** : 209.
 1905. *Junonia orithya* : Bingham, *Fauna Brit. India, Butterflies*, **1** : 358.
 1927. *Precis orithya* : Seitz, *The Macrolepidoptera of the World*, 9. *The Indo-Australian Rhopalocera* : 522.

Common name.—The Blue Pansy.

Material examined.—(i) 1 ex, HNP, Old loop road, 27. ix. 1975 ; (ii) 3 exs., HNP, Main road, 29. ix. 1975 ; (iii) 1 ex., Isri, near Paresnath Rly. Station, 4. x. 1975.

FW range.—21 to 24 mm.

Remarks.—Some exs of the material collected are discoloured and/or with broken wings. All the exs. have shorter wing span than 54-62 mm mentioned by Bingham (1905) for both wings expanse.

It is a very common butterfly recorded from all over the Indian region.

(iv) Family ACRAEIDAE

18. *Acraea violae* (Fabr.)

1775. *Papilio violae* Fabricius, *Syst. Ent.*, (3) **1** : 460.
 1932. *Telchinia violae* : Evans, *Identification of Indian Butterflies* : 192.
 1947. *Acraea violae* : Talbot, *Fauna Brit. India, Butterflies*, **2** : 466.
 1973. *Acraea violae* : Varshney, *Curr. Sci.*, **42** : 107.

Common name.—The Tawny Coster.

Material examined.—(i) 2 exs., HNP, Main road, near Rajderwa, 4. iii. 1970 ; (ii) 1 ex. (discoloured), HNP, Bahimar road, 27 ix. 1975 ;

(iii) 8 exs. (LHW damaged in 2 exs. and one antenna broken in 1 ex.), HNP, Main road, 29. ix. 1975.

FW range.—19 to 25 mm (DSF) ; 27 to 31 mm (WSF)

Remarks.—Peile (1937) has shown the total wing expanse of both wings for this species as 50-65 mm. Thus, one specimen collected by us is smaller than this range.

Most authors, including Peile (1937) and Talbot (1947), show the distribution of this species in Peninsular India and Ceylon only. Donahue (1967) has also referred it as a southern butterfly. However, Varshney (1973a) has shown its distribution in North and East India and thus, extended its range. Common.

(v) Family ERYCINIDAE

19. *Abisara echerius suffusa* (Moore)

1790. *Papilio echerius* Stoll : Cramer, *Pap. Exot.*, **5** : pl. 31., fig. 1.
 1905. *Abisara echerius* : Bingham, *Fauna Brit. India, Butterflies*, **1** : 492.
 1932. *Abisara echerius suffusa* : Evans, *Identification of Indian Butterflies* : 197.
 1957. *Abisara echerius* : Wynter-Blyth, *Butterflies of Indian Region* : 243, pl. 40, fig. 5.

Common name.—The Plum Judy.

Material examined.—2 exs., HNP, By-Pass road, 27. ii. 1973.

FW range.—20-22 mm

Remarks.—These specimens are with a little damaged HW, but they agree well with the characters shown by Wynter-Blyth (1957).

This is the only Erycinid species found in Bihar. Outside this State, it is recorded from North and Central India to China, Thailand etc.

(vi) Family LYCAENIDAE

20. *Catochrysops strabo strabo* (Fabr.)

1793. *Hesperia strabo* Fabricius, *Ent. Syst.*, **3** (1) : 287.
 1932. *Catachrysops* [sic] *strabo* : Evans, *Identification of Indian Butterflies* : 236.

1962. *Catochrysops strabo strabo* : Cantlie, *Lycaenidae of Evans' Identification of Indian Butterflies* : 67.

Common name.—The Forget-me-not.

Material examined.—1 ex., HNP, Main road, 26. ii. 1973.

FW.—15 mm.

Remarks.—Morrison-Godfrey (1948) has erroneously listed all *Lycaenids*, including this species, under *Erycinidae*.

This species is recorded from Sri Lanka, South India, Bombay, Jabalpur, Bihar and Irrawady valley (Burma). Common.

21 *Chaetoprocta odata* (Hew.)

1865. *Dipsas odata* Hewitson, *Ill. Diurn. Lep.* : 66, pl. 30, figs. 13, 14.

1932. *Chaetoprocta odata* : Evans, *Identification of Indian Butterflies* : 252.

1962. *Chaetoprocta odata* : Cantlie, *Lycaenidae of Evans' Identification of Indian Butterflies* : 101

Common name.—The Walnut Blue.

Material examined.—1 ex., HNP, Hill of watch tower no. 6, 4. iii. 1970.

FW.—17 mm.

Remarks.—The specimen collected is a ♂

This species is so far recorded from N. W. Himalayas, *i. e.*, Chitral to Kumaon, and Nepal. The specimen collected by us is, therefore, interesting and first record from this region. Not common.

22. *Lampides boeticus* (Linn.)

1767. *Papilio boeticus* Linnaeus, *Syst. Nat.*, ed. xii, 1 : 789.

1907. *Polyommatus boeticus* : Bingham, *Fauna Brit. India, Butterflies*, 2 : 432.

1932. *Lampides boeticus* : Evans, *Identification of Indian Butterflies* : 236.

1962. *Lampides boeticus* : Cantlie, *Lycaenidae of Evans' Identification of Indian Butterflies* : 69.

Common name.—The Pea Blue.

Material examined.—1 ex., HNP, Road to Bahimar gate, 3. iii. 1970.

FW.—17 mm.

Remarks.—In this specimen, on both HW, the tornal black spot is not crowned with orange colour, but with metallic shining blue.

It is distributed over Sri Lanka, India and Pakistan. Common.

23. *Narathura atrax* (Hew.)

1862. *Amblypodia atrax* Hewitson, *Cat. Lyc., B. M.* ; 13.

1903. *Arhopala atrax* : Bethune-Baker, *Trans. zool. Soc. Lond.* **1903** : 130.

1932. *Amblypodia alemon* : Evans, *Identification of Indian Butterflies* : 263.

1962. *Narathura atrax* : Cantlie, *Lycaenidae of Evans' Identification of Indian Butterflies* : 108.

1970. *Amblypodia atrax* : Nadkerny, *J. Bombay nat. Hist. Soc.*, **67** : 190.

Common name.—The Indian Oakblue.

Material examined.—1 ex., HNP, By-Pass road, 27 ii. 1973.

FW.—18 mm.

Remarks.—Cantlie (1962) reports that all species of *Amblypodia* (*Arhopala Group*) of Evans (1932) are put in *Narathura* now. He also reports that Evans in 1957 has synonymized *alemon* De Niceville with *atrax* Hewitson.

Earlier *atrax* was thought as a Burmese species, but now Cantlie (*loc. cit.*) gives its extended range as South India, Dun to Burma. It is recorded from South Bihar here. Nadkerny (1970) reported it from Ranikhet. Not rare.

(vii) Family PAPILIONIDAE

24. *Atrophaneura aristolochiae aristolochiae* (Fabr.)

1775. *Papilio aristolochiae* Fabricius, *Syst. Ent.* : 443.

1932. *Tros aristolochiae aristolochiae* : Evans, *Identification of Indian Butterflies* : 44.

1939. *Polydorus aristolochiae aristolochiae*: Talbot, *Fauna Brit. India, Butterflies*, **1** : 86.

1977. *Atrophaneura aristolochiae aristolochiae*: Varshney & Nandi, *J. Bombay nat. Hist. Soc.*, **73** (2) : 327.

Common name.—The Common Rose

Material examined.—1 ex., Paresnath hill, 3. x. 1975.

FW.—44 mm.

Remarks.—As Hemming (1967) has pointed out that since *Polydorus* is preoccupied, generic name *Atrophaneura* has priority over *Pachliopta* for this genus. However, specific name *aristolochiae* is retained here, instead of the prior name *ascanius*, on the ground shown by Talbot (1947, p. 491) and Opinion No. 265 of the International Commission of Zoological Nomenclature. Common.

25. *Graphium nomius nomius* (Esper)

1801 *Papilio nomius* Esper, *Die Ausländische Schmetterlinge* : 210.

1932. *Pathysa nomius nomius* Evans, *Identification of Indian Butterflies* 54.

1939. *Graphium nomius nomius* Talbot, *Fauna Brit. India, Butterflies*, **1** : 207.

Common name.—The Spot Swordtail.

Material examined.—1 ex., HNP, deforested land on Main road, near Rajderwa, 4. iii. 1970.

FW.—39 mm.

Remarks.—Although this specimen was collected in the western part of the Park, this species was seen more times in the eastern part, from watch tower no. 1 to ascending slopes of Sijhua Hill. It was also seen near Dumri, at dam site.

Morrison-Godfrey (1948) found it common during June-July in this region, while we collected it in early March.

The distribution of this species has been recorded in Ceylon, Southern India to the Sikkim lowlands, by Talbot (1939). In other published records, it has been extended as Himalayas from

Simla east to Peninsular India, Delhi, Lucknow, South Bihar, Gujarat also.

26. *Papilio demoleus demoleus* Linn.

1758. *Papilio demoleus* Linnæus, *Syst. Nat.* ed. x : 464.

1895. *Papilio demoleus demoleus* : Rothschild, *Nov. Zool.*, **2** : 279.

1907. *Papilio demoleus* : Bingham, *Fauna Brit. India, Butterflies*, **2** : 39.

1939. *Papilio demoleus* : Talbot, *Fauna Brit. India, Butterflies*, **1** : 187.

Common name.—The Lime Butterfly.

Material examined.—(i) 1 ex., HNP, By-Pass road, 28 ix.1975 ; (ii) 2 exs. (wings broken), HNP, Main road, 29. ix. 1975 ; (iii) 1 ex. (RHW broken at black spot), Isri, near Parasnath Rly. Stn., 4. x. 1975.

FW range.—43 to 48 mm.

Remarks.—It is one of the commonest butterflies in the Indian region and other countries. Its larvae are pest on citrus, bel, ber and curry leaf plant (Varshney, 1978).

27 *Papilio polytes romulus* f. *stichius* Huebn.

1775. *Papilio romulus* Cramer, *Pap. Exot.*, **1** : 67, pl. 43, fig. A.

1895. *Papilio polytes romulus* : Rothschild, *Nov. zool* **2** : 347.

1907. *Papilio polytes* : Bingham, *Fauna Brit. India, Butterflies*, **2** : 61

1939. *Papilio polytes romulus* : Talbot, *Fauna Brit. India, Butterflies*, **1** : 178.

Common name.—The Common Mormon.

Material examined.—1 ex. (♀) (without abdomen ; HW ruptured), HNP, Rajderwa, 30. ix. 1975.

FW.—53 mm.

Remarks.—Our catch is a damaged specimen. However, this species is very common throughout the gangetic plains. Male and female exs. are dimorphic, and there are many forms recorded of the latter.

(viii) Family PIERIDAE

28. *Cepora nerissa phryne* (Fabr.)

1775. *Papilio nerissa* Fabricius, *Syst. Ent.* : 471.

1775. *Papilio coronis* Cramer, *Pap. Exot.*, **1** : 69
1932. *Huphina nerissa phryne* : Evans, *Identification of Indian Butterflies* : 72.
1937. *Cepora coronis evagete* : Peile, *Guide to collecting Butterflies in India* : 53.
1939. *Cepora nerissa phryne* : Talbot, *Fauna Brit. India, Butterflies*, **1** : 362.

Common name.—The Common Gull.

Material examined.— 1 ex., HNP, Bahimar gate, ca 10 Km away west from Rajderwa, 25. ii. 1973.

FW.—26 mm.

Remarks.—The nomenclature of this species requires comment. What Evans (1932) and Talbot (1939) has called *nerissa*, has been substituted with *ccronis* by Peile (1937). The latter has further given Sikkim to Assam as distribution of subspecies *phryne*, which other authors treated as a peninsular subspecies. Peile has instead shown *evagete* as peninsular subspecies. Since the works of Evans and Talbot are standard and they have assigned subspecies on better understanding. *nerissa phryne* is adopted here.

Morrison-Godfrey (1948) has listed *evagete* from South Bihar. Common.

29. *Eurema brigitta rubella* (Wallace)

1867. *Terias rubella* Wallace, *Trans. ent. Soc. Lond.* (3), **4** (3) : 323.
1932. *Terias libythea* : Evans, *Identification of Indian Butterflies* : 77.
1939. *Eurema brigitta rubella* : Talbot, *Fauna Brit. India, Butterflies*, **1** : 515.
1970. *Eurema brigitta rubella* Varshney & Nandi, *Sci. Cult* **36** (7) : 405.

Common name.—The Small Grass Yellow.

Material examined.—(i) 1 ex., HNP, Rajderwa canteen area, 4. iii. 1970 ; (ii) 2 exs., HNP, Dam site jungle, 6. iii. 1970 ; (iii) 1 ex., HNP, Main road, 26. ii. 1973.

FW range.—18 to 20 mm.

Remarks.—It is a less common species than *hecabe* or *laeta*,

of this genus, in most parts of the country. However, we collected it during our both survey trips to the park in dry season.

Reported from the Indian region and Thailand. Common.

30. *Eurema hecabe simulata* (Moore)

1758. *Papilio hecabe* Linnaeus, *Syst. Nat.*, ed. x : 470.

1907. *Terias hecabe* f. *simulata* : Bingham, *Fauna Brit. India, Butterflies*, ed. i, 2 : 250.

1932. *Terias hecabe simulata* : Evans, *Identification of Indian Butterflies* : 78.

1939. *Eurema hecabe simulata* : Talbot, *Fauna Brit. India, Butterflies*, ed. ii, 1 : 530.

1966. *Eurema hecabe simulata* : Donahue, *J. Bombay nat. Hist. Soc.*, 63 (2) : 267.

Common name.—The Common Grass Yellow.

Material examined.—1 ex., HNP, Bahimar Gate, 25. ii. 1973.

FW.—17 mm.

Remarks.—*E. hecabe* occurs throughout India, but subspecies *simulata* is restricted to Sri Lanka, Peninsular India and Central Provinces. Because *hecabe* is very variable in size and colour, Donahue (1966) has indicated that at least some Indian subspecies are invalid. Very common.

31 *Eurema laeta laeta* (Boisd.)

1836. *Terias laeta* Boisduval, *Sp. Gen. Lep.*, 1 : 674.

1907. *Terias laeta* : Bingham, *Fauna Brit. India, Butterflies*, ed. i, 2 : 248.

1932. *Terias laeta laeta* : Evans, *Identification of Indian Butterflies* : 77.

1939. *Eurema laeta laeta* : Talbot, *Fauna Brit. India, Butterflies*, ed. ii, 1 : 517.

Common name.—The Spotless Grass Yellow.

Material examined.—(i) 1 ex. ♂, HNP, Road to Bahimar, near watch tower no. 6, 3. iii. 1970 ; (ii) 4 exs. (3 ♂, 1 ♀), HNP, Loop road, 4. iii. 1970, (iii) 3 exs. (1 ♂, 2 ♀), HNP, Jungle road to watch tower no. 3, 6. iii. 1970 ; (iv) 7 exs., HNP, Bahimar gate, 25. ii. 1973 ; (v) 2 exs., HNP, By-Pass road, 27. ii. 1973.

FW range.—16 to 19 mm.

Remarks.—These all specimens belong to DSF of *laeta*. The differentiation between ♂ and ♀ specimens is often clearly seen from the wing markings, e. g., the specimen collected on the Bahimar road in 1970 is a ♂

This species is distributed in India, Burma and Thailand. Very common.

32. *Leptosia nina nina* (Fabr.)

- 1781 *Papilio xiphia* Fabricius, *Spec. Ins.*, 2 : 43. (Preoccupied)
1793. *Papilio nina* Fabricius, *Ent. Syst.*, 3 (1) : 194. (nom. nov. pro *xiphia*)
1932. *Leptosia nina nina* : Evans, *Identification of Indian Butterflies* : 65.
1939. *Leptosia nina nina* : Talbot, *Fauna Brit India, Butterflies*, 1 : 305.
1966. *Leptosia nina nina* : Donahue, *J. Bombay nat. Hist. Soc* 63 (2) : 256.

Common name.—The Psyche.

Material examined.—1 ex., HNP, Main road, 26. ii. 1973.

FW.—17 mm.

Remarks.—It is a weak flier and its wings easily detach from body. It was observed flying quite low, about 1 ft above the ground level, near bushes and slopes.

Its distribution has been recorded in Peninsular India to Mussoorie and in east extending to neighbouring countries. In west it has been reported upto Delhi (Donahue, 1966). Common.

(ix) Family HESPERIIDAE

33. *Suastus minuta aditia* Evans

1895. *Suastus minuta* Watson, *J. Bombay nat. Hist. Soc.*, 9 : 429.
1932. *Suastus rama rama* : Evans, *Identification of Indian Butterflies* : 365.
1949. *Suastus minuta aditia* : Evans, *Cat. Hesperidae from Europe, Asia & Austr., in Brit. Mus. (N. H.)* : 297.

Common name.—The Small Palm Bob.

Material examined—1 ex., HNP, deforested land near Main road, ca 1 mile from Rajderwa, 4. iii. 1970.

FW.—30 mm.

Remarks.—Morrison-Godfrey (1948) has not reported any

species of *Suastus* from South Bihar. It is, therefore, first record from this region. Regarding its specific name, Evans (1949) has stated that this species has been incorrectly cited as *sala* Hew. and *rama* Mabille, earlier.

Evans (1932) recorded its distribution from Bengal, Sikkim to Tavoy (Burma) and stated it as a rare butterfly.

34. *Udaspes folus* (Cram.)

1779. *Papilio folus* Cramer, *Pap. Exot.*, **1** : pl. 74, fig. 7.
 1859. *Hesperia folus* : Moore, *Cat. Lep. Mus. E. I. C.*, **1** : 252, pl. 7 fig. 7.
 1869. *Tagiades folus* : Butler, *Cat. Fabr. Lep. B. M.* : 283.
 1874. *Plesioneura folus* : Druce, *Proc. zool. Soc.* 109.
 1881. *Udaspes folus* : Moore, *Lep. Ceylon*, **1** : 177, pl. 68. fig. 3, 3a.
 1912-13. *Udaspes folus* : Swinhoe, *Lepidoptera Indica*, **10** : 205.
 1932. *Udaspes folus* : Evans, *Identification of Indian Butterflies* : 370.

Common name.—The Grass Demon.

Material examined.—i) 1 ex., HNP, Old loop road, 27. ix. 1975 ; (ii) 1 ex., HNP, By-Pass road, 28. ix. 1975 ; (iii) 1 ex., HNP, Main road, 29. ix. 1975 ; (iv) 1 ex., HNP, Rajderwa, 30 ix. 1975.

FW range.—19 to 21 mm.

Remarks.—As a pest of ginger and turmeric it is reported from South India (Varshney, 1978). However, it is recorded from M. P., Kangra, Assam to Burma also. Not rare.

SUMMARY

The paper provides a list of butterflies collected by the authors from the Hazaribagh National Park and some nearby areas in South Bihar. These were collected during dry season in 1970 and 1973 and during wet season in 1975. On identification, they represent altogether 34 species belonging to 25 genera and 9 families. Eight species and subspecies have been recorded for the first time from the region, three of these, viz., *Suastus minuta aditia*, *Ypthima baldus* and *Chaetoprocta odata*, are of interest from distributional aspect. Detailed keys to all species so far recorded from South Bihar have been provided, and a consolidated list reporting 137 species from the region is appended.

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APPENDIX I**A consolidated list of butterfly species reported from South Bihar****Family DANAIIDAE**

(Drury)

1. *Danaus chrysippus chrysippus* (L.)
2. *Danaus genutia* (Cr.)
3. *Danaus limniace leopardus* (But.)
4. *Euploea core core* (Cr.)

Family SATYRIDAE

5. *Mycalesis mineus polydecta* (Cr.)
6. *Mycalesis perseus typhlus* Fruh.
7. *Mycalesis visala visala* M.
8. *Lethe europa ragalva* Fruh.
9. *Lethe rohria neelgheriensis* Guer.
10. *Ypthima ceylonica* Hew.
11. *Ypthima huebneri huebneri* Kirby
12. *Ypthima baldus* (F.)
13. *Ypthima inica* Hew.
14. *Orsotrioena medus medus* (F.)
15. *Melanitis leda ismene* (Cr.)

Family NYMPHALIDAE

16. *Charaxes polyxena hemana* But.
17. *Charaxes polyxena hierax* Felder
18. *Eriboea athamas athamas* (Drury)
19. *Euthalia garuda anagama* Fruh.
(? 'Eriboea')
20. *Euthalia nais* (Forst)
21. *Limenitis procris procris* (Cr.)
22. *Pantoporia selenophora kanara*
Evans
23. *Neptis columella ophiana* M.
24. *Neptis jumbah jumbah* M.
25. *Neptis hylas varmona* M.
26. *Neptis hylas astola* M.
27. *Neptis soma soma* M.
28. *Neptis hordonia hordonia* (Stoll)
29. *Cyrestis cocles cocles* (F.)
30. *Cyrestis thyodamas indica* Evans
31. *Hypolimnas misippus* (L.)
32. *Hypolimnas bolina bolina* (L.)
33. *Parathyma perius* (L.)
34. *Phalanta phalantha phalantha*

35. *Precis hierta hierta* (F.)
36. *Precis almana almana* (L.)
37. *Precis lemonias* (L.)
38. *Precis lemonias vaisya* Fruh.
39. *Precis orithya swinhoei* But.
40. *Precis iphita iphita* (Cr.)
41. *Precis atlites* (L.)
42. *Cynthia cardui* (L.) (= *Vanessa*)
43. *Ergolis ariadne indica* M.
44. *Kallima inachus inachus* (Bd.)

Family ACRAEIDAE

45. *Acraea violae* (F.)

Family ERYCINIDAE

46. *Abisara echerius suffusa* (M.)

Family LYCAENIDAE

47. *Catochrysops strabo strabo* (F.)
48. *Castalius rosimon rosimon* (F.)
49. *Castalius caleta decidia* (Hew.)
50. *Chilades laius laius* (Cr.)
51. *Chaetoprocta odata* (Hew.)
52. *Curetis acuta dentata* M.
53. *Lampides boeticus* (L.)
54. *Loxura atymnus continentalis*
Fruh.
55. *Celastrina puspa gisca* Fruh.
56. *Anthene lycaenina lycaenina*
(Felder) (= *Lycaenesthes*)
57. *Anthene emolus* (Godart)
(= *Lycaenesthes*)
58. *Deudorix epijarbas epijarbas* (M.)
59. *Amblypodia alemon* de N.
60. *Amblypodia amantes amantes*
Hew.
61. *Amblypodia anita dina* Fruh.
(= *Horsfieldia*)
62. *Iraota timoleon timoleon* Stoll
63. *Jamides celeno celeno* Cr.

103. *Graphium nomius nomius* (Esper) non (L.)

104. *Appias libythea* (F.)
105. *Appias albina darada* (C. & R.
Felder)
106. *Catopsilia crocale* (Cr.)
107. *Catopsilia pomona* (F.)
108. *Catopsilia pyranthe minna* Herbst
109. *Catopsilia florella gnoma* (F.)
110. *Cepora nerissa phryne* (F.)
111. *Eurema laeta laeta* (Bd.)
112. *Eurema hecabe simulata* (M.)
113. *Eurema hecabe* (L.)
114. *Eurema blanda silhetana*
(Wallace)
115. *Eurema brigitta rubella* (Wallace)
116. *Leptosia nina nina* (F.)
117. *Valeria valeria hippia* (F.)

118. *Badamia exclamationis* (F.)
119. *Coladenia indrani indra* Evans
120. *Caprona ransonnetti ransonnetti*
Felder
121. *Caprona ransonnetti potiphera*
Hew.
122. *Caprona agama agama* M.
123. *Daimio bhagava* M.
124. *Cupitha purreea* M.
125. *Telicota ancilla bambusae* M.
126. *Tagiades litigosa litigosa*
Moschler

94. *Atrophaneura hector* (L.)
95. *Atrophaneura aristolochiae* aris-
tolochiae (F.)
96. *Atrophaneura aristolochiae sawi*
(Evans)
97. *Papilio clytia clytia* L.
98. *Papilio demoleus demoleus* L.
99. *Papilio polytes romulus* f. *sti-*
chius Hueb.
100. *Papilio polymnestor polymnestor*
Cr.
101. *Graphium doson eleius* (Fruh.)
102. *Graphium agamemnon agamem-*

127. *Baoris farri farri* M.
128. *Pelopidas conjuncta narooa* (M.)
129. *Pelopidas subochracea subochracea* (M.)
130. *Pelopidas mathias mathias* (F.)
131. *Parnara naso bada* M.
132. *Borbo cinnara* Wallace
133. *Spialia galba* F.
134. *Matapa aria* M.
135. *Halpe porus* Mabille
136. *Suastus minuta aditia* Evans
137. *Udaspes folus* (Cr.)

APPENDIX II

A list of plants in the Hazaribagh National Park

(This is a tentative list, prepared with the help of Park staff. No attempt has been made to verify it or to correct the botanical nomenclature. Some introduced ornamental plant species have been left out. Local vernacular names, mostly in hindi, have been shown on the right side. Many of the species recorded here are known food-plants of the butterfly caterpillars).

1. <i>Acacia catechu</i>	Khair
2. <i>Acacia pennata</i>	Agnibel, Araar
3. <i>Adina cordifolia</i>	Haldu
4. <i>Aegle marmelos</i>	Bel
5. <i>Agave americana</i>	Murabba
6. <i>Ailanthus excelsa</i>	Chhornim
7. <i>Allium sativum</i>	Lahsun
8. <i>Allium sepa</i>	Piaz
9. <i>Anacardium occidentale</i>	Kaju
10. <i>Anogeissus latifolia</i>	Bakli, Dhoura
11. <i>Antidesma diandrum</i>	
12. <i>Arachis hypogaea</i>	Mungphaii
13. <i>Artocarpus integrifolia</i>	Kathal
14. <i>Asparagus racemosus</i>	Satawaar
15. <i>Azadirachta indica</i>	Neem
16. <i>Bauhinia purpurea</i>	Konar
17. <i>Bauhinia racemosa</i>	Apta
18. <i>Bauhinia retusa</i>	Kathmohli, Semla
19. <i>Bauhinia vahlii</i>	Mahulan
20. <i>Bauhinia variegata</i>	Kachnaar
21. <i>Blumea lacera</i>	Kakronda
22. <i>Bombax ceiba</i> (syn. <i>B. malabaricum</i>)	Semal
23. <i>Boswellia serrata</i>	Salai
24. <i>Bridelia retusa</i>	Kaaz
25. <i>Buchanania lanzan</i> (syn. <i>B. latifolia</i>)	Achar, Piyal Kathbholwa
26. <i>Butea monosperma</i>	Palas, Dhak
27. <i>Butea superba</i>	Latpalas
28. <i>Caesalpinia pulcherrima</i>	
29. <i>Calamus tenuis</i>	Baint
30. <i>Calotropis gigantea</i>	Aak, Akwan
31. <i>Camellia thea</i>	Chai
32. <i>Capsicum annuum</i>	Lal mirch

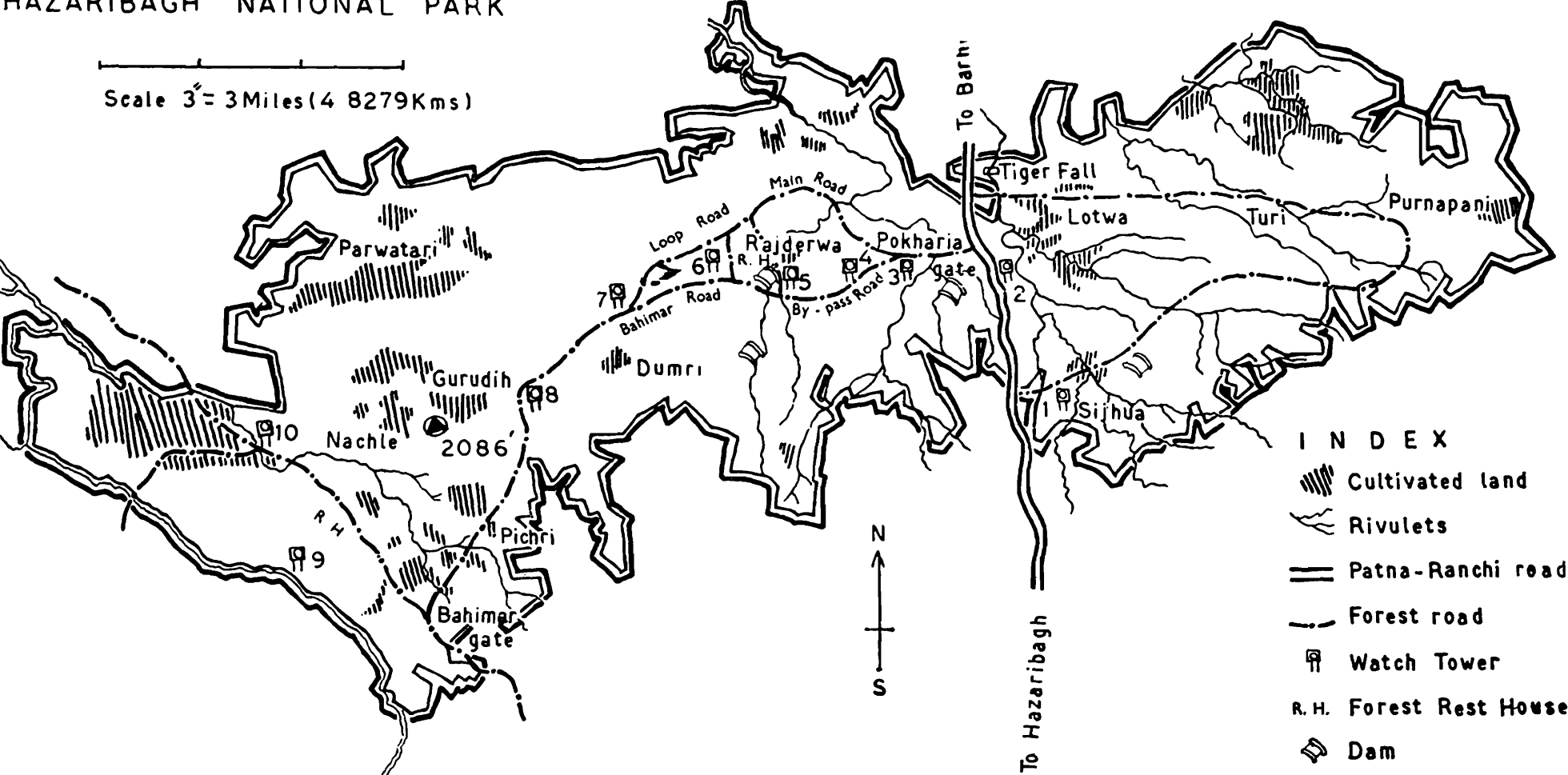
33. <i>Carica papaya</i>	Papita
34. <i>Carissa opaca</i>	Kanoda
35. <i>Casearia tomentosa</i>	Beri
36. <i>Cassia arborea</i>	
37. <i>Cassia fistula</i>	Amaltaas
38. <i>Cassia japonica</i>	
39. <i>Cassia siamea</i>	
40. <i>Cassia tora</i>	Chakaur
41. <i>Cedrus deodara</i>	Deodaru
42. <i>Cestrum nocturnum</i>	Raat Ki rani
43. <i>Cinnamomum temala</i>	Dalchini
44. <i>Citrus medica</i> (= <i>C. aurantifolia</i>)	Nibu
45. <i>Citrus reticulata</i>	Narangi
46. <i>Cleistanthus collinus</i>	Garari, Jirhool
47. <i>Clerodendron infortunatum</i>	Bhant
48. <i>Cochlospermum religiosum</i> (syn. <i>C. gossypium</i>)	Gongal, Galgal
49. <i>Croton oblongifolius</i>	Bhasondh
50. <i>Cuscuta reflexa</i>	Akashbel, Amarlat
51. <i>Cynodon dactylon</i>	Doob ghas
52. <i>Cyperus rotundus</i>	Modha ghas
53. <i>Dalbergia sissoo</i>	Sisham (desi)
54. <i>Dendrocalamus strictus</i>	Bans
55. <i>Diospyros melanoxylon</i>	Kend, Tendu
56. <i>Dodonaea viscosa</i>	Vilayati mehndi
57. <i>Elacodendron glaucum</i>	Jamraasi, Ratan garur
58. <i>Emblica officinalis</i> (syn. <i>Phyllanthus emblica</i>)	Aonla
59. <i>Eugenia hyneana</i>	Kathjamun
60. <i>Eugenia jambolana</i>	Jamun
61. <i>Eulatiopsis binata</i>	Sawai
62. <i>Ficus bengalensis</i>	Barh
63. <i>Ficus glomerata</i>	Goolar
64. <i>Ficus infectoria</i>	Pankar
65. <i>Ficus religiosa</i>	Pipal
66. <i>Flemingia chappar</i>	Galphuli
67. <i>Gardenia latifolia</i>	Paprot
68. <i>Gardenia turgida</i>	Fetra, Karhar
69. <i>Garuga pinnata</i>	Ghoghar, Kharpat, Kainkar
70. <i>Gloriosa superba</i>	Kaalhari
71. <i>Gmetina arborea</i>	Gamhaar
72. <i>Grewia elastica</i> (syn. <i>G. tiliaefolia</i>)	Dhaaman
73. <i>Hardwickia binata</i>	Aanjan
74. <i>Helianthus annuus</i>	Suryamukhi
75. <i>Helicteres isora</i>	Marurphal, Kapaasi
76. <i>Holarrhena antidysenterica</i>	Indrajawa, Koraiya
77. <i>Hymenodictyon excelsum</i>	Bhorsaal, Bhurkund
78. <i>Indigofera pulchella</i>	Neel
79. <i>Ipomoea batatas</i>	Sakarkand

80. <i>Jasminum pubescens</i>	Chameli
81. <i>Juglans regia</i>	Akhrot
82. <i>Lagerstroemia parviflora</i>	Sidha, Dhons
83. <i>Lannea grandis</i> (syn. <i>Odina wodier</i>)	Moin, Jhingan, Doka
84. <i>Lantana camara</i> (syn. <i>L. aculeata</i>)	Phutus. Kuri
85. <i>Lawsonia inermis</i>	Menhdi
86. <i>Loranthus ligustrinus</i>	Band
87. <i>Lycopersicum esculentum</i>	Tamaatar
88. <i>Madhuca latifolia</i> (syn. <i>Bassia latifolia</i>)	Mahuwa
89. <i>Mallotus philippinensis</i>	Roli, Rori
90. <i>Mangifera indica</i>	Aam
91. <i>Mimosa indica</i>	Lajwanti
92. <i>Mimusops elengi</i>	Moulshri
93. <i>Mitragyna cardifolia</i>	Gurikaram
94. <i>Morus</i> spp.	Shahtoot
95. <i>Mucuna prurita</i>	Bhalpakshi
96. <i>Murraya exotica</i>	Kaamini
97. <i>Nyctanthes arbor-tristis</i>	Harsingaar
98. <i>Ocimum sanctum</i>	Tulsi
99. <i>Opuntia dillenii</i>	Naagfani
100. <i>Oroxylum indicum</i>	Jaymangal, Sonapatha
101. <i>Ougeinia dalbergioides</i>	Sandan, Pandan
102. <i>Pandanus odoratissimus</i>	Keora
103. <i>Phoenix acaulis</i>	Khajoor
104. <i>Piper longum</i>	Pipal (spice)
105. <i>Plumeria aculeata</i>	Champa
106. <i>Pongamia glabra</i>	Karanji, Karonj
107. <i>Prunus communis</i>	Alubukhaara
108. <i>Pterocarpus marsupium</i>	Bija-paisar
109. <i>Pyrus communis</i>	Nashpati
110. <i>Ricinus communis</i>	Rendi
111. <i>Saccharum munja</i>	Sarkanda
112. <i>Saccharum spontaneum</i>	Kashighas
113. <i>Saccopetalum tomentosum</i>	Kaari
114. <i>Santalum album</i>	Chandan
115. <i>Saraca indica</i>	Ashok
116. <i>Schleichera oleosa</i> (syn. <i>S. trijuga</i>)	Kusum
117. <i>Semecarpus anacardium</i>	Bhelwa, Marking nut tree
118. <i>Shorea robusta</i>	Saal
119. <i>Sida cordifolia</i>	Variyaar
120. <i>Smilax macrophylla</i>	Ram datwan
121. <i>Solanum melongena</i>	Baingan
122. <i>Solanum tuberosum</i>	Aaloo
123. <i>Soymida febrifuga</i>	Roin
124. <i>Sterculia urens</i>	Kullu, Kenwjhi
125. <i>Stereospermum suaveolens</i>	Pandar
126. <i>Tamarindus indica</i>	Imli

127. <i>Tamarix</i> sp.	Jhau
128. <i>Tectona grandis</i>	Saagwan
129. <i>Tephrosia candida</i>	Kulthi, Boga
130. <i>Terminalia arjuna</i>	Arjun, Kahuwa
131. <i>Terminalia belerica</i>	Bahera
132. <i>Terminalia chebula</i>	Harra
133. <i>Terminalia tomentosa</i>	Saain, Aasni
134. <i>Vitex negundo</i>	Nirgud, Sindwaa
135. <i>Wrightia tomentosa</i>	Dudhi
136. <i>Zizyphus mauritiana</i> (syn. <i>Z. jujuba</i>)	Ber
137. <i>Zizyphus oxyphylla</i>	Beri
138. <i>Zizyphus xylopyra</i>	Ghont, Kathber

HAZARIBAGH NATIONAL PARK

Scale 3" = 3 Miles (4 8279 Kms)



- I N D E X
- Cultivated land
 - Rivulets
 - Patna-Ranchi road
 - Forest road
 - Watch Tower
 - R.H. Forest Rest House
 - Dam
 - Water fall
 - Highest peak