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Skippers Taken on the Frank C. Johnson Entomological Expedition to Peru, with Distributional and Ecological Notes (Lepidoptera, Hesperiidae)

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INTRODUCTION

The material for the present paper was taken in Peru by the author during a nine-month collecting trip, September 15, 1946, to June 15, 1947, which was made for the Department of Insects and Spiders of the American Museum of Natural History and sponsored by the late Mr. Frank C. Johnson. Its purpose was to collect all orders of insects and spiders from as many localities as possible, with particular attention to the valleys of the numerous streams that make up the headwaters of the Amazon. Thirty-one regions were visited, most of them in the interior of central and southern Peru, the others along the west coast. Elevations varied from 600 feet to 10,000 and 12,000 feet. Some of the collecting stations were revisited in order to obtain specimens at a different season. Hesperiidae were taken at 19 of these collecting stations. Detailed notes on these localities follow.

Plans for the trip called for special attention to be paid to those groups on which the Museum had active workers or work in progress. These included the spiders, Coleoptera, Diptera, Hymenoptera, and Lepidoptera, with special emphasis on the Saturniidae and the genus *Anaea*. Therefore no attempt was made to get as many Hesperiidae as possible. They

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were collected only when easily obtained and when taking them would not interfere with something more specifically desired. More intensive hesperiid collecting would have yielded a great many more species, as well as more extensive locality and distributional records. One hundred and twenty-six species were taken. Some are new to the American Museum of Natural History collections. Five female specimens remain unidentified. Evans (1951, 1952, 1953) was followed in the arrangement of the subfamilies Pyrrhopyginae and Pyrginae.

ACKNOWLEDGMENTS

I wish to thank Dr. Mont A. Cazier, Chairman and Curator, and Dr. Frederick H. Rindge, Associate Curator, of the Department of Insects and Spiders, the American Museum of Natural History, for the time taken to read the manuscript and for their helpful suggestions towards its improvement. I wish also to thank Dr. John T. Zimmer, Chairman and Curator of the Department of Birds, the American Museum of Natural History, who has spent many years in Peru in the study of the distribution of the birds and of the zoogeography of this country, for his helpful advice on the life zones and physiography of Peru. To Miss Majorie Statham, I extend my thanks for preparing the map of Peru showing the collecting stations visited. Special thanks go to Mr. Ernest L. Bell, Research Associate, Department of Insects and Spiders, the American Museum of Natural History, without whose help this paper could never have been written. Besides making all the determinations and arranging the order of the subfamily Hesperiinae, he also read the finished manuscript and was always willing to take the time to suggest changes.

PHYSIOGRAPHIC ACCOUNT OF PERU

Peru, one of the smaller republics of South America, has within its approximately 482,000 square miles more different kinds of country, with their corresponding ecological conditions, than almost any other area of similar size in the world. Travel for only a few miles in any direction from almost any point leads to an entirely different type of country (Goodspeed, 1941). Innumerable ridges and the associated valleys criss-cross Peru in every possible direction. Streams cataract down rocky gorges or lie steaming in sweltering valleys. Swamps are numerous and impenetrable. In the nine months spent in this region the collector could gather only the most casual sampling. It will require the lifetimes of several entomologists working continuously to arrive at a comprehensive view of the insect fauna of Peru.

In general Peru is crossed from north to south by three mountain ranges that make up the Andes. The westernmost, the Cordillera Occidental, begins to rise just in from the sea, leaving a very narrow coastal plain, which is sandy, arid, and nearly barren, except where watered by the few mountain streams or by irrigation. From its sea-level base the Cordillera Occidental rises steeply to its lowest passes, which are at about 16,000 feet, while its peaks ascend much higher, to over 20,000 feet. Snow line in the Andes varies from about 15,000 to 19,000 feet but is commonly near the 17,000-foot mark.

The Cordillera Occidental range is separated from the middle range, the Cordillera Central, in northern Peru by the Marañon River and in central and southern Peru by the Junin Plateau. The Marañon, starting high in the mountains near the divide at Cerro de Pasco, rapidly increases to a large, tumultuous river which has carved a deep and narrow valley between the two ridges. Its general course is north-northwest until it crosses the fifth parallel, where it swings directly to the east, and flows down to meet the Huallaga, the Ucayali, and the Amazon.

The Junin Plateau is a rather flat, arid, treeless plain, with an average altitude of 12,000 feet, which stretches out for miles. South of this plateau the mountain ranges merge into a jumbled mixture of intercepting ridges.

The Cordillera Central rises to about the same altitude as the Cordillera Occidental. But its higher elevations usually have more snow, and its rainfall is heavier, because it is more exposed to the moisture-laden east winds. In northern Peru the Cordillera Central is separated from the extreme eastern range, the Cordillera Oriental, by the Huallaga River Valley, which parallels and has the same general characteristics as the Marañon. Not so large as the latter, the Huallaga is nevertheless a mighty river and an important tributary of the Amazon.

In central Peru the Cordilleras Central and Oriental have a tendency to merge in a jumbled series of cross ridges, while a little farther to the south they are separated by the Apurimac, a good-sized river, and the Urubamba, which is not quite so large. At about the eleventh parallel these two rivers suddenly cut through the Oriental range, to join and form the Upper or Alto Ucayali.

The eastern range is not nearly so high as the central and western ranges; except for individual peaks, it is seldom much over 10,000 feet, with its few passes at about 6000 feet. From the Cordillera Oriental the land slopes to the east, steeply at first and then more gradually, to form the western margin of the Amazonian basin. Although this range is comparatively low, it receives the largest portion of the moisture carried by

the winds from the Atlantic Ocean 2000 miles away. Storms beat against the whole length of its eastern slope. Rains that fall in the northern and central part of Peru drain into the Ucayali River, making it one of the extremely large tributaries of the Amazon. As do the Huallaga and the Marañon, the Ucayali follows a north-northwesterly course, gradually swinging eastward after it has absorbed these two rivers, which had already joined about 150 miles to the west.

LIFE ZONES OF PERU

Life zones in Peru are too numerous and too complicated to be discussed in any detail in the present paper. In a country so broken by irregular and frequently interlocking ranges, which are narrowly separated by such deep valleys, one obstructing ridge may receive torrents of rain, while another only a short distance away, but less favorably exposed, receives little or none at all. Cold winds sweeping down from ice-covered peaks chill the regions they pass over, while other areas, not very far away, bask in tropical warmth under the nearly vertical sun.

All Peru is in the Tropical Belt (approximately latitudes 0° to 18° S.). The extreme variation in altitude, from about 600 feet to well over 20,000 feet, modifies this tropical influence considerably, with the result that all the generally recognized life zones (Chapman, 1921) typical of these regions will be found at some place in the country. Each of these zones may be large and continuous in one part of Peru and restricted to a small isolated area in another part.

The most outstanding of these zones is, of course, the Lower Tropical Zone. This is usually divided into two types according to the amount of rainfall: the Humid Lower Tropical Zone and the Arid Lower Tropical Zone. The first is by far the largest and most conspicuous. It includes all eastern Peru from its Brazilian and Bolivian boundaries up the eastern slope of the Cordillera Oriental to about 4000 feet. It is, in fact, the western part of the great Amazonian basin which extends 2000 miles to the east and an equal distance north and south. This Humid Lower Tropical Zone does not stop abruptly on the Oriental foothills; it penetrates into the Andean country for many miles by following up the Marañon, the Huallaga, the Apurimac, and other rivers. In these valleys it does not reach the altitude attained on the eastern slopes, but merges with the Humid Upper Tropical Zone at about 1500 or 2000 feet.

High temperatures and heavy rainfall are the chief climatic characters of the Humid Lower Tropical Zone. Rain is abundant during the dry season and excessive throughout the wet season. The vegetation is rank, with a rich ground cover of herbaceous plants, tall bushes, and young

trees struggling to reach the sunlight. Over this spreads a thick middle layer of tall trees with interlocking crowns through which little sunlight is able to penetrate. Every available surface is matted with orchids, bromelias, and other epiphytes, while long, swinging lianas drop from the branches of the taller trees. Overtopping all are the jungles giants, their trunks reaching many feet above the general canopy, their crowns flat and massed with blossoms. This zone is not restricted to the Amazon basin but extends, although somewhat broken up, through Central America into southern Mexico (Goldman, 1951), and southward into southern Brazil.

The Arid Lower Tropical Zone is not so widespread, but it is equally distinctive and readily recognized. Here there is very little rainfall, and the vegetation is consequently sparse in distribution and limited in growth. In Peru this zone, except for a few localized areas among the eastern foothills, reaches its extreme condition on a narrow strip 20 to 60 miles wide and stretching for over 1000 miles along the Pacific coast. From the water's edge it extends up the steep slope of the Cordillera Occidental to about 1500 feet in altitude. The less than 2 inches of annual rainfall over this region does not allow much plant growth and produces one of the most nearly desert-like conditions in the Americas. Where streams from the mountains cut across this strip, or where irrigation is possible, tropical vegetation flourishes with astonishing luxuriance. These areas are known as *las lomas* in Peru and show many of the characteristics of the Humid Lower Tropical Zone. In eastern Peru there are occasional small, low-lying areas that for one or another topographic reason receive so little rain that their condition approaches the Arid Lower or Arid Upper Tropical Zones.

The Upper Tropical Zone differs from the Lower Tropical Zone by its generally lower temperatures, decreased rainfall, and of course its higher altitude. In this less tropical condition the trees are not so tall and the vegetation is not nearly so rank. It also divides into two types, the Humid and the Arid. The edges of the Upper and the Lower Tropical Zones merge imperceptibly, the Upper beginning where the Lower leaves off, and continuing up the mountain slopes or following up the river valleys. It ranges in altitude in its various locations from around 2000 feet to 6000 feet, and in some places is considerably higher. The Humid part of the Upper Tropical Zone is largely confined to the valley bottoms, while the surrounding mountain slopes with their more limited rainfall and excessive drainage often become quite arid, although enjoying a warm temperature. Here the vegetation is dwarfed and somewhat scanty, while the presence of scattered cacti indicate a simulating desert condition.

The Upper Tropical Zone is not confined to the Peruvian Andes, but extends northward, although somewhat broken, through the lower mountains of Ecuador, Colombia, Central America, and into southern Mexico and Yucatan (Goldman, 1951). From Colombia a somewhat broken side branch extends across South America through Venezuela and the Guianas. Southward from Peru this zone spreads through Bolivia into northern Chile and Argentina.

The next two zones exist in no great continuity. They are broken patches throughout the mountains, varying greatly in their size, continuity, and relations. The Subtropical Zone is really a transition area connecting the Upper Tropical Zones with the Temperate Zone above it. It begins at altitudes sometimes as low as 5000 feet and may persist as far up as 9000 feet. Its average altitude is around 6000 feet. The considerably less tropical vegetation, shorter trees, and less luxuriant ground cover that characterize this area are all comparatives with the Upper Tropical Zone. Frost rarely occurs in the Subtropical Zone.

The Temperate Zone ranges from 8000 to 12,000 feet, with 9000 feet being average. This is an area of scattered trees, bushes, and scanty ground cover. It is strikingly like a poor deciduous forest in the United States. Frequently the trees are bent or ill-shaped by the strong winds which prevail during a large part of the year. Where rain falls in abundance the forests of the Temperate as well as of the Subtropical Zone are often referred to as cloud-forests. Frost sometimes occurs in the Temperate Zone.

The last and highest life zone is the Puna, sometimes called the Pãramo, especially farther north in Ecuador and Colombia. It extends from where tree and bushy growth leave off to the lower limit of the snow line. This places it at an altitude of 11,000 to 15,000 feet. Towards the lower part of this zone the *ichu,* or bunch grass, grows in abundance and stretches out for miles, without a tree in sight. Higher up the grass is shorter and less luxuriant. Frequently intermixed is a cactus of a small-leaved *Opuntia* species, growing in great rounded cushion-like masses, which at a short distance might well be mistaken for a patch of snow. The sun shines a good part of the time, making the days bright and pleasant, but the temperature never is very high, and at night it frequently drops below freezing. Cold rains or snow, accompanied by strong winds, often sweep in to change the brightness to dreariness. The wild life of this high country is extremely limited.

COLLECTING STATIONS

Following are short descriptions, with a few ecological notes, of the

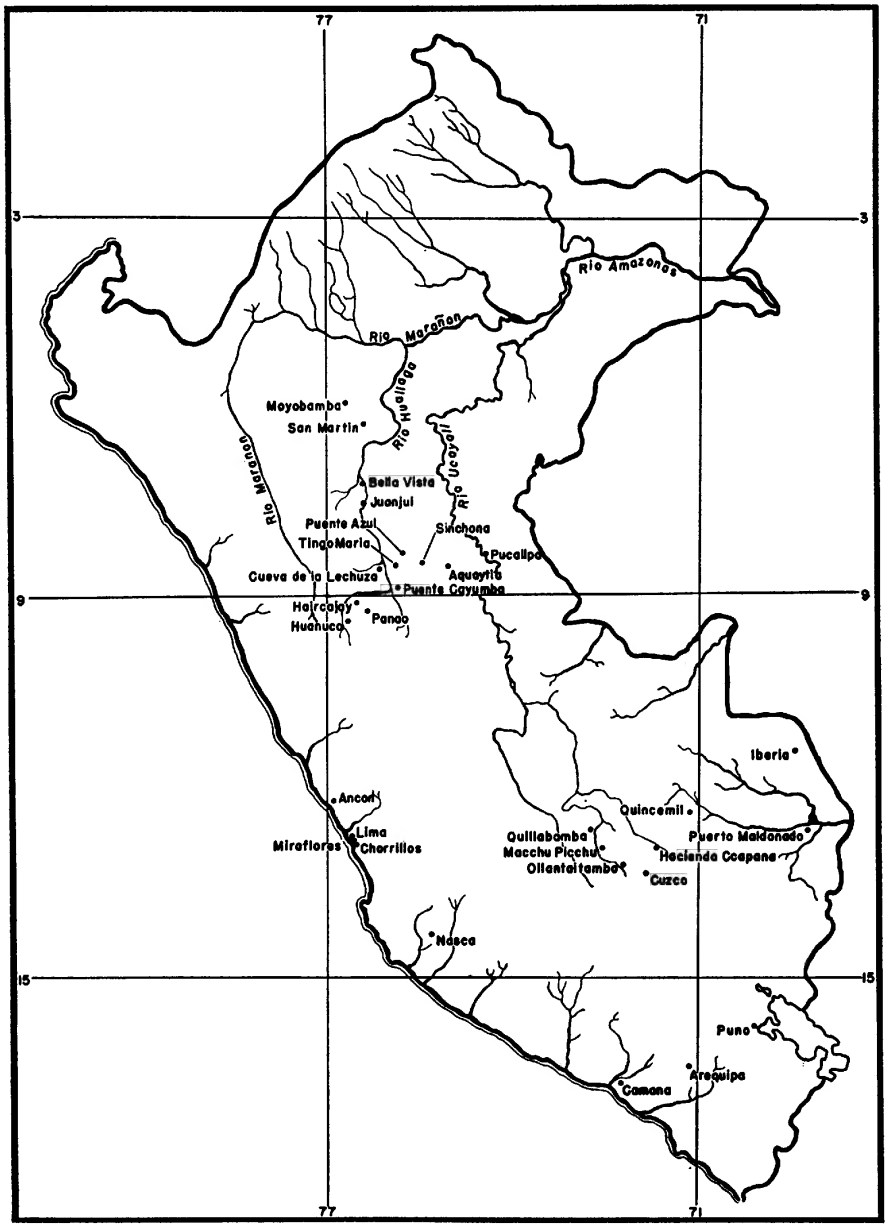

FIG. 1. Map of Peru, showing collecting stations visited on the American Museum of Natural History entomological expedition to Peru in 1946–1947.

19 localities in Peru where Hesperiidae were collected, and a list of the species secured at each location. The coordinates and altitudes are only

approximate, as accurate surveys for all parts of Peru have not yet been made. As might be expected, the spelling of place names varies considerably in different publications. This paper uses the spelling adopted by the American Geographical Society.

Miraflores, Lima, Peru

This is a residental suburb of Lima, about 15 kilometers south of the city, at latitude 12° 07′ S., longitude 77° 02′ W. The elevation is low, rising from sea level to about 100 feet. Miraflores is on the shore of the Pacific and, like Lima and this entire coastal region, has very little rainfall, usually less than 2 inches. The soil is sandy, but where it is irrigated produces a paradise of flowers and trees. The nearly continuous fogs that hang over this region five months of the year, August to December, also provide some moisture. Nevertheless this region is an extreme on the arid side of the Arid Lower Tropical Zone.

Only one species of skipper (two specimens) was collected at Miraflores:

78. *Hylephila phyleus* (Drury)

Huanuco, Huanuco, Peru

A town of considerable size in the Huallaga River Valley, at latitude 9° 56′ S., longitude 76° 14′ W., altitude about 6500 feet.The river is quite rapid at this point, although from 100 to 150 feet broad. It is unnavigable except to an occasional dug-out in the quieter places, and the water runs yellow with sediment.

The town occupies the width of the valley, which is less than a mile across at this point. Up and down the valley, wherever water can be diverted for irrigation, there are crops, chiefly of rice and corn but also of vegetables in great variety. Small orchards of various tropical fruit trees are scattered about. The farms are fenced with better than head-high walls. Some of the homes have rather extensive yards; nearly all have a few trees that provide fruit and shade.

The valley itself is hemmed in by arid, gravelly or sandy hills, rising another 2000 or 3000 feet. They are generally reddish in color, varying from yellow to purple as the light changes. I have no records for the rainfall at Huanuco, but it must be rather scanty and limited to a few months of the year. The Huanucans have tried to take advantage of any rain falling on the hills above them by constructing ditches around the face of the slope, which lead in a gradual decline to a place of distribution. However, the quantity of water obtained in this way is very meager, and

the rich vegetation of Huanuco depends on an irrigation system attached to the Huallaga River. Huanuco is on the borderline of the Arid Upper Tropical and the Subtropical Zones.

One species of skipper was taken here:

77. *Heliopetes omrina* (Butler)

PANAO, HUANUCO, PERU

About 15 miles down the valley from Huanuco, a road turns off to the right and climbs over the ridge that separates the Rio Panao at this point from the Rio Huallaga. At the highest place on the ridge, over 9000 feet, is the tiny village, a mere cluster of huts, of Haircajay. No skippers were collected here, although a few beetles were taken from under stones.

The road then quickly drops down, crosses the Rio Panao, and climbs part way up the opposite slope to the little town of Panao, at about latitude 9° 51′ S., longitude 75° 58′ W. The town extends up and down this slope for perhaps 2000 feet, but its general altitude is at about 8000 feet. Although in a generally arid region, gardens flourish on every hand, for water is brought in open ditches from higher on the mountain. Although somewhat above the altitudinal limits, Panao is probably still in the Arid Upper Tropical Zone, with some parts of it taking on the appearance of the Subtropical or Temperate Zone. I spent one day, January 26, 1947, at Panao.

Only one hesperiid, a rather rare species, was taken here:

81. *Hylephila basistrigata* (Eaton)

CAYUMBA PUENTE, HUANUCO, PERU

A very small village located in the Huallaga River Valley, at about latitude 9° 28′ S., longitude 75° 53′ W., with an elevation of about 2700 feet. Cayumba Puente is at the point where the highway, on reëntering the Huallaga Valley, crosses the river on a small steel bridge. The river at this point is extermely narrow, and the water rushes with tremendous force between two close outcropping ledges. The Incas spanned this gap, in years past, with a liana suspension bridge. The bridge has been replaced many times with ever larger structures, and the road has been widened, but its course and the ancient village have changed but little.

The great clouds of water vapor tossed into the air from the tumultuous river and the hot sun overhead create in this narrow valley a tropical paradise. Bromelias, orchids, and other epiphytes cluster on every exposed rock and tree limb. Lianas climb to the top of the tree canopy and by their great weight pull down the weaker trees. Only the giant trees

are able to bear the load. The ground is hip deep with moss, ferns, and humus. Although quite Amazonian in character, this area is small in extent, and as it lies in the Humid Upper Tropical Zone, it must be considered a part of that zone.

One day, October 24, 1946, was spent here. Butterflies were everywhere, and 113 species of Lepidoptera were taken. Of these, 14 were Hesperiidae, as follows:

1. *Pyrrhopyge aziza troja* Evans
2. *Pyrrhopyge proculus draudti* Bell
3. *Pyrrhopyge sergius sergius* Hopffer
8. *Jemadia sosia* (Mabille)
11. *Oxynetra semihyalina* Felder
46. *Bolla tetra boliviensis* (Bell)
59. *Mylon menippus* (Fabricius)
64. *Antigonus erosus* (Hübner)
66. *Antigonus mutilatus* Hopffer
69. *Achlyodes pallida* (Felder)
70. *Ebrietes infanda* (Butler)
71. *Ebrietes anacreon* (Staudinger)
73. *Cycloglypha tisias* (Godman and Salvin)
76. *Pyrgus oileus orcus* (Stoll)

Tingo Maria, Huanuco, Peru

About 25 miles farther down the Huallaga Valley from Cayumba Puente at about latitude 9° 08′ S., longitude 75° 57′ W., and an elevation of 2200 feet, is the town of Tingo Maria. It is on the eastern bank of the river and extends along the valley for about a mile. An agricultural experiment station, established by the United States during World War II, a small hospital, an electric power plant, and one of the lovely Peruvian Tourista Hotels, are located here. The hotel became my headquarters, from which I made several collecting trips.

The valley around Tingo Maria varies from one-half a mile to nearly a mile and a half in width. It is hemmed in by high limestone mountains, densely covered with tropical vegetation, except where the slopes are too steep to support heavy growth. Almost directly across from the hotel the Rio Monson empties into the Huallaga. At its mouth the Monson breaks up to form a large delta-like area of sand bars and islands. Some are low and barren and under water when the river rises. Others are high enough to be permanent and support an extensive tree growth.

This entire region is in the Humid Upper Tropical Zone, separated from the Humid Lower Tropical Zone by the Cordillera Azul, the Blue Cordilleras, a spur of the eastern range of the Andes. The Azul Range

rises to an altitude of about 10,000 feet, with a pass at the Divisoria at about 5000 feet.

Many of the insects of the Tingo Maria area show a close affinity to those of the Amazonian part of the Humid Lower Tropical Zone. They are Amazonian forms that may have moved up the Huallaga for the nearly 500 miles from the region of Iquitos. Or they may have come more directly through the pass at the Divisoria, helped along by the strong easterly winds. On the other hand there are many species that are apparently indigenous to the region of which the Tingo Maria area is a small part. Their general range is from 1500 to 5000 or 6000 feet. However, some of these species, reversing the upward trend of the Amazonian migrants, have pushed down the valleys to invade the margins of the Lower Tropical Zone. True representatives of the Upper Tropical Zone tend to be not so large or brightly colored as the insects of the Lower Tropical Zone.

Other life shows a similar comparison. Although rainfall is plentiful and temperature is nearly constant and fairly high, the trees are not so tall, the epiphytes not so massed, the lianas not so vigorous, the ground cover is not so rank, and the variety is more limited, than in the Amazonian region.

Tingo Maria was my headquarters during two periods, from October 6, 1946, to January 24, 1947, and from May 13 to 31, 1947. Because so much time was spent in and around the town between my various trips to more distant areas, the greatest number of species show this locality name. Eighty-two hesperiids were taken here:

5. *Pyrrhopyge rubricollis* (Sepp)
6. *Pyrrhopyge cometes staudingeri* Plötz
9. *Jemadia menechmus* (Mabille)
10. *Jemadia hewitsonii albescens* Röber
12. *Epargyreus socus dicta* Evans
13. *Epargyreus exadeus exadeus* (Cramer)
14. *Epargyreus clavicornis clavicornis* (Herrich-Schäffer)
16. *Chrysoplectrum bahiana bahiana* (Herrich-Schäffer)
18. *Urbanus pronta* Evans
19. *Urbanus dorantes dorantes* (Stoll)
20. *Urbanus teleus* (Hübner)
21. *Urbanus simplicius* (Stoll)
22. *Urbanus doryssus doryssus* (Swainson)
24. *Astraptes fulgerator fulgerator* (Walch)
25. *Astraptes creteus creteus* (Cramer)
26. *Astraptes anaphus anaphus* (Cramer)
27. *Autochton neis* (Geyer)
28. *Autochton longipennis* (Plötz)

29. *Autochton zarex* (Hübner)
30. *Autochton jao* (Mabille)
31. *Dyscophellus porcius porcius* (Felder)
32. *Nascus phocus* (Cramer)
33. *Nascus solon solon* (Plötz)
34. *Celaenorrhinus shema disjunctus* Bell
35. *Celaenorrhinus shema songoensis* Draudt
36. *Celaenorrhinus eligius eligius* (Stoll)
37. *Polyctor polyctor* (Prittwitz)
39. *Nisoniades peruana* (Williams and Bell)
40. *Nisoniades indistincta* (Williams and Bell)
43. *Gorgopas trochilus* (Hopffer)
45. *Bolla morona* (Bell)
47. *Bolla tetra tetra* (Mabille)
48. *Staphylus lizeri* (Hayward)
49. *Staphylus mazans ascalaphus* (Staudinger)
52. *Gorgythion begga pyralina* (Möschler)
53. *Ouleus fridericus fridericus* (Geyer)
54. *Quadrus deyrollei porta* Evans
56. *Haemactis sanguinalis* (Westwood)
57. *Potamanaxas effusa effusa* Draudt
59. *Mylon menippus* (Fabricius)
62. *Xenophanes tryxus* (Stoll)
63. *Antigonus nearchus* (Latreille)
64. *Antigonus erosus* (Hübner)
70. *Ebrietas infanda* (Butler)
71. *Ebrietas anacreon* (Staudinger)
74. *Helias phalaenoides phalaenoides* Fabricius
76. *Pyrgus oileus orcus* (Stoll)
77. *Heliopetes omrina* (Butler)
78. *Hylephila phyleus* (Drury)
81. *Hylephila basistrigata* (Eaton)
83. *Polites vibex* subsp.
84. *Polites athenion* (Hübner)
86. *Atrytone myron* Godman
87. *Nyctelius nyctelius* (Latreille)
88. *Xeniades cecropterus* Draudt
90. *Thespieus aspernatus* Draudt
91. *Thoon modius* (Mabille)
92. *Rhinthon anthracinus* (Mabille)
93. *Rhinthon proximus* Bell
94. *Cobalus cannae* Herrich-Schäffer
96. *Cobalus decinea* (Hewitson)
97. *Eutychide complana* (Herrich-Schäffer)
98. *Euroto compta* (Butler)
100. *Euroto saramacca* Williams and Bell
101. *Phlebodes tiberius reticulata* (Plötz)
102. *Thargella caura* (Plötz)
103. *Papias sobrinus* Schaus
104. *Papias potaro* (Williams and Bell)

105. *Vehilius venosus* (Plötz)
106. *Vehilius forbesi* Williams and Bell
107. *Lerodea noctis* (Plötz)
108. *Lerodea tripunctata* (Latreille)
111. *Lerodea catocala* (Herrich-Schäffer)
112. *Anthoptus epictetus* (Fabricius)
113. *Carystus marcus* (Fabricius)
114. *Carystus artona* (Hewitson)
115. *Vettius phyllus* (Cramer)
117. *Eutocus quichua* Lindsey
118. *Callimormus gracilis* (Felder)
124. *Thracides antoninus* (Latreille)
125. *Perichares philetes marmorata* Scudder
126. *Pyrrhopygopsis telmela* (Hewitson)

Hacienda Puma Hwasi, Huanuco, Peru

About 10 miles down the Huallaga from Tingo Maria is the mouth of the Azul River, and some 2 miles up its valley is the plantation, or hacienda, Puma Hwasi. This is a Quechua name for a cave in the limestone mountain and means "home of the puma." The coordinates for this location are about latitude 9° 04′ S., longitude 75° 40′ W. Its elevation is about the same as that of Tingo Maria, 2200 feet, for the hacienda is well up the side of the mountain, overlooking the Azul River.

At one time heavy tropical growth covered the slopes, but the land has been fairly well cleared for the growing of tea, cocoa, and barbasco. Possibly for this reason it seemed drier here than at Tingo, but I still consider it to be Humid Upper Tropical Zone. The clearing and cultivation had greatly changed the natural life, and insects were surprisingly scarce. Although I visited this hacienda on several occasions, I took but one skipper:

44. *Bolla cupreiceps* (Mabille)

West Slope of the Cordillera Azul, Huanuco, Peru

This location is on the highway from Tingo Maria to Pucallpa, on the west slope of the Cordillera Azul as the road winds up to approach the pass at the Divisoria. The approximate coordinates are latitude 8° 54′ S., longitude 75° 40′ W. The elevation is about 4000 feet. Here are broken mountain slopes, often craggy and precipitous. The vegetation, wherever it could get a foothold, was rather rank. The trees were shorter, frequently bent and stunted by storms, and broken by small landslides and boulders that have crashed down on them from above. Its altitude places this location on the extreme border of the Humid Upper Tropical Zone. Two skippers were collected here:

89. *Thespieus dalmani* (Latreille)
118. *Callimormus gracilis* (Felder)

PUCALLPA, LORETA, PERU

Pucallpa is a typical Amazonian town, situated on the west bank of the Ucayali River, at about latitude 8° 26′ S., longitude 74° 36′ W., and, although over 2000 miles from the mouth of the Amazon, it is only about 600 feet above sea level. It is not very far within the western margins of the great Amazonian basin, but it is thoroughly Humid Lower Tropical Zone.

In the less disturbed areas around Pucallpa vegetation grows in the three-layer effect that is characteristic of this zone. The lower layer, some 20 to 30 feet high, is a thick mass of bushes, shrubs, and small trees, many of them dying from lack of light. Shade-enduring, usually herbaceous plants cover the ground to a depth of 3 to 4 feet. The middle layer consists of medium-sized trees and palms that have succeeded in the struggle for light, their bushy crowns interlacing and effectively shading the lower layer. Epiphytes cover these trees rather closely, and lianas saddle their branches. High above the middle layer towers a scattering of giant trees, their almost branchless trunks rising from great buttressed roots to disappear through the canopy overhead, where they spread their crowns 75 to 100 feet across. Every bit of space on them is festooned with epiphytic plant growth.

But Pucallpa is an old river town, and with people pushing farther and farther out over the years, not much of the original jungle forest is left. More and more the native conditions have succumbed to axe, saw, and fire. As everywhere in the Amazonian country, when the native cover is removed, sun and rain quickly leach out all the needed mineral salts, and the land either turns to swamp and washes away during the rainy season, or dries up and blows away during the dry season. After a few years the land is abandoned. Slowly vegetation does come back, a weedy, tangled, useless growth, quite different from the original. Only after many, many years will a once denuded land possess anything like the rich tropical jungle it once supported.

Fourteen days, September 4–18, 1946, were spent in the Pucallpa area. Only seven species of hesperiids were taken:

19. *Urbanus dorantes dorantes* (Stoll)
74. *Helias phalaenoides phalaenoides* Fabricius
76. *Pyrgus oileus orcus* (Stoll)
94. *Cobalus cannae* Herrich-Schäffer
99. *Euroto micythus* Godman
101. *Phlebodes tiberius reticulata* (Plötz)
107. *Lerodea noctis* (Plötz)

JUANJUI, SAN MARTIN, PERU

From Tingo Maria I followed down the Huallaga for a considerable distance, traveling by balsa-wood raft, airplane, horse, and foot. One of my first stops was at Juanjui, at about latitude 7° 13′ S., longitude 76° 42′ W., and approximately 1400 feet in elevation.

This is a small village of about 1000 people, mostly natives, scattered over the extremely broad flood plain on the west bank of the river. Low, rolling mountains, distantly separated, border the village. The river here has become two or three times as wide as at Tingo Maria, which is not far upstream. The current is swift, and the waters run yellow with sediment.

I place the region of Juanjui in the Humid Upper Tropical Zone, in spite of its low elevation, for it is a long way up the valley of the Huallaga from any connection with the Lower Tropical Zone. During the dry season the region takes on a few of the characteristics of the Arid Upper Tropical Zone. Five days, December 2–7, 1946, were spent in this area. Ten species of hesperiids were taken here:

52. *Gorgythion begga pyralina* (Möschler)
55. *Paches loxus loxana* Evans
61. *Carrhenes fuscescens bamba* Evans
64. *Antigonus erosus* (Hübner)
68. *Achlyodes thraso thraso* (Hübner)
70. *Ebrietas infanda* (Butler)
75. *Gesta gesta gesta* (Herrich-Schäffer)
95. *Cobalus virbius* (Cramer)
98. *Euroto compta* (Butler)
120. *Callimormus fabulinus* (Plötz)

SAN MARTIN, SAN MARTIN, PERU

A few miles downstream from Juanjui, one of the larger tributaries of the Huallaga, the Rio Mayo, joins the Huallaga from the northwest. The topography here is low, rolling foothills with very much higher mountains to the northeast. A short distance up the valley of the Mayo is San Martin, formerly known, and still frequently appearing on maps, as Tarapota. Situated at latitude 6° 31′ S., longitude 76° 19′ W., at an altitude of about 1600 feet, this fair-sized village is built on the side of a foothill sloping southwest to the river. From the mountains to the northeast several small streams flow down, some through the village, following ditches along the street. There are others on each side of the town. Some of the streams have cut deep barrancas.

Although most of the land adjacent to San Martin has been cleared, the surrounding mountains are still heavily forested. During the dry season this region approaches a semi-arid condition, but it does not last

long. In the wet season the rains come down in torrents. The vegetation is typical of the Humid Upper Tropical Zone.

December 13–18, 1946, and December 22–25, 1946, were spent in this area. Ten species of skippers were obtained:

37. *Polyctor polyctor* (Prittwitz)
42. *Nisoniades castolus* (Hewitson)
48. *Staphylus lizeri* (Hayward)
53. *Ouleus fridericus fridericus* (Geyer)
67. *Achlyodes busirus heros* Ehrmann
75. *Gesta gesta gesta* Herrich-Schäffer
76. *Pyrgus oileus orcus* (Stoll)
82. *Polites vibex praeceps* (Scudder)
84. *Polites athenion* (Hübner)
119. *Callimormus corades* (Felder)

Moyobamba, San Martin, Peru

Moyobamba is farther up the Mayo Valley from San Martin, at about latitude 6° 03′ S., longitude 76° 58′ W., and about 2800 feet in altitude. At this point the Rio Mayo is rather narrow, and the town is located some little distance from the river. On either side of the town several small streams have cut very deep barrancas, hemming it in on a somewhat elevated, mesa-like, flat, clayey plain. Storms sweep down out of the surrounding mountains at a moment's notice, almost filling the barrancas with muddy water. During the dry season this region approaches an arid condition. However, there are enough scattered showers, together with the high temperatures, to make the vegetation richly tropical. Bananas, papayas, and many other tropical fruits flourish here. It is not, however, a Lower Tropical Zone area, such as might be found at higher elevations farther east. Throughout all this Andean foothill region the river valleys become Upper Tropical Zone at a comparatively low elevation. Moyobamba is typically Humid Upper Tropical Zone.

Four days, December 18–22, 1946, were spent collecting in this area. Only four species of skippers were taken.

20. *Urbanus teleus* (Hübner)
101. *Phlebodes tiberius reticulata* (Plötz)
109. *Lerodea labdacus* (Godman)
117. *Eutocus quichua* (Lindsey)

Ollantaitambo, Cuzco, Peru

This is a delightful little Inca-Peruvian village in the valley of the Rio Urubamba at about latitude 13° 13′ S., longitude 72° 20′ W. The floor of the valley has an elevation of about 9200 feet and is relatively flat. At this

point the valley is widened considerably, in comparison to its narrowness both up and down the river from the village, by the cutting back of a small stream which enters the valley from the northeast. Even at its widest the valley is hemmed in by towering mountains that rise abruptly to 15,000 feet. Some of the snow-capped peaks of the Vilcabamba Range are visible from the floor of the valley.

Where irrigation is possible, crops do very well in this high semitropical country. The Incas had a highly developed system here of irrigated terraces. Present-day inhabitants use such of the old terraces as remain intact, but where the retaining walls have given way, no repairs are attempted, and no new terraces are constructed.

The surrounding mountains and unirrigated places, which compose by far the greater part of this vast region, are semi-arid, thinly covered with woody, low-growing plants and shrubs, bunches of coarse grass, and scattered cacti. Scores of sheep are herded high up on the face of the mountain. Condors are constantly soaring about the higher crags. There are very few trees except around the houses or gardens under irrigation. Insect life was not abundant. Tenebrionid beetles wandered about or hid under stones. Dragonflies and damsel flies cruised or fluttered along the river and the irrigation ditches. Of the butterflies the Pieridae were seen most frequently. This area appears to be in the Temperate Zone on the arid side.

Although two visits were made to this region, February 28 to March 5 and again March 22–27, 1947, only one specimen of a skipper was taken:

80. *Hylephila boulleti* (Mabille)

MACCHU PICCHU (PUEBLA), CUZCO, PERU

Farther down the Urubamba Valley is the little village of the present Macchu Picchu, at approximately latitude 13° 08′ S., longitude 72° 34′ W., and about 6490 feet above sea level. The village is restricted to one street; the homes and tiny *tiendas* cling to the river bank on one side of the only road, and on the other side back up against a mountainside that rises cliff-like for 3000 feet.

On both sides of the town the valley is frequently only wide enough to accommodate the road. A narrow-gauge railroad runs down the center of the vehicular road. It ends 2 miles farther down at the foot of the Macchu Picchu ruins.

Violent storms swirl around these mountains, making the vegetation much more luxuriant than it is just a few miles farther up at Ollantaitambo. Also the turbulent river sprays so much moisture into the air as

to form a nearly constant mist or fog which drifts throughout the valley, particularly at night, but persisting in the morning until the sun is quite high. Many kinds of epiphytes cling to the trees and cliffs. The trees are not large, for there are few places with sufficient soil and adequate foothold to support them. Every tree from the ground to the twigs wears a gray and shaggy coating of lichens.

Because of the narrow valley, collecting was possible only along the railroad track and the narrow river banks. There were here, however, an assortment of plants in bloom. Lupines and other legumes and some Compositae lured a few Lepidoptera to pause long enough for me to collect them. Papillios and other strong-winged species flew disappointingly out of reach.

The village of Macchu Picchu is in the Subtropical Zone with a tendency towards a cloud forest. During the four days, March 19–22, 1947, spent here, three species of skippers were taken:

107. *Lerodea noctis* (Plötz)
110. *Lerodea coroicana* (Weeks)
116. *Eutocus lucia* (Capronnier)

Macchu Picchu (Ruins), Cuzco, Peru

Overtopping by 3000 feet the village of Macchu Picchu are the famous ruins, at latitude 13° 07′ S., longitude 72° 36′ W., with an elevation of about 9500 feet. They were built on the top of an isolated promontory rising from a loop of the Urubamba River. Sheer cliffs drop down to the water on nearly all sides, with only a narrow ridge connecting it with the mountain ranges behind.

The springs that once supplied this ancient village have stopped flowing, and now water is provided only by the rather frequent rains. However, heavy mists from the river below keep the atmosphere saturated; all vegetation and everything else is dripping wet from evening until midmorning or later.

Ordinarily the rain, the mist, and the temperature would make this area a high mist forest, but no trees are permitted to grow around the ruins, for fear of the upheaving action of their roots. Furthermore, it is unlikely that there were many trees in Macchu Picchu when the Incas lived here. Farther back, along the connecting ridge, scrubby trees and dense bushy growth bar any ordinary means of getting into the region, except along a few faint trails, infrequently traveled. This high region is in the Temperate Zone.

It was difficult to collect Lepidoptera around the ruins, for they could so easily fly out over the surrounding abyss and return to any convenient

spot beyond one's reach. Two visits were made here, February 20–21, and March 5–8, 1947, but only two specimens of skippers were taken:

19. *Urbanus dorantes dorantes* (Stoll)
46. *Bolla tetra boliviensis* (Bell); this specimen differs from that taken at Cuyumba Puente, which is a typical example, by the presence of a very small, distinct, apical dot on the under side of the wing

Quillabamba, Cuzco, Peru

Still farther down the Urubamba Valley is tiny Quillabama, at about latitude 12° 49′ S., longitude 72° 43′ W. Its elevation is about 3400 feet. Although only 25 miles from Macchu Picchu, as a bird flies, the ecology is tremendously different, chiefly because of the 3000-foot drop in altitude. As at the higher locations rainfall is plentiful. With its luxuriant vegetation and its flourishing crops of bananas, cocoa, coffee, and papayas, this region is definitely in the Humid Upper Tropical Zone.

Even this far down, the valley is quite narrow and the mountain slopes are steep. Only here and there, usually where a side stream enters, is there any considerable width. It is in these flattened areas that the tropical conditions reach their highest development.

Below Quillabamba the river rushes downward into deeper and denser jungle. Eventually the road dwindles into a trail. This and all neighboring trails were closed while I was there, because it was the rainy season and every little side stream had grown to a roaring cataract, obliterating all crossings.

Eleven days were spent in this delightful valley, March 8–19, 1947. Six species of Hesperiidae were taken here:

17. *Urbanus proteus proteus* (Linnaeus)
49. *Staphylus mazans ascalaphus* (Staudinger)
51. *Staphylus minor minor* Schaus
75. *Gesta gesta gesta* (Herrich-Schäffer)
76. *Pyrgus oileus orcus* (Stoll)
94. *Cobalus cannae* (Herrich-Schäffer)

Ccapana Hacienda (Ocongate), Cuzco, Peru

Across the Vilcanota Cordillera to the east of the Urubamba flows one of the larger tributaries of that river, the Rio Paucartambo, and in the upper parts of its valley, about 8 miles downstream from the village of Ocongate, there is an enormous plantation, the Hacienda Ccapana. The residence is at about latitude 13° 34′ S., longitude 71° 24′ W., and has an elevation of around 11,000 feet. It is located on a mountainside, overlooking the valley, and adjoining the native Quechua village of Ccapana.

Except for the owner, his family, and overseers, the entire population of this region are Quechua Incas.

The valley is narrow except for a strip of flat bottomland, first on one side and then on the other, as the river swings back and forth. This land is extensively cultivated, and with irrigation obtained by diverting water from the river produces marvelous grain, hay, and potatoes. From this river bed the mountains rise fairly steeply another 3000 or 4000 feet. The slopes are rather arid, covered with a scattered growth of scrubby brush, becoming drier and more barren towards the top. Droves of llama, alpaca, goats, and sheep, herded by Quechuas and their dogs, graze on the slopes and form one of the principal activities of the hacienda. During the night the temperature drops to a little above freezing, but rises during the daytime to a pleasant warmth. The sun shone nearly every day of my visit there.

Vegetation is somewhat limited in number of species, and insects likewise were scarce. Among the butterflies, the Pieridae, with a few lycaenids, were the most plentiful. This region is in the Temperate Zone. I spent six days at the hacienda, April 6–12, 1947, but obtained only one skipper, the second of its species for the Museum collection.

79. *Hylephila isonira* Dyar

QUINCEMIL, CUZCO, PERU

From the Hacienda Ccapana I rode in one of their trucks to the village of Quincemil, located at about latitude 13° 15′ S., longitude 70° 35′ W., at about 2400 feet in altitude. The road to Quincemil from Ocongate crosses the Cordillera Carabaya at a tiny cluster of huts called Huallahualla at the 15,580-foot pass and then follows down the Marcapata River Valley.

The farther one goes down the valley the richer and more varied grows the vegetation, until at Quincemil there are typical Humid Upper Tropical Zone conditions. The topography of this region is mainly rolling mountains cut by numerous streams. The trees are fairly tall and draped with lianas and epiphytes. The ground cover is rank but not impenetrable. Orchids and begonias hang from every cliff and ledge.

I visited this village three times in as many weeks, between sorties to two distant places. The dates were April 12–16, April 23–27, and May 2–4, 1947. During these 10 days, 17 species of Hesperiidae were taken, three of them extremely interesting:

4. *Pyrrhopyge sergius josephina* Draudt
7. *Elbella azeta* (Hewitson)
15. *Polythrix hirtius* (Butler)

17. *Urbanus proteus proteus* (Linnaeus)
19. *Urbanus dorantes dorantes* (Stoll)
26. *Astraptes anaphus anaphus* (Cramer)
38. *Nisoniades laurentina* (Williams and Bell)
46. *Bolla tetra boliviensis* (Bell)
48. *Staphylus lizeri* (Hayward)
50. *Staphylus saxos satrap* Evans
58. *Mylon lassia* (Hewitson)
76. *Pyrgus oileus orcus* (Stoll)
84. *Polites athenion* (Hübner)
96. *Cobalus decinea* (Hewitson)
105. *Vehilius venosus* (Plötz)
112. *Anthoptus epictetus* (Fabricius)
123. *Thracides panimeron* H. H. Druce

PUERTO MALDONADO, MADRE DE DIOS, PERU

This is an isolated village in the Amazonian jungle, where the Rio Tambopata and the Rio Inambari meet to form the great Rio Madre de Dios. Located at about latitude 12° 36′ S., longitude 69° 11′ W., with an elevation of some 600 feet, it is typically Humid Lower Tropical Zone. An old station of the United States Rubber Development Company, now taken over by the Peruvian Forest Products Company, Puerto Maldonado has grown into a fair-sized village. For many years Quincemil, its nearest contact with the outside world, was at least 15 days away by pack train. I made the trip in a few hours by airplane.

As are other jungle towns it is surrounded by small plantations, frequent clearings, and outlying centers. Away from the cultivated spots, the vegetation is luxuriant and impenetrable. Only along the trails and in the clearings could any profitable collecting be done. But flowers in bloom along the paths and open spaces always had some butterflies.

I spent seven days, April 16–23, 1947, at Puerto Maldonado, and secured 10 species of Hesperiidae:

19. *Urbanus dorantes dorantes* (Stoll)
23. *Urbanus virescens* (Mabille)
28. *Autochton longipennis* (Plötz)
41. *Nisoniades macarius* (Herrich-Schäffer)
76. *Pyrgus oileus orcus* (Stoll)
85. *Wallengrenia otho curassavica* (Snellen)
106. *Vehilius forbesi* Williams and Bell
108. *Lerodea tripunctata* (Latreille)
109. *Lerodea labdacus* (Godman)
118. *Callimormus gracilis* (Felder)

IBERIA, MADRE DE DIOS, PERU

Like Puerto Maldonado, Iberia is an isolated community in the Amazonian jungle, close to the Brazilian-Bolivian border. Located at latitude

11° 20′ S., longitude 69° 30′ W., and about 600 feet above sea level, it lies some 80 miles north-northwest of Puerto Maldonado, and also can be reached from Quincemil by pack train and occasionally by airplane.

Iberia was also a station of the United States Rubber Development Company during World War II and is in one of the finest native rubber-producing regions in the world. The vegetation here is rich and varied, with towering trees and dense ground cover. Collecting could be done only along the established trails, of which there were not many.

During the six days, April 27–May 2, I spent here I took 11 species of skippers:

19. *Urbanus dorantes dorantes* (Stoll)
29. *Autochton zarex* (Hübner)
60. *Mylon jason* (Ehrmann)
65. *Antigonus decens* Butler
68. *Achlyodes thraso thraso* (Hübner)
72. *Ebrietas evanidus* Mabille
75. *Gesta gesta gesta* (Herrich-Schäffer)
85. *Wallengrenia otho curassavica* (Snellen)
103. *Papias sobrinus* Schaus
121. *Carystoides basochesi* (Latreille)
122. *Turesis lucasi* (Fabricius)

FAMILY HESPERIIDAE

SUBFAMILY PYRRHOPYGINAE

1. *Pyrrhopyge aziza troja* Evans

Pyrrhopyge aziza troja EVANS, 1951, A catalogue of the American species of Hesperiidae in the British Museum (Natural History), pt. 1, p. 11.

TYPE LOCALITY: San Ramon, Peru.

RECORDED DISTRIBUTION: Colombia, Peru, Bolivia.

NEW RECORD FOR PERU: Cayumba Puente, Huanuco, Peru, October 24, 1946.

The one specimen taken on the expedition increases the known range of this subspecies. It comes from a river valley adjoining to the north that of the type locality but separated from it by a high mountain barrier. This is the only specimen of this subspecies in the American Museum of Natural History collections. Evans (1951) has recognized five other subspecies of *aziza*. They occupy rather definite geographical areas in a belt of the extreme northwestern part of South America, which extends from Colombia, Venezuela, and British Guiana southwest through western Brazil into Ecuador, Peru, and Bolivia. This is a species of the Humid Upper Tropical Zone.

2. *Pyrrhopyge proculus draudti* Bell

Pyrrhopyge drauti BELL, 1931, Jour. New York Ent. Soc., vol. 39, p. 436, pl. 36, fig. 20.

TYPE LOCALITY: Santa Cruz, Bolivia.

RECORDED DISTRIBUTION: Colombia, Venezuela south through Ecuador, Peru, into Bolivia and western Brazil.

NEW RECORD FOR PERU: Cayumba Puente, Huanuco, Peru, October 24, 1946.

Described originally as a species, this form is placed by Evans (1951) as one of the five subspecies that he recognizes of *proculus*. Although there are specimens of the various subspecies in collections from widely scattered areas in northwestern South America they seem to be nowhere plentiful. The species ranges over about the same area as the preceding species and apparently is a member of the fauna of the Humid Upper Tropical Zone.

3. *Pyrrhopyge sergius sergius* Hopffer

Pyrrhopyge sergius HOPFFER, 1874, Stettiner Ent. Zeitg., vol. 35, p. 369.

TYPE LOCALITY: Chanchamayo, Peru.

RECORDED DISTRIBUTION: Peru.

NEW RECORD FOR PERU: Cayumba Puente, Huanuco, Peru, October 24, 1946.

Although a number of specimens of this subspecies are known, it seems at the present time to be limited to favorable localized areas in Peru between the middle and eastern ranges of the Andes. It is definitely of the Humid Upper Tropical Zone.

4. *Pyrrhopyge sergius josephina* Draudt

Pyrrhopyge josephina DRAUDT, 1921, *in* Seitz, Macrolepidoptera of the world, vol. 5, p. 829, pl. 162 G.

TYPE LOCALITY: Songo, Bolivia.

RECORDED DISTRIBUTION: Southern Peru and Bolivia.

NEW RECORDS FOR PERU: Quincemil, Cuzco, Peru, April 24–27, 1947.

This subspecies joins typical *P. s. sergius* along the southern part of its range. It is also of the Humid Upper Tropical Zone fauna. These Peruvian records extend the known range of this subspecies somewhat to the north of previous records.

5. *Pyrrhopyge rubricollis* (Sepp)

Papilio rubricollis SEPP, 1848, Surinaamische Vlinders, vol. 1, pl. 36.

TYPE LOCALITY: Surinam.

RECORDED DISTRIBUTION: French Guiana, Peru, Bolivia, and the upper Amazon Valley.

NEW RECORD FOR PERU: Tingo Maria, Huanuco, Peru, December 18, 1946, one male.

This is the third specimen of this species in the collection of the American Museum of Natural History. It seems to be generally rare in all collections. The species is limited to a narrow belt across northern South America from French Guiana to Peru. From its present recognized distribution this species appears to belong to the Humid Upper Tropical Zone.

6. *Pyrrhopyge cometes staudingeri* Plötz

Pyrrhopyge staudingeri PLÖTZ, 1879, Stettiner Ent. Zeitg., vol. 40, p. 530.

TYPE LOCALITY: Not designated.

RECORDED DISTRIBUTION: Peru, Bolivia.

NEW RECORD FOR PERU: Tingo Maria, Huanuco, Peru, December 18, 1946, one male.

Described originally as a species, this form was placed by Evans (1951) as one of three subspecies of *cometes*. This subspecies has a rather restricted range, occurring locally in the river valleys of the foothills of the middle and eastern ranges of the Andes, and evidently belongs to the Humid Upper Tropical Zone.

7. *Elbella azeta* (Hewitson)

Pyrrhopyge azeta HEWITSON, 1866, Trans. Ent. Soc. London, ser. 3, vol. 2, p. 479.

TYPE LOCALITY: St. Paulo, Amazons.

RECORDED DISTRIBUTION: Ecuador, Peru, Bolivia, into southern Brazil and Paraguay.

NEW RECORD FOR PERU: Quincemil, Cuzco, Peru, April 15, 1947.

This rare skipper is apparently a Humid Lower Tropical Zone species distributed throughout the western Amazonian region, south into Paraguay. It occurs locally along the eastern foothills of the Andes.

8. *Jemadia sosia* (Mabille)

Pyrrhopyge sosia MABILLE, 1878, Ann. Soc. Ent. Belgique, vol. 21, pp. 21, 22.

TYPE LOCALITY: Brazil.

RECORDED DISTRIBUTION: Colombia, Ecuador, Peru.

NEW RECORD FOR PERU: Cayumba Puente, Huanuco, Peru, October 24, 1946, one male.

This Peruvian record extends the known range of this skipper some-

what to the south of previous records. It is a species of the Humid Upper Tropical Zone. This insect resembles *J. hospita,* but it is restricted to the valleys in the foothills of the Andes where it replaces *hospita* which is more eastern and southern in distribution.

9. *Jemadia menechmus* (Mabille)

Pyrrhopyge menechmus MABILLE, 1878, Ann. Soc. Ent. Belgique, vol. 21, p. 21.

TYPE LOCALITY: Not designated.

RECORDED DISTRIBUTION: Colombia, Venezuela, Surinam, south through Ecuador, Peru, Bolivia, and western Brazil.

NEW RECORD FOR PERU: Tingo Maria, Huanuco, Peru, October 17, 1946.

A widely distributed but not very common species of the Humid Upper Tropical Zone which spreads into the Amazonian region from the eastern Andes.

10. *Jemadia hewitsonii albescens* Röber

Jemadia albescens RÖBER, 1925, Ent. Mitteil., vol. 14, pp. 87, 88.

TYPE LOCALITY: Macas, Ecuador.

RECORDED DISTRIBUTION: Ecuador, Peru, and Bolivia.

NEW RECORDS FOR PERU: Tingo Maria, Huanuco, Peru, October 11, 1946, December 29, 1946.

A subspecies of *hewitsonii* that ranges along the western foothills of the Andes in the Humid Upper Tropical Zone. Typical *hewitsonii* is of the Amazonian fauna of the lowlands of northwestern Brazil extending into French Guiana and Peru.

11. *Oxynetra semihyalina* Felder

Oxynetra semihyalina FELDER, 1862, Wiener Ent. Monatschr., vol. 6, p. 180.

TYPE LOCALITY: Rio Negro, Brazil.

RECORDED DISTRIBUTION: Colombia, Ecuador, Peru, and Bolivia.

NEW RECORD FOR PERU: Cayumba Puente, Huanuco, Peru, October 24, 1946.

This species seems to be restricted to a rather limited belt along the eastern foothills of the Andes and is apparently a species of the Humid Upper Tropical Zone. It is not common.

SUBFAMILY PYRGINAE

12. *Epargyreus socus dicta* Evans

Epargyreus socus dicta EVANS, 1952, A catalogue of the American species of Hesperiidae in the British Museum (Natural History), pt. 2, p. 48.

TYPE LOCALITY: Mapiri, Bolivia.

RECORDED DISTRIBUTION: Colombia south through Ecuador, Peru, and into Bolivia.

NEW RECORD FOR PERU: Tingo Maria, Huanuco, Peru, May 14, 1947.

This subspecies of *socus* is a member of the Humid Upper Tropical Zone, following the river valleys of the eastern and central ranges of the Andes. It is replaced in Central America, Trinidad, Brazil, Paraguay, and Argentina by a number of other subspecies.

13. *Epargyreus, exadeus exadeus* (Cramer)

Papilio exadeus CRAMER, 1779, Papillons exotiques, vol. 3, p. 188, pl. 260, fig. C.

TYPE LOCALITY: Surinam.

RECORDED DISTRIBUTION: Colombia, Venezuela, Trinidad, Ecuador, Peru, Bolivia, Brazil, Paraguay, and into Argentina.

NEW RECORD FOR PERU: Tingo Maria, Huanuco, Peru, November 21, 1946.

This widely distributed and rather common subspecies ranges throughout a large part of South America in the Humid Tropical and Humid Upper Tropical Zones. Although previously recorded from numerous places in Peru, only one specimen was taken during the trip. Another subspecies occurs in Mexico and Central America.

14. *Epargyreus clavicornis clavicornis* (Herrich-Schäffer)

Eudamus clavicornis HERRICH-SCHÄFFER, 1869, Corresp. Blatt Zool. Min. Ver. Regensburg, vol. 23, p. 186.

TYPE LOCALITY: Not designated.

RECORDED DISTRIBUTION: Peru, western and southern Brazil south into Paraguay.

NEW RECORDS FOR PERU: Tingo Maria, Huanuco, Peru, December 28, 1946, May 15, 17, 1947.

This subspecies is rather common and widely distributed. It is of the Upper Tropical Zone but extends out into the Lower Tropical Zone from the foothills of the eastern Andes. Although recorded from a number of localities in Peru, and appearing to be on the wing over a considerable period of time, no specimens were taken at any of the other places visited on this trip. Two other subspecies are found in Mexico and Central America.

15. *Polythrix hirtius* (Butler)

Goniurus hirtius BUTLER, 1870, Trans. Ent. Soc., London, pp. 491–492.

TYPE LOCALITY: Venezuela.

RECORDED DISTRIBUTION: Colombia, Venezuela, Peru.

NEW RECORD FOR PERU: Quincemil, Cuzco, Peru, April 14, 1947.

The single specimen of this interesting and rather rare species taken in the Humid Upper Tropical Zone of southern Peru broadens the known range somewhat to the southwest. It probably occurs locally throughout the foothills of the eastern Cordilleras throughout its range.

16. *Chrysoplectrum bahiana bahiana* (Herrich-Schäffer)

Eudamus bahiana HERRICH-SCHÄFFER, 1869, Corresp. Blatt Zool. Min. Ver. Regensburg, vol. 23, p. 185.

TYPE LOCALITY: Not designated.

RECORDED DISTRIBUTION: Venezuela, British Guiana, Surinam, and northwestern Brazil.

NEW RECORD FOR PERU: Tingo Maria, Huanuco, Peru, May 28, 1954.

The one specimen taken in Peru broadens considerably to the southwest the known range of this rare species. Heretofore regarded as a species of the Humid Upper Tropical Zone restricted to the northern part of South America, it evidently follows the mountains around into Peru and spreads into the Humid Lower Tropical Zone that borders on the foothills of the Andes.

17. *Urbanus proteus proteus* (Linnaeus)

Papilio proteus LINNAEUS, 1758, Systema naturae, ed. 10, vol. 1, p. 484.

TYPE LOCALITY: "In Indiis."

RECORDED DISTRIBUTION: Southern half of the United States, south through Central America and into South America as far as Argentina; Trinidad, Tobago.

NEW RECORDS FOR PERU: Quillabamba, Cuzco, Peru, March 2, 1947; Quincemil, Cuzco, Peru, April 13, 25, 1947.

A widely distributed species, locally common throughout its range and on the wing over a long season. It sometimes is plentiful enough for the larvae to do considerable damage to beans, so that it is known as the "bean leaf roller," or "roller worm." The long tails, although not so long as in some other species of skippers, have given this butterfly the name of long-tailed skipper. A West Indian and Lesser Antillean form is regarded as the subspecies *domingo* Scudder.

18. *Urbanus pronta* Evans

Urbanus pronta EVANS, 1952, A catalogue of the American species of Hesperiidae in the British Museum (Natural History), pt. 2, p. 88.

TYPE LOCALITY: San Pedro Sula, Honduras.

RECORDED DISTRIBUTION: Mexico, south through Central America, to Colombia, Venezuela, French Guiana, Peru, Brazil, and into Paraguay.

NEW RECORD FOR PERU: Tingo Maria, Huanuco, Peru, January 2, 1947.

This record, with two others from Peru (Evans, 1952), indicates that this species, although largely of the Humid Lower Tropical Zone, extends into the Upper Tropical Zone along the river valleys of the eastern Andes.

19. *Urbanus dorantes dorantes* (Stoll)

Papilio dorantes STOLL, 1791, *in* Cramer, Papillons exotiques, suppl., p. 172, pl. 39, fig. 9.

TYPE LOCALITY: Surinam.

RECORDED DISTRIBUTION: Southwestern United States, south through Mexico, Central America, Colombia, Venezuela, British Guiana, Surinam, French Guiana, Ecuador, Peru, Bolivia, Brazil, Paraguay, and into Argentina; Trinidad.

NEW RECORDS FOR PERU: Tingo Maria, Huanuco, Peru, October 11, 17, 1946, January 1, 1947, May 27, 1947; Pucallpa, Loreto, Peru, November 10, 1946; Macchu Picchu (ruins), Cuzco, Peru, March 23, 1947; Quincemil, Cuzco, Peru, April 13, 1947; Puerto Maldonado, Madre de Dios, Peru, April 22, 1947; Iberia, Madre de Dios, Peru, April 18, 1947.

The most widely distributed subspecies of *dorantes* is generally common throughout its range. It was one of the most frequently taken butterflies on the expedition, having been collected from six widely separated localities and was on the wing throughout nearly my entire stay in Peru. Because it is so widely distributed, this species shows considerable variation in specimens from the different regions, resulting in many synonyms. Forms of this subspecies are frequently confused with the preceding species and others of the genus *Urbanus*. The other four recognized subspecies occur on various islands of the West Indies, Lesser Antilles, and the Galapagos Islands.

20. *Urbanus teleus* (Hübner)

Goniurus teleus HÜBNER, 1821, Index exotica Lepidoptera, p. 3.

TYPE LOCALITY: Not designated.

RECORDED DISTRIBUTION: Southern Texas, south through Mexico, Central America, Colombia, Venezuela, the Guianas, Ecuador, Peru, Bolivia, Brazil, and Paraguay into Argentina; Trinidad, Tobago, and Jamaica.

NEW RECORDS FOR PERU: Tingo Maria, Huanuco, Peru, November 2, 1946, January 3, 1947, May 14, 23, 28, 1947; Moyobamba, San Martin, Peru, December 26, 1946.

Although this is a widely distributed and common species throughout its range, it was taken in only two localities visited by the expedition. At one of these, however, specimens were collected on five different dates over a period of seven months. Apparently the insect is on the wing over a rather long season. The eurycles skipper, as it is commonly called, has tails equally as long as, if not longer than, those of *U. proteus proteus* (Linnaeus).

21. *Urbanus simplicius* (Stoll)

Papilio simplicius STOLL, 1790, *in* Cramer, Papillons exotiques, suppl., p. 171, pl. 39, figs. 6, 6E.

TYPE LOCALITY: Not designated.

RECORDED DISTRIBUTION: Extreme southwestern United States, south through Mexico, Central America, Colombia, Venezuela, the Guianas, Ecuador, Peru, Bolivia, Brazil, Paraguay, and into Argentina; Trinidad; Tobago.

NEW RECORDS FOR PERU: Tingo Maria, Huanuco, Peru, October 12, 18, 28, 1946, January 3, 1947, May 14, 19, 22, 23, 29, 1947.

This species is quite similar to the preceding and has the same general range. It differs from *Urbanus teleus* (Hübner) in having the light band across the forewings greatly reduced in width and frequently entirely absent. It also has a costal fold which is absent in *teleus*. This species was quite common around Tingo Maria, particularly upon my return in May. It is on the wing over a long period of time. Considering its wide distribution and long season, it is curious, however, that no specimens were taken in any of the other places in Peru visited on the trip.

22. *Urbanus doryssus doryssus* (Swainson)

Eudamus doryssus SWAINSON, 1831, Zoological illustrations, insects, ser. 2, vol. 2, pl. 48, fig. 2.

TYPE LOCALITY: Bahia, Brazil.

RECORDED DISTRIBUTION: Mexico, Central America, Colombia, Venezuela, the Guianas, south through Ecuador and Peru and into Bolivia and northern Brazil.

NEW RECORD FOR PERU: Tingo Maria, Huanuco, Peru, January 2, 1947.

Only one specimen was taken of this striking and distinctive looking

subspecies. It appears to be a member of the Humid Lower Tropical Zone, only occasionally being taken in the Humid Upper Tropical Zone. It is a strong flier and seems to wander more than most of the Hesperiidae. In spite of its wandering the general range of the species is more restricted than a number of other species of *Urbanus*. In southern Brazil, Paraguay, and Argentina it is replaced by another subspecies.

23. *Urbanus virescens* (Mabille)

Eudamus virescens MABILLE, 1877, Ann. Soc. Ent. France, ser. 5, vol. 7, p. 39.

TYPE LOCALITY: Cayenne.

RECORDED DISTRIBUTION: Panama, Colombia, Venezuela, the Guianas, south through Brazil, Ecuador, Peru, and into Bolivia and Paraguay.

NEW RECORD FOR PERU: Puerto Maldonado, Madre de Dios, Peru, April 19, 1947.

A species of the Humid Lower Tropical Zone, venturing only into the Humid Upper Tropical Zone along the valleys of the eastern Andes.

24. *Astraptes fulgerator fulgerator* (Walch)

Papilio fulgerator WALCH, 1775, Der Naturforscher, vol. 7, p. 115, pl. 2, figs. a, b.

TYPE LOCALITY: Not designated.

RECORDED DISTRIBUTION: British Guiana, Surinam, French Guiana, south through Brazil, Peru (Amazons), Paraguay, and into Argentina; Trinidad.

NEW RECORDS FOR PERU: Tingo Maria, Huanuco, Peru, October 8, 23, 1946, January 20, 1947.

Specimens were taken at only one locality in Peru, but on three different dates. This subspecies is of the Humid Lower Tropical Zone. The specimens taken on the expedition extend the known range into the Humid Upper Tropical Zone, apparently overlapping the range of the subspecies *A. f. azul* Reakirt which extends from Mexico south through Central America into the Humid Tropical Zone of Colombia, Venezuela, Ecuador, Peru, and Bolivia.

The brilliant, iridescent blue-green of the head and thorax, less brilliant on the base of the wings, quickly identifies this strong and fast flier as it flashes past. The flight is so marked that the species has acquired the common name of the flashing astraptes.

25. *Astraptes creteus creteus* (Cramer)

Papilio creteus CRAMER, 1780, Papillons exotiques, vol. 3, p. 162, pl. 284, figs. C, D.

TYPE LOCALITY: Surinam.

RECORDED DISTRIBUTION: Panama, Colombia, Venezuela, and the Guianas, south through northern Brazil into Bolivia.

NEW RECORD FOR PERU: Tingo Maria, Huanuco, Peru, January 22, 1947.

The single specimen of this subspecies taken at Tingo Maria widens the range of this attractive but rather rare butterfly. Although widely distributed it seems to be nowhere common. It is of the fauna of the Humid Upper Tropical Zone and follows the mountains in a broad arc from the Guianas to Bolivia. Four other subspecies recognized by Evans (1952) replace this subspecies in other parts of Central and South America.

26. *Astraptes anaphus anaphus* (Cramer)

Papilio anaphus CRAMER, 1777, Papillons exotiques, vol. 2, p. 126, pl. 178, fig. F.

TYPE LOCALITY: Surinam.

RECORDED DISTRIBUTION: Guianas south to Bolivia, Paraguay, and into Argentina.

NEW RECORDS FOR PERU: Tingo Maria, Huanuco, Peru, December 28, 1946; Quincemil, Cuzco, Peru, April 15, 1947.

Only two specimens of this wide-ranging skipper were taken. Both were from localities regarded as Humid Upper Tropical Zone. Because of its wide distribution there are many subspecies differing slightly in color and markings which, however, have received names. It is a strong flier, and as are a number of these strong-flying skippers, it is often taken as a stray far beyond the boundaries of its recorded range.

27. *Autochton neis* (Geyer)

Cecrops neis GEYER, 1832, *in* Hübner, Zuträge zur Sammlung exotischer Schmetterlinge, vol. 4, p. 10.

TYPE LOCALITY: Brazil.

RECORDED DISTRIBUTION: Mexico, Central America, Colombia, Venezuela, the Guianas, south through Ecuador, Peru, Brazil, into Bolivia and Paraguay; Trinidad; "Jamaica."

NEW RECORDS FOR PERU: Tingo Maria, Huanuco, Peru, November 25, 29, 1946.

A species primarily of the Humid Lower Tropical Zone, it invades the Humid Upper Tropical Zone along the river valleys of the eastern Andes. It appears to be a native of the open areas in the tropical and semitropical rain forest regions throughout its range. The species is extremely variable in the maculation of both the upper and lower surface of the wings.

28. *Autochton longipennis* (Plötz)

Cercropterus longipennis PLÖTZ, 1882, Berliner Ent. Zeitschr., vol. 26, p. 261.

TYPE LOCALITY: South America.

RECORDED DISTRIBUTION: Mexico, Central America, Colombia, Venezuela, British Guiana, French Guiana, south through Brazil, Ecuador, Peru, and Bolivia; Trinidad.

NEW RECORDS FOR PERU: Puerto Maldonado, Madre de Dios, Peru, April 22, 1947; Tingo Maria, Huanuco, Peru, May 22, 1947.

The two specimens, from two widely separated localities in Peru, broaden the previous known distribution of this species. It is a species of the Humid Lower Tropical Zone but spreads into the Humid Upper Tropical Zone along the river valleys of the eastern Andes.

29. *Autochton zarex* (Hübner)

Cecrops zarex HÜBNER, 1818, Zuträge zur Sammlung exotischer Schmetterlinge, vol. 1, p. 30, pl. 32, figs. 183, 184.

TYPE LOCALITY: Surinam.

RECORDED DISTRIBUTION: Mexico, Central America, Colombia, Venezuela, the Guianas, south through Ecuador, Peru, Bolivia, Brazil, Paraguay, and into Argentina; Trinidad.

NEW RECORDS FOR PERU: Iberia, Madre de Dios, Peru, April 30, 1947; Tingo Maria, Huanuco, Peru, May 29, 1947.

A species of the Humid Lower Tropical Zone which has pushed westward into the Humid Upper Tropical Zone of Peru and north into the tropical parts of Central America.

30. *Autochton jao* (Mabille)

Plesioneura jao MABILLE, 1889, Naturaliste, ser. 2, vol. 3, p. 14, fig. 1.

TYPE LOCALITY: Pebas, Peru.

RECORDED DISTRIBUTION: Ecuador, Peru, upper Amazon.

NEW RECORDS FOR PERU: Tingo Maria, Huanuco, Peru, December 29, 1946, May 20, 1947.

As far as known at the present time, this species seems restricted to a limited area in the valleys of the eastern Andes of Ecuador and Peru. The two records of specimens taken on the trip extend the known range considerably to the west of the type locality. It appears to be on the wing for a rather extended period of time.

31. *Dyscophellus porcius porcius* (Felder)

Eudamus porcius FELDER, 1862, Wiener Ent. Monatschr., vol. 6, p. 182.

TYPE LOCALITY: Brazil, Rio Negro.

RECORDED DISTRIBUTION: Costa Rica, Panama, Colombia, the Guianas, south through Peru, Bolivia, and into western and central Brazil.

NEW RECORDS FOR PERU: Tingo Maria, Huanuco, Peru, May 26, 30, 1947.

A butterfly of the tropical rain forests of Panama and Brazil but following the river valleys into the Humid Upper Tropical Zone regions of Colombia to Bolivia. Another subspecies, *doriscus,* occurs in southern Brazil and Paraguay.

32. *Nascus phocus* (Cramer)

Papilio phocus CRAMER, 1777, Papillons exotiques, vol. 2, pp. 102, 103, pl. 162, fig. F.

TYPE LOCALITY: Surinam.

RECORDED DISTRIBUTION: Mexico, Central America, Colombia, the Guianas, south through Ecuador, Peru, Brazil, and into Bolivia and Paraguay.

NEW RECORD FOR PERU: Tingo Maria, Huanuco, Peru, May 27, 1947.

This is a rather common species throughout the tropical rain forests of Central and South America. Over its wide range specimens show some variation in color, particularly on the under side of the wings. It is frequently confused in collections with other species of *Nascus. Nascus phintias* is one of these, especially the synonym *mackeyi* described by Williams from Chiapas, Mexico. *Nascus phocus* enters the Humid Upper Tropical Zone along the river valleys of the eastern Andes.

33. *Nascus solon solon* (Plötz)

Telemiades solon PLÖTZ, 1882, Berliner Ent. Zeitg., vol. 26, p. 75.

TYPE LOCALITY: South America.

RECORDED DISTRIBUTION: French Guiana, upper and lower Amazon, Ecuador, and Peru.

NEW RECORD FOR PERU: Tingo Maria, Huanuco, Peru, May 30, 1947.

This Peruvian record broadens the recorded distribution of this skipper. This rare subspecies seems to be limited to the extreme northern part of the Amazonian section of the Lower Tropical Zone. It has been taken in only a few localities of the Humid Upper Tropical Zone of Ecuador and Peru. In Central America, Colombia, and Venezuela it is replaced by the subspecies *corilla.* Although a rare species, more intensive collecting may show that it is more widely distributed than at present recorded.

34. *Celaenorrhinus shema disjunctus* Bell

Celaenorrhinus disjunctus BELL, 1940, Amer. Mus. Novitates, no. 1094, p. 4, fig. 1.

TYPE LOCALITY: Rio Morona, Peru.

RECORDED DISTRIBUTION: Type locality and Tarapota, Peru.

NEW RECORDS FOR PERU: Tingo Maria, Huanuco, Peru, October 29, 1946; May 23, 1947.

Previously known only from Tarapota, Peru, and the type locality which is near Iquitos, Peru, on the western edge of the Amazonian section of the Humid Lower Tropical Zone. The two specimens taken on the expedition extend the known range of this subspecies somewhat farther to the westward into the Humid Upper Tropical Zone. This subspecies is, however, apparently limited to a small region in the east central part of Peru and actually is probably a member of the Humid Upper Tropical Zone fauna, and extends down the river valleys to the edge of the Humid Lower Tropical Zone.

35. *Celaenorrhinus shema songoensis* Draudt

Celaenorrhinus eligius songoensis DRAUDT, 1922, *in* Seitz, Macrolepidoptera of the world, vol. 5, p. 885, pl. 173b.

TYPE LOCALITY: Rio Songo, Bolivia.

RECORDED DISTRIBUTION: Bolivia, Peru.

NEW RECORD FOR PERU: Tingo Maria, Huanuco, Peru, November 25, 1946.

As is the preceding, this subspecies is apparently limited to a small area in the Humid Upper Tropical Zone on the border of Bolivia and Peru. The single record of the specimen taken on the expedition extends the known range somewhat to the northward where it overlaps the range of the preceding subspecies. These two subspecies are rare, for only a few specimens are known. Undoubtedly more intensive collecting will reveal specimens from other localities in the range.

36. *Celaenorrhinus eligius eligius* (Stoll)

Papilio eligius STOLL, 1781, *in* Cramer, Papillons exotiques, vol. 4, pp. 123, 124, pl. 354, fig. H.

TYPE LOCALITY: Not designated.

RECORDED DISTRIBUTION: Central America, Colombia, Venezuela, Surinam, south into Peru and northern Brazil; Trinidad, Tobago.

NEW RECORD FOR PERU: Tingo Maria, Huanuco, Peru, December 25, 1946, male.

This widely distributed subspecies appears to be nowhere common throughout its extensive range. It is definitely of the Humid Lower Tropical Zone but ventures somewhat up into the river valleys of the eastern Andes. The one specimen taken on the expedition comes from a locality considerably to the west of previous records.

37. *Polyctor polyctor* (Prittwitz)

Pirgus polyctor PRITTWITZ, 1868, Stettiner Ent. Zeitg., vol. 29, p. 186, pl. 3, figs. 3a, 3b.

TYPE LOCALITY: Rio Jan, Bahia, Corcovado, Brazil.

RECORDED DISTRIBUTION: Costa Rica to Panama, Colombia, Venezuela, French Guiana, south through Ecuador, Peru, Brazil, and Paraguay into northern Bolivia and Argentina.

NEW RECORDS FOR PERU: San Martin, San Martin, Peru, December 16, 1946; Tingo Maria, Huanuco, Peru, May 14, 1947.

This is a widely distributed species of the Humid Lower Tropical Zone, following the river valleys up into the lower mountains of the Humid Upper Tropical and Subtropical Zones of the Andes of Ecuador, Peru, and Bolivia. The two specimens secured were from two widely separated localities in the Huallaga River Valley. Evans (1953) places specimens of this species from Mexico and the northern part of its range into two other subspecies.

38. *Nisoniades laurentina* (Williams and Bell)

Pellicia laurentina WILLIAMS AND BELL, 1939, Trans. Amer. Ent. Soc., vol. 65, p. 141, fig. 6.

TYPE LOCALITY: St. Laurent du Maroni, French Guiana.

RECORDED DISTRIBUTION: Evans (1953) records this species as occurring in Mexico, Costa Rica, Trinidad, British Guiana, and French Guiana.

NEW RECORD FOR PERU: Quincemil, Cuzco, Peru, April 27, 1947.

The single specimen from southern Peru extends considerably the known range of this species to the southwest from the type locality or the other records from northern South America or Central America. At the present time it seems extremely rare and localized or spotty in its distribution. Because, however, it resembles other species of *Nisioniades,* it may be confused in collections.

39. *Nisoniades peruana* (Williams and Bell)

Pellicia peruana WILLIAMS AND BELL, 1939, Trans. Amer. Ent. Soc., vol. 65, p. 143, fig. 8.

TYPE LOCALITY: Putumayo River region, Peru.

RECORDED DISTRIBUTION: The type locality.

NEW RECORD FOR PERU: Tingo Maria, Huanuco, Peru, May 16, 1947.

Known heretofore only from the type locality in the extreme northern part of Peru, the single specimen taken on the expedition, from the east central part, extends the known range of this species to the southward. From the little we know of this insect it seems to be a member of the Humid Upper Tropical Zone and limited to the river valleys of the eastern Andes of Peru.

Evans (1953) is inclined to consider this species a synonym of *N. ephora* Herrich-Schäffer. For the present, in this paper it is retained as a distinct species.

40. *Nisoniades indistincta* (Williams and Bell)

Pellicia indistincta WILLIAMS AND BELL, 1939, Trans. Amer. Ent. Soc., vol. 65, p. 140, fig. 5.

TYPE LOCALITY: East-Colombia.

RECORDED DISTRIBUTION: Colombia.

NEW RECORD FOR PERU: Tingo Maria, Huanuco, Peru, May 26, 1947.

The single specimen taken on the expedition extends the previous known range of this rare and little-known skipper far to the south of its recorded distribution. It is evidently an inhabitant of the Humid Upper Tropical Zone and eventually probably will be found to occur in the river valleys of the eastern Andes from Colombia south through Ecuador and Peru and probably into Bolivia.

41. *Nisoniades macarius* (Herrich-Schäffer)

Pellicia macarius HERRICH-SCHÄFFER, 1870, Corresp. Blatt Zool. Min. Ver. Regensburg, vol. 24, p. 160.

TYPE LOCALITY: Venezuela.

RECORDED DISTRIBUTION: Honduras, Panama, Colombia, British Guiana, French Guiana, south through Ecuador, Peru, Brazil into Bolivia, Uruguay, and Argentina; Tobago.

NEW RECORD FOR PERU: Puerto Maldonado, Madre de Dios, Peru, April 27, 1947.

This is a widely distributed species of the Humid Lower Tropical Zone, also extending up into the Humid Upper Tropical Zone. Specimens vary considerably in the ground color of the wings. This has resulted in the establishment of many named species now relegated to synonomy.

42. *Nisoniades castolus* (Hewitson)

Arteurotia castolus HEWITSON, 1878, Ann. Mag. Nat. Hist., ser. 5, vol. 1, p. 347.

TYPE LOCALITY: Brazil.

RECORDED DISTRIBUTION: Nicaragua, Panama, Colombia, south through Ecuador, Peru, Brazil, into Bolivia and Chile.

NEW RECORD FOR PERU: San Martin, San Martin, Peru, December 14, 1947.

This widely distributed species is of the Humid Lower Tropical Zone, but spreads into the Humid Upper Tropical Zone of the eastern Andes. Throughout its wide range it seems to be nowhere common, for in general only single specimens have been taken at the various localities where collected.

43. *Gorgopas trochilus* (Hopffer)

Achlyodes trochilus HOPFFER, 1874, Stettiner Ent. Zeitg., vol. 35, p. 366.

TYPE LOCALITY: "Moxos (Pavon)," Peru.

RECORDED DISTRIBUTION: Colombia, Ecuador, Peru, Brazil, south into Bolivia and Paraguay.

NEW RECORD FOR PERU: Tingo Maria, Huanuco, Peru, October 14, 1946.

A wide-ranging species of the Humid Upper Tropical Zone, which spreads into the Humid Lower Tropical Zone of the eastern Andes.

44. *Bolla cupreiceps* (Mabille)

Antigonus cupreiceps MABILLE, 1891, Compt. Rendus Ann. Soc. Ent. Belgique, vol. 35, p. 63.

TYPE LOCALITY: Honduras.

RECORDED DISTRIBUTION: Mexico, south through Central America, to Colombia, Ecuador, Peru, and into Bolivia, southern Brazil, and Argentina.

NEW RECORD FOR PERU: Hacienda Puma Hwasi, 35 kilometers east of Tingo Maria, Huanuco, Peru, November 1, 1946.

This rather widely distributed species displays a number of color forms. However, these differences are not marked enough to make distinct geographical races or subspecies. It is probably a species of the Humid Upper Tropical Zone, which extends down into the Lower Tropical Zone from the eastern foothills of the Andes.

45. *Bolla morona* (Bell)

Pholisora morona BELL, 1940, Amer. Mus. Novitates, no. 1094, p. 6, fig. 2.

TYPE LOCALITY: Rio Morona, Peru.

RECORDED DISTRIBUTION: Type locality and Carabaya, Peru.

NEW RECORD FOR PERU: Tingo Maria, Huanuco, Peru, May 19, 1947.

Apparently a rare species, at the present time restricted to a very limited area in central Peru. This is the only specimen of this species to be added to the American Museum of Natural History collections since the description of the type.

46. *Bolla tetra boliviensis* (Bell)

Pholisora giselus boliviensis BELL, 1937, Amer. Mus. Novitates, no. 914, p. 10.

TYPE LOCALITY: Cochabamba, Bolivia.

RECORDED DISTRIBUTION: Guatemala south through Nicaragua, Colombia, Venezuela, Peru, into Bolivia.

NEW RECORDS FOR PERU: Cayumba Puente, Huanuco, Peru, October 24, 1946; Macchu Picchu (ruins), Cuzco, Peru, March 22, 23, 1947; Quincemil, Cuzco, Peru, April 15, 1947.

Of the five subspecies of *tetra* that Evans (1953) recognizes, *boliviensis* occupies the greatest area. Throughout its range it seems to be fairly common, with the greatest concentration in Peru and Bolivia. It is of the Humid Upper Tropical Zone and follows along the river valleys from an elevation of 2000 feet to about 5000 feet. The one specimen taken at the ruins of Macchu Picchu seems to indicate that it even crosses mountain ranges of 9000 feet or more. The Cayumba specimen lacks the apical dot on the wings.

47. *Bolla tetra tetra* (Mabille)

Pythonides (*Achlyodes* auct.) *tetra* MABILLE, 1878, Petites nouvelles entomologiques, vol. 2, no. 196, p. 229.

TYPE LOCALITY: "E. French Guiana."

RECORDED DISTRIBUTION: Colombia, Ecuador, French Guiana.

NEW RECORD FOR PERU: Tingo Maria, Huanuco, Peru, December 29, 1944.

The one specimen of this typical subspecies of *tetra* taken on the expedition extends the recorded range much farther to the south. This subspecies is not common and has its greatest concentration in Ecuador and Colombia, with the range overlapping that of *boliviensis* in the south. As is *boliviensis* it is of the Humid Upper Tropical Zone.

48. *Staphylus lizeri* (Hayward)

Pholisora lizeri HAYWARD, 1938, Rev. Ent., Rio de Janeiro, vol. 8, fasc. 1–2, pp. 108, 109, fig. 6.

TYPE LOCALITY: Caravani, Bolivia.

RECORDED DISTRIBUTION: Peru, Bolivia, and western Brazil.

NEW RECORDS FOR PERU: Tingo Maria, Huanuco, Peru, October 24, 1946, November 23, 1946, December 21, 1946, April 28, 1947, May 24, 25, 1947; San Martin, San Martin, Peru, December 13, 1946; Quincemil, Cuzco, Peru, April 13, 1947.

This species was one of the most common met with during my stay in Peru. Although not taken at all places visited, it was particularly plentiful at Tingo Maria and undoubtedly occurred in numbers at the other two places where it was taken. It may be rather localized in its distribution and seems to be confined to the river valleys of the eastern slopes of the Andes in Bolivia and Peru, making it a member of the Upper Tropical Zone. The above date records show that the species is on the wing over a long period of time—at least from October to May. In spite of this long season, specimens are rare in collections, or misidentified.

49. *Staphylus mazans ascalaphus* (Staudinger)

Helias ascalaphus STAUDINGER, 1875, Verhandl. K. K. Zool. Bot. Gesell. Wien, vol. 25, pp. 116–117.

TYPE LOCALITY: Panama, Chiriqui.

RECORDED DISTRIBUTION: Yucatan and southern Mexico south through Guatemala, Honduras, Nicaragua, El Salvador, Costa Rica, Panama, Colombia, Venezuela, Peru, eastern Bolivia, and into western Brazil; Trinidad.

NEW RECORDS FOR PERU: Tingo Maria, Huanuco, Peru, October 24, 1946, December 21, 29, 1946; Quillabamba, Cuzco, Peru, April 12, 1947.

Of the four subspecies of *Staphylus mazans* that Evans (1953) recognizes this one is the most southern. The other three range from Mexico northward, with *Staphylus mazans hayhursti* Edwards distributed over a large part of the United States. In spite of its wide distribution, the subspecies *ascalaphus* appears to be rather rare in collections, with the greatest number from Trinidad and Venezuela.

50. *Staphylus saxos satrap* Evans

Staphylus saxos satrap EVANS, 1953, A catalogue of the American species of Hesperiidae in the British Museum (Natural History), pt. 3, p. 94, pl. 38, fig. E-32/30.

TYPE LOCALITY: San José, Bolivia.

RECORDED DISTRIBUTION: Type Locality.

NEW RECORD FOR PERU: Quincemil, Cuzco, Peru, April 24, 1947, one male, slide A.M.N.H. No. 2050.

This is the only specimen of this subspecies in the American Museum

of Natural History collection and the only record from Peru. Evans (1953) described two subspecies of *Staphylus saxos*. One, *Staphylus saxos saxos* Evans, was described from only one specimen, the type, a male taken at Cali on the Pacific side of Colombia. Of the present subspecies Evans had five specimens: the type, a male from San José, Bolivia, and four other males from Santa Cruz and San José, Bolivia. The specimen collected on the expedition extends the range of this rare insect considerably to the west of the type locality, but the new locality is also in the Upper Tropical Zone. More intensive collecting will undoubtedly show that it is established throughout this section of Bolivia and Peru.

51. *Staphylus minor minor* Schaus

Staphylus minor SCHAUS, 1902, Proc. U. S. Natl. Mus., vol. 24, p. 432.

TYPE LOCALITY: Peru.

RECORDED DISTRIBUTION: Peru, Bolivia, western Brazil, south through Paraguay into Argentina.

NEW RECORD FOR PERU: Quillabamba, Cuzco, Peru, March 14, 1947.

Described in 1902 as a species this insect is rare in collections. The one specimen taken on the expedition is the only one in the American Museum collection. Although rather widely distributed it seems to be extremely localized in a few small areas in the eastern foothills of the Andes, and extends down into southern Brazil, Paraguay, and Argentina. Its greatest concentration is in the river valleys of Peru and Bolivia. It belongs to the Upper Tropical Zone. Evans (1953) described another subspecies from Colombia.

52. *Gorgythion begga pyralina* (Möschler)

Helias pyralina MÖSCHLER, 1876, Verhandl. K. K. Zool. Bot. Gesell. Wien, vol. 26, p. 343, pl. 4, fig. 31.

TYPE LOCALITY: Paramaribo, Surinam.

RECORDED DISTRIBUTION: Southern Texas, through Mexico, Central America, to the Guianas, and southwest into Peru and Bolivia; Trinidad.

NEW RECORDS FOR PERU: Tingo Maria, Huanuco, Peru, October 12, 30, 1946, November 21, 23, 1946, May 27, 1947; Juanjui, San Martin, Peru, December 6, 1946.

Described originally as a species, it is now generally considered to be a subspecies of *H. begga* Prittwitz. It is a widely distributed species of the Lower Tropical Zone, spreading into the Upper Tropical Zone to an elevation of about 5000 feet. The six specimens taken on the expedition came from two localities, both, however, in the valley of the Huallaga River. It

is on the wing over a long season, at least from October to May, as indicated by the specimens taken.

The subspecies *Gorgythion begga begga* Prittwitz and *G. b. plautia* Möschler as recognized by Evans (1953) replace this subspecies to the east and south.

53. *Ouleus fridericus fridericus* (Geyer)

Achlyodes fridericus GEYER, 1832, *in* Hübner, Zuträge zur Sammlung exotischer Schmetterlinge, vol. 4, p. 9.

TYPE LOCALITY: Surinam.

RECORDED DISTRIBUTION: Colombia, Venezuela, the Guianas, southwest through Brazil into Peru and Bolivia.

NEW RECORDS FOR PERU: Tingo Maria, Huanuco, Peru, November 27, 1946, May 22, 24, 1947; San Martin, San Martin, Peru, December 16, 1946.

The four specimens from two localities in Peru extend the known distribution of this fairly common subspecies. It also appears to be on the wing over a number of months, or at least from November to May. Five other subspecies extend the range of the species over a large part of Central and South America.

54. *Quadrus deyrollei porta* Evans

Quadrus deyrollei porta EVANS, 1953, A catalogue of the American specimens of Hesperiidae in the British Museum (Natural History), pt. 3, p. 114.

TYPE LOCALITY: Teffe, "Amazons," Brazil.

RECORDED DISTRIBUTION: Ecuador, Peru, western Brazil.

NEW RECORD FOR PERU: Tingo Maria, Huanuco, Peru, October 23, 1947.

This subspecies, together with the other two recognized subspecies, although widely distributed over a large part of north and central South America, seems to be nowhere common. It is a species of the Upper Tropical Zone and extends down into the Lower Tropical Zone. It appears to reach its greatest concentration in the transition belt between these two zones.

55. *Paches loxus loxana* Evans

Paches loxus loxana EVANS, 1953, A catalogue of the American species of Hesperiidae in the British Museum (Natural History), pt. 3, p. 129.

TYPE LOCALITY: Buenavista, Bolivia.

RECORDED DISTRIBUTION: Peru, Bolivia, and northwest Brazil.

NEW RECORD FOR PERU: Juanjui, San Martin, Peru, December 4, 1946.

Evans (1953) recognizes four subspecies of *Paches loxus*. They are widely distributed, ranging from Mexico south through Central America and into northern South America. Two of the subspecies occupy the more northern part of the area covered, while the other two occupy the southern part. The present subspecies, *P. l. loxana* Evans (1953), was set up to include the forms that seem to be restricted to the Humid Upper Tropical Zone of Peru and Bolivia and extend down into the Humid Lower Tropical Zone along the eastern foothills of the Andes. The previous recorded Peruvian record was up the Huallaga River Valley at Tarapota (now San Martin). The Juanjui specimen taken on the expedition comes from considerably higher up the Huallaga River Valley.

56. *Haemactis sanguinalis* (Westwood)

Achlyodes sanguinalis WESTWOOD, 1852, The genera of diurnal Lepidoptera, vol. 2, p. 524, pl. 79, fig. 8.

TYPE LOCALITY: Quito, Ecuador.

RECORDED DISTRIBUTION: Colombia, Ecuador, Peru, Bolivia, western Brazil.

NEW RECORDS FOR PERU: Tingo Maria, Huanuco, Peru, December 28, 29, 1946.

A scarce species of the Upper Tropical Zone with a very limited distribution, as far as known, being confined to the valleys in a narrow strip along the eastern slope of the Andes from Colombia to Bolivia. The two specimens were taken on the expedition on two different days, from the same general locality, which is about the middle of their recorded distribution. Peru seems to be the center of distribution for this species, for most of the specimens in various collections are recorded from this country.

57. *Potamanaxas effusa effusa* Draudt

Potomanaxas effusa DRAUDT, 1922, *in* Seitz, Macrolepidoptera of the world, vol. 5, p. 899, pl. 175g.

TYPE LOCALITY: Rio Negro, east Colombia.

RECORDED DISTRIBUTION: French Guiana, Colombia, and Peru.

NEW RECORD FOR PERU: Tingo Maria, Huanuco, Peru, May 15, 1947.

One specimen, a male, of this very rare skipper was taken on the expedition. It adds one more Peruvian locality to the very few records at the present time: one specimen from Panama and one from Colombia.

Evans (1953) has set aside as a subspecies *P. e. confusa* Draudt. The few distributional records available seem to indicate that this species is restricted to a few isolated spots in a limited section of the Upper Tropical Zone of northwestern South America.

58. *Mylon lassia* (Hewitson)

Leucochitonea lassia HEWITSON, 1868, Descriptions of one hundred new species of Hesperidae, pt. 2, pp. 49, 50.

TYPE LOCALITY: Ecuador.

RECORDED DISTRIBUTION: Mexico south through Central America to Colombia and Venezuela; Trinidad.

NEW RECORD FOR PERU: Quincemil, Cuzco, Peru, April 21, 1947.

The Peruvian record extends the known distribution of this species considerably to the south. This is a species of the Upper Tropical Zone, being more or less restricted to the valleys in the eastern foothills of the Andes with a far-reaching extension north through Central America into southern Mexico.

59. *Mylon menippus* (Fabricius)

Papilio menippus FABRICIUS, 1776, Genera insectorum, p. 272.

TYPE LOCALITY: Surinam.

RECORDED DISTRIBUTION: Mexico, south through Central America, to Colombia, Venezuela, the Guianas, Brazil, Ecuador, Peru, Bolivia, Paraguay, and into Argentina; Trinidad.

NEW RECORDS FOR PERU: Cayumba Puente, Huanuco, Peru, October 24, 1946; Tingo Maria, Huanuco, Peru, May 2, 1947.

This widely distributed species ranges over most of Central and South America, with the probable exception of the west coast, the higher Andes, and the extreme southern part of South America. This is a species of both the Lower Tropical and Upper Tropical Zones. The two localities where it was taken in Peru are not close together, but both are in the upper Huallaga Valley.

60. *Mylon jason* (Ehrmann)

Leucochitonea jason EHRMANN, 1907, Canadian Ent., vol. 39, p. 317.

TYPE LOCALITY: Suapure, Venezuela.

RECORDED DISTRIBUTION: Southern Mexico, south through Central America, to Colombia, Venezuela, the Guianas, Ecuador, Peru, Bolivia, Brazil, and into Paraguay; Trinidad.

NEW RECORD FOR PERU: Iberia, Madre de Dios, Peru, April 28, 1947.

Although widely distributed, this species seems to be nowhere common, for only one or two individuals have been taken from all the many localities where it has been collected. It is a species of the Lower Tropical Zone that apparently does not extend very far into the Upper Tropical Zone.

61. *Carrhenes fuscescens bamba* Evans

Carrhenes fuscescens bamba EVANS, 1953, A catalogue of the American species of Hesperiidae in the British Museum (Natural History), pt. 3, p. 150.

TYPE LOCALITY: Chanchamayo, Peru.

RECORDED DISTRIBUTION: Ecuador, Peru, Bolivia.

NEW RECORD FOR PERU: Juanjui, San Martin, Peru, December 6, 1946.

Evans (1953) has described this form as one of the five subspecies of *C. fuscescens*. This subspecies at the present time seems to be restricted to a narrow area along the eastern ranges of the Andes from Ecuador to Bolivia, reaching its greatest concentration in Peru and Bolivia. It is of the fauna of the Upper Tropical Zone and extends up into the Subtropical Zone. Specimens from the southern part of its distribution tend to merge with the subspecies *C. f. chaeremon* which ranges from southern Bolivia south into southern Brazil.

62. *Xenophanes tryxus* (Stoll)

Papilio tryxus STOLL, 1780, *in* Cramer, Papillons exotiques, vol. 4, p. 87, pl. 334, figs. G, H.

TYPE LOCALITY: Not designated.

RECORDED DISTRIBUTION: Southern Texas, south through Mexico, the Guianas, to southern Brazil and into Argentina.

NEW RECORD FOR PERU: Tingo Maria, Huanuco, Peru, May 28, 1947.

Only one specimen of this rather common and widely distributed species was taken on the expedition. Because of the broad areas of transparent (glossy) spots on the wings, this species is frequently known as the glossy-winged skipper. Throughout its wide range the species shows very little variation. It is a lowland insect of the Lower Tropical Zone, ascending into the Upper Tropical Zone along the river valleys to about 4000 feet altitude.

63. *Antigonus nearchus* (Latreille)

Hesperia nearchus LATREILLE, 1811–1821, *in* Humboldt and Bonpland, Voyage aux régions equinoxiales du Nouveau Continent, Recueil d'observations de zoologie et d'anatomie comparée, pt. 2, p. 135, pl. 43, figs. 3, 4.

TYPE LOCALITY: South America.

RECORDED DISTRIBUTION: Mexico, south through Central America, to Colombia, Venezuela, the Guianas, Trinidad, "Jamaica," Brazil, Peru, Bolivia, into Paraguay and Argentina.

NEW RECORD FOR PERU: Tingo Maria, Huanuco, Peru, December 29, 1946.

This is a species of the Lower Tropical Zone, with a long extension up through the humid tropical regions of Central America into Mexico. Although an insect of the lowlands it enters the Upper Tropical Zone along the river valleys, where it reaches an altitude of 3000 to 4000 feet. The butterflies delight in the clearings and open forest rather than the denser jungle.

64. *Antigonus erosus* (Hübner)

Urbanus vetus erosus HÜBNER, 1812, Sammlung exotischer Schmetterlinge, vol. 1, pl. 153, figs. 1–4.

TYPE LOCALITY: Not designated.

RECORDED DISTRIBUTION: Mexico, south through Central America, to Colombia, Venezuela, the Guianas, Brazil, Ecuador, Peru, Bolivia, and into Paraguay: Trinidad, Tobago, Grenada.

NEW RECORDS FOR PERU: Cayumba Puente, Huanuco, Peru, October 24, 1946; Juanjui, San Martin, Peru, December 4, 1946; Tingo Maria, Huanuco, Peru, December 29, 1946.

Having about the same distribution as the previous species, this species seems to be somewhat more common throughout its wide range and apparently is on the wing over a rather long season. The three localities in Peru where specimens were taken are all in the Huallaga River Valley which is the Upper Tropical Zone. It is a species of the Humid Lower Tropical Zone and ascends along the river valleys into the Upper Tropical Zone to an elevation of about 3000 feet.

65. *Antigonus decens* Butler

Antigonus decens BUTLER, 1874, Trans. Ent. Soc. London, p. 436.

TYPE LOCALITY: "Peruvian Amazons."

RECORDED DISTRIBUTION: Peru and western Brazil.

NEW RECORD FOR PERU: Iberia, Madre de Dios, Peru, April 29, 1947.

This species, rare in collections, is the third specimen in the collection of the American Museum of Natural History. At the present time it seems to be confined to a very small area of southeastern Peru, near the type locality, but extends into southeastern Brazil.

66. *Antigonus mutilatus* Hopffer

Antigonus mutilatus HOPFFER, 1874, Stettiner Ent. Zeitg., vol. 35, p. 366.

TYPE LOCALITY: Chanchamaya, Peru.

RECORDED DISTRIBUTION: Ecuador, Peru, Bolivia, and south into Argentina.

NEW RECORD FOR PERU: Cayumba Puente, Huanuco, Peru, October 24, 1946.

This is a species of the Upper Tropical Zone extending up into the Subtropical and Temperate Zones to elevations of 10,000 or 12,000 feet. It seems to be restricted to a narrow belt along the eastern range of the Andes where, however, it appears to be fairly abundant.

67. *Achlyodes busirus heros* Ehrmann

Achylodes (*Achlyodes*) *heros* EHRMANN, 1909, Canadian Ent., vol. 41, p. 87.

TYPE LOCALITY: Suapure, Venezuela.

RECORDED DISTRIBUTION: Mexico, south through Central America, to Colombia, Venezuela, British Guiana, Ecuador, Peru, Bolivia, and northwestern Brazil.

NEW RECORD FOR PERU: San Martin, San Martin, Peru, December 16, 1946.

Described as a species, this is now considered as one of the four subspecies of *A. busirus* Stoll. Typical *busirus* seems to occur in the more eastern parts of South America, while the subspecies *negro* Kaye is in Trinidad, and *rioja* Evans ranges throughout southern Brazil, Paraguay, and into Argentina. This is a characteristic species of the Humid Lower Tropical Zone, but spreads into the Upper Tropical Zone along the river valleys, ascending to an elevation of about 4000 feet.

68. *Achlyodes thraso thraso* (Hübner)

Urbanus vetus thraso HÜBNER, 1807, Sammlung exotischer Schmetterlinge, vol. 1, pl. 151, figs. 1–4.

TYPE LOCALITY: Not designated.

RECORDED DISTRIBUTION: Southern Texas, south through Mexico, Central America, Colombia, Venezuela, the Guianas, Ecuador, Peru, Bolivia, Brazil, Paraguay, and into Argentina; Trinidad.

NEW RECORDS FOR PERU: Juanjui, San Martin Peru, December 3, 1946; Iberia, Madre de Dios, Peru, May 1, 1947.

This widely distributed and rather common skipper has a number of geographical races or subspecies. Four of these occur on various islands

of the West Indies and Lesser Antilles, according to Evans (1953). Evans considers all the mainland forms to be typical *thraso*. Other workers have regarded the Texas form as the subspecies *tamenund* Edwards, and Mabille and Boullet named the Peruvian form as *peruvianus*. It is a Humid Lower Tropical Zone species but also invades the Humid Upper Tropical Zone by following the river valleys. The specimens taken on the expedition came from two localities—one in the Humid Lower Tropical Zone and one in the Humid Upper Tropical Zone. From the two records above it is apparently on the wing over a long season—at least from December to May.

This species is unusual in appearance and is easily recognized by the peculiar incurving margin at the apex of the forewing. This distinguishing character has resulted in the common name of sickle-winged skipper.

69. *Achlyodes pallida* (Felder)

Helias pallida FELDER, 1869, Verhandl. K. K. Zool. Bot. Gesell. Wien, vol. 19, pp. 478, 479.

TYPE LOCALITY: Jalapa, Mexico.

RECORDED DISTRIBUTION: Mexico, south through Central America, to Colombia, Venezuela, Ecuador, Peru, and Bolivia.

NEW RECORD FOR PERU: Cayumba Puente, Huanuco, Peru, October 24, 1946.

This is a species of the Humid Upper Tropical Zone of Mexico and Central America, with a long extension to its range southward along the eastern foothills of the Andes to Bolivia. Here it frequently reaches an altitude of over 7000 feet, penetrating into the Subtropical Zone.

70. *Ebrietas infanda* (Butler)

Aethilla infanda BUTLER, 1876, Trans. Ent. Soc. London, p. 149.

TYPE LOCALITY: Tunantins, Amazonas, Brazil.

RECORDED DISTRIBUTION: Colombia, British and French Guiana, Ecuador, Peru, Bolivia, western and southern Brazil, Paraguay.

NEW RECORDS FOR PERU: Cayumba Puente, Huanuco, Peru, October 24, 1946; Juanjui, San Martin, Peru, December 4, 1946; Tingo Maria, Huanuco, Peru, December 29, 1946.

The three localities where specimens of this skipper were taken on the expedition are all in the Huallaga River Valley. It appears to be a species of the Humid Upper Tropical Zone, ranging along the foothills of the eastern range of the Andes but invading the Humid Lower Tropical Zone as well as the higher Subtropical Zone.

71. *Ebrietas anacreon* (Staudinger)

Achlyodes anacreon STAUDINGER, 1876, Verhandl. K. K. Zool. Bot. Gesell. Wien, vol. 25, pp. 115, 116.

TYPE LOCALITY: "Rio and Novo Friburgo," Brazil.

RECORDED DISTRIBUTION: Mexico, south through Central America, to Colombia, Venezuela, Ecuador, Peru, Bolivia, Brazil, Paraguay, and into Argentina; Trinidad.

NEW RECORDS FOR PERU: Cayumba Puente, Huanuco, Peru, October 24, 1946; Tingo Maria, Huanuco, Peru, May 19, 27, 1947.

This wide-ranging species is found throughout most of Central and South America. It appears, however, to be nowhere abundant, seeming to prefer the valleys along the eastern slopes of the Andes. Of the Lower Tropical Zone fauna it is also at home in the Upper Tropical and Subtropical Zones.

72. *Ebrietas evanidus* Mabille

Ebrietas evanidus MABILLE, 1897, Ann. Soc. Ent. France, p. 200.

TYPE LOCALITY: Bolivia.

RECORDED DISTRIBUTION: Mexico, south through Central America, to Colombia, Venezuela, British Guiana, northern Brazil, Ecuador, and Peru.

NEW RECORD FOR PERU: Iberia, Madre de Dios, Peru, April 30, 1947.

The above record from southeastern Peru extends the known range of this species somewhat to the south. It is of the Lower Tropical Zone, preferring the deep humid jungle and not venturing deeply into the valleys of the mountainous foothills as does the preceding species.

73. *Cycloglypha tisias* (Godman and Salvin)

Camptopleura tisias GODMAN AND SALVIN, 1896, Biologia Centrali-Americana, Rhopalocera, vol. 2, p. 423; vol. 3, pl. 88, fig. 16.

TYPE LOCALITY: Costa Rica.

RECORDED DISTRIBUTION: Costa Rica, Panama, Colombia, Trinidad, British Guiana, French Guiana, western and southern Brazil, Ecuador, Peru.

NEW RECORD FOR PERU: Cayumba Puente, Huanuco, Peru, October 24, 1946.

A rather rare species of the Humid Upper Tropical Zone and spreading into the Humid Lower Tropical Zone along its margins. This skipper seems to be more plentiful in Peru than elsewhere throughout its range.

74. *Helias phalaenoides phalaenoides* Fabricius

Helias phalaenoides FABRICIUS, 1807, Mag. f. Insektk., vol. 6, p. 287.

TYPE LOCALITY: Not designated.

RECORDED DISTRIBUTION: Panama, Venezuela, British Guiana, Surinam, French Guiana, Ecuador, Peru, Bolivia; Trinidad, Tobago.

NEW RECORDS FOR PERU: Pucallpa, Loreto, Peru, November 13, 1946; Tingo Maria, Huanuco, Peru, November 23, 1946.

This is the typical subspecies of the four recognized by Evans (1953). It is of the Humid Upper Tropical Zone and follows in general the mountainous foothills and valleys from the Guianas to Bolivia, and into the Amazonian zone on its western margin. Brazil, Uruguay, Paraguay, and northern Argentina represent the range of the subspecies *palpalis* Latreille. The northern part from Mexico to Colombia is the area covered by *cama* Evans, and *godmani* Mabille and Boullet occupies the intermediate area of Panama, Colombia, and Ecuador.

75. *Gesta gesta gesta* (Herrich-Schäffer)

Thanaos gesta HERRICH-SCHÄFFER, 1863, Corresp. Blatt Zool. Min. Ver. Regensburg, vol. 17, p. 142.

TYPE LOCALITY: Cuba.

RECORDED DISTRIBUTION: Panama, Colombia, Venezuela, Ecuador, Peru, Bolivia, Brazil, Paraguay, and into Argentina; Trinidad, Tobago, Cuba, Haiti, Jamaica.

NEW RECORDS FOR PERU: Juanjui, San Martin, Peru, December 4, 1946; San Martin, San Martin, Peru, December 13, 1946; Quillabamba, Cuzco, Peru, March 11, 1947; Iberia, Madre de Dios, Peru, April 28, 1947.

Originally described as a species, this form was considered by Evans (1953) to be one of two subspecies and as occupying the southern part of the range of the species. The other subspecies, *invisus* Butler and Druce, is the northern form and ranges from southern Texas south through Mexico and Central America into northern South America. It is interesting that the southern form has invaded a number of the islands of the West Indies, probably by way of the Lesser Antilles, where it occurs on some of the islands, rather than by way of Yucatan. Of this movement we have no evidence at the present time. Perhaps more intensive collecting in Mexico (Yucatan), the West Indies, and the Lesser Antilles will bring to light material that would have a bearing on the subject.

This widely distributed subspecies is primarily of the hot Humid

Lower Tropical Zone lowlands but ascends to elevations of about 6000 feet along the river valleys into the Upper Tropical Zone. It seems to be fairly abundant, for specimens were taken by the expedition from four widely scattered localities. The dates of the collection of specimens indicates that the butterfly is on the wing for at least five months—December through April.

76. *Pyrgus oileus orcus* (Stoll)

Papilio orcus STOLL, 1780, *in* Cramer, Papillons exotiques, vol. 4, p. 87, pl. 334, figs. I, K, L.

TYPE LOCALITY: Surinam.

RECORDED DISTRIBUTION: Costa Rica, Panama, Colombia, Venezuela, the Guianas, Peru, Bolivia, Brazil, Paraguay, northern Argentina, and Chile; Trinidad, Tobago, Martinique, Grenada, Grenadines, the Dominican Republic, St. Vincent, St. Lucia.

NEW RECORDS FOR PERU: Tingo Maria, Huanuco, Peru, October 19, 1946, November 8, 23, 1946, May 28, 29, 1947; Cayumba Puente, Huanuco, Peru, October 24, 1946; San Martin, San Martin, Peru, December 14, 15, 1946; Pucallpa, Loreto, Peru, November 6, 7, 11, 1946; Quillabamba, Cuzco, Peru, March 11, 12, 1947; Quincemil, Cuzco, Peru, April 13, 1947; Puerto Maldonado, Madre de Dios, Peru, April 17, 23, 1947.

Described as a species, *orcus* is now regarded as one of the four subspecies of *oileus* Linnaeus. The subspecies *oileus* occurs in Florida, Texas, Mexico, Central America, and some of the islands of the West Indies and Lesser Antilles. Texas, Arizona, northern Mexico, and Yucatan represent the known range of the subspecies *philetas* Edwards, while *brenda* Evans occurs along the coast and the western slope of the Andes through Ecuador and Peru.

This wide-ranging subspecies of this skipper is a member of the Humid Lower Tropical Zone but ranges well up into the Upper Tropical and Subtropical Zones. It was the most widely distributed and most frequently collected insect on the expedition. The above records show that it was on the wing during virtually every month of the time I spent in Peru. Sixteen specimens were taken at seven widely separated localities, with widely varying ecological conditions.

77. *Heliopetes omrina* (Butler)

Pyrgus omrina BUTLER, 1870, Trans. Ent. Soc., London, p. 509.

TYPE LOCALITY: Peru.

RECORDED DISTRIBUTION: Panama, Ecuador, Peru, Bolivia, western and southern Brazil, Paraguay, and into Argentina.

NEW RECORDS FOR PERU: Tingo Maria, Huanuco, Peru, October 11, 1946, January 27, 1947, May 19, 1947; Huanuco, Huanuco, Peru, January 27, 1947.

This is a species of the Humid Upper Tropical Zone which spreads into the Lower Tropical Zone along the western and southern margins. The Huanuco record is interesting, because this is a high-altitude, arid region of the Subtropical Zone, showing that this butterfly is equally at home under conditions of extreme contrast. This skipper has, however, been taken at the high altitudes of the Temperate Zone, for it has been recorded from such places as La Paz, Bolivia, Huancabamba, Peru, and the high western slopes of the Andes.

SUBFAMILY HESPERIINAE

78. *Hylephila phyleus* (Drury)

Papilio phyleus (*phylaeus* auct.) DRURY, 1873, Illustrations of natural history, vol. 1, p. 25, pl. 13, figs. 4, 5.

TYPE LOCALITY: Antiqua; St. Christopher's; Nevis.

RECORDED DISTRIBUTION: Eastern United States from Connecticut west to Illinois, Michigan, Nebraska, and California, south through Mexico, Central America, to Colombia, Ecuador, Peru, Bolivia, into southern Brazil; West Indies.

NEW RECORDS FOR PERU: Miraflores, Lima, Peru, February 6, 9, 1947; Tingo Maria, Huanuco, Peru, January 26, 1947, one male.

This very widely distributed species is rare in the northern part of its range, but is plentiful farther south. In South America it ranges from the Upper Tropical through the Subtropical Zones and may even extend into the Temperate Zone. The two specimens taken west of the Andes at Miraflores, where only limited collecting was done, seem to indicate that the species may be abundant in this Arid Lower Tropical Zone. The specimen from Tingo Maria is a small male differing from typical *phyleus*. It may prove to be an undescribed geographical subspecies. With only this one specimen at hand, it was thought advisable to retain it under *phyleus*.

79. *Hylephila isonira* Dyar

Hylephila isonira DYAR, 1913, Proc. U. S. Natl. Mus., vol. 45, no. 2006, p. 639.

TYPE LOCALITY: Peru (no specific locality).

RECORDED DISTRIBUTION: Peru: Ollantaytambo, Urubamba, Chuquibamba, Cuzco, Coropuna, Cantas.

NEW RECORD FOR PERU: Hacienda Ccapana, Ocangate, Peru, April 9, 1947.

This species was described by Dyar from 15 specimens. It is rare and at the present time seems to be confined to a rather limited area in the higher Andes of southern Peru, above the 9000-foot limit in the Temperate and lower parts of the Puna Zones. Three of Dyar's specimens, however, came from much lower down, at the 2000-foot level. He noted at that time that these three specimens had the marginal markings more pointed and smaller. These lowland forms may at some future time prove to be a new subspecies.

The one specimen taken on the expedition is the second in the collections of the American Museum of Natural History. This specimen, however, differs from typical *isonira* in that the spots on the under side of the secondaries are blackish instead of reddish which may make this a possible new subspecies. With only one specimen at hand it was thought advisable to retain it under *isonira*.

80. *Hylephila boulleti* (Mabille)

Chaerephon boulleti MABILLE, 1906, Bull. Soc. Ent. France, pp. 67, 68.

TYPE LOCALITY: Peru.

RECORDED DISTRIBUTION: Peru.

NEW RECORD FOR PERU: Ollantaitambo, Cuzco, Peru, March 24, 1947.

This rare butterfly seems to be restricted to a very few localized areas in Peru. It is an inhabitant of the Upper Tropical Zone but prefers the more arid parts of this zone.

81. *Hylephila basistrigata* (Eaton)

Talides basistrigata EATON, 1932, Ann. Ent. Soc. Amer., vol. 25, pp. 21–22, pl. 1.

TYPE LOCALITY: Lima, Peru.

RECORDED DISTRIBUTION: Peru.

NEW RECORDS FOR PERU: Tingo Maria, Huanuco, Peru, January 20, 1947; Panao, Huanuco, Peru, January 26, 1947.

This is a rare species known heretofore only from the type locality near the Pacific coast of Peru. The expedition material from two localities, both from the Huallaga River Valley, extends the known range of this species far to the east and separated from the type locality by two mountain ranges with 16,000-foot passes and the intermediate high Junin Plateau.

82. *Polites vibex praeceps* (Scudder)

Hedone praeceps SCUDDER, 1872, Rept. Peabody Acad. Sci., p. 79.

TYPE LOCALITY: Tehuantepec, Mexico.

RECORDED DISTRIBUTION: Mexico, south through Central America, to Bolivia and southern Brazil in South America.

NEW RECORD FOR PERU: San Martin, San Martin, Peru, December 14, 1946.

This subspecies replaces typical *P. vibex vibex* Geyer from Texas southward. The typical form ranges over a large part of the eastern United States and the West Indies. The common name of whirlabout has been given to the northern form which well describes this active skipper, for its flight is fast and erratic. The one specimen taken on the expedition comes from the lower Huallaga River Valley. It will, however, undoubtedly be found in favorable places throughout the Humid Lower and Humid Upper Tropical Zones.

83. *Polites vibex* subspecies

Thymelicus vibex GEYER, 1832, *in* Hübner, Zuträge zur Sammlung exotischer Schmetterlinge, vol. 4, pp. 22–23.

TYPE LOCALITY: Not designated.

RECORDED DISTRIBUTION: Eastern half of the United States, south into the tropics.

NEW RECORD FOR PERU: Tingo Maria, Huanuco, Peru, January 26, 1947, two males.

These two male specimens, taken on the same day and from the same locality, are probably a new subspecies of *vibex*. They differ markedly from typical *vibex* by being much smaller, the forewings measuring 11 mm. and 12 mm., being very dark in color, and by the fact that the secondaries beneath have a very broad dark border on the outer margin, very much as in the female.

84. *Polites athenion* (Hübner)

Talides athenion HÜBNER, 1825, Sammlung exotischer Schmetterlinge, vol. 2, pl. 148, figs. 1–4.

TYPE LOCALITY: Not designated.

RECORDED DISTRIBUTION: Mexico, south through Central America, to Colombia, Venezuela, the Guianas, Brazil, Ecuador, Peru, Bolivia, and into Argentina; Trinidad.

NEW RECORDS FOR PERU: Tingo Maria, Huanuco, Peru, October 12, 1946, November 29, 1946, January 3, 22, 1947, May 19, 29, 1947; San

Martin, San Martin, Peru, December 14, 1946; Quincemil, Cuzco, Peru, April 24, 29, 1947.

This was a common species in the three areas in Peru where it was collected. As the species is widely distributed, it is probably to be found throughout the entire Humid Upper Tropical Zone and a large part of the Humid Lower Tropical Zone. It was on the wing when I arrived in October and was still flying in April.

85. *Wallengrenia otho curassavica* (Snellen)

Hesperia curassavica SNELLEN, 1886, Tijdschr. Ent., vol. 30, pp. 28–30, pl. 2, figs. 3, 3a.

TYPE LOCALITY: Curaçao.

RECORDED DISTRIBUTION: The typical species and its numerous subspecies have an extremely wide distribution ranging from southern Quebec and Ontario south through Central America, through South America.

NEW RECORDS FOR PERU: Puerto Maldonado, Madre de Dios, Peru, April 20, 1947; Iberia, Madre de Dios, Peru, April 30, 1947.

This subspecies is a tropical form, ranging from Panama and the Guianas through Brazil into Argentina. It apparently is a member of the Humid Lower Tropical Zone, for in Peru and Bolivia it seems to be restricted to the lower regions, not following the rivers up into the Humid Upper Tropical Zone as many species do. The common name, broken dash, has been given to this species because of the broken black line on the upper forewings.

86. *Atrytone myron* Godman

Atrytone myron GODMAN, 1900, Biologia Centrali-Americana, Rhopalocera, vol. 2, p. 493; vol. 3, pl. 94, figs. 20–24.

TYPE LOCALITY: Mexico.

RECORDED DISTRIBUTION: Mexico, south through Central America, to Colombia, Venezuela, British Guiana, Ecuador, Peru, Bolivia, and northwestern Brazil.

NEW RECORD FOR PERU: Tingo Maria, Huanuco, Peru, October 12, 1946.

A rather widely distributed species throughout the Upper Tropical Zone of Central and northern South America. It apparently is not common and is rather localized. The only specimens taken on the expedition were a male and a female, captured on the same day and in the same locality.

87. *Nyctelius nyctelius* (Latreille)

Hesperia nyctelius LATREILLE, 1822, Encyclopédie methodique, vol. 9, p. 746.

TYPE LOCALITY: Brazil.

RECORDED DISTRIBUTION: Southern Texas, south through Mexico, Central America, to Colombia, Venezuela, Ecuador, Peru, and northwestern Brazil.

NEW RECORDS FOR PERU: Tingo Maria, Huanuco, Peru, November 1, 21, 1946.

Only two specimens of this rather widely distributed species were taken on the expedition. Both came from the same locality, taken at an interval of about three weeks. Peru appears to be near the southern limit for the distribution of this species. It is a species of the Upper Tropical Zone but is rather localized throughout its range.

88. *Xeniades cecropterus* Draudt

Xeniades cercropterus DRAUDT, 1924, *in* Seitz, Macrolepidoptera of the world, vol. 5, p. 951.

TYPE LOCALITY: Rio Songa, Bolivia.

RECORDED DISTRIBUTION: Bolivia.

NEW RECORD FOR PERU: Tingo Maria, Huanuco, Peru, May 23, 1947.

Only one specimen of this rare species, which is scarce in collections, was taken on the expedition, and it is the second specimen in the American Museum of Natural History collection. Heretofore the species was known only from the region of the type locality. The Peruvian specimen broadens the known range considerably to the north. However, the species may well be found in most of the river valleys of the Humid Upper Tropical Zone of Bolivia and Peru.

89. *Thespieus dalmani* (Latreille)

Hesperia dalman LATREILLE, 1822, Encyclopédie methodique, vol. 9, p. 747

TYPE LOCALITY: Brazil.

RECORDED DISTRIBUTION: Mexico, south through Central America, to Colombia, British Guiana, Ecuador, Peru, and northwestern Brazil.

NEW RECORD FOR PERU: West slope of Cordillera Azul, Huanuco, Peru, May 17, 1947.

Although this species is rather common throughout its range, only one specimen of it was taken on the expedition. It is a member of the Humid Upper Tropical Zone and reaches an elevation of about 5000 feet.

90. *Thespieus aspernatus* Draudt

Thespieus aspernatus DRAUDT, 1924, *in* Seitz, Macrolepidoptera of the world, vol. 5, p. 952, pl. 184F.

TYPE LOCALITY: Paraguay.

RECORDED DISTRIBUTION: Southern Brazil, Paraguay, and northern Argentina.

NEW RECORDS FOR PERU: Tingo Maria, Huanuco, Peru, December 31, 1946, May 24, 1947.

Not previously recorded from Peru, the two specimens taken on the expedition extend the known range of this skipper considerably to the north and west. Other specimens will undoubtedly be found in favorable locations throughout the Humid Upper Tropical Zone.

91. *Thoon modius* (Mabille)

Proteides modius MABILLE, 1889, Naturaliste, ser. 2, vol. 3, p. 99, fig. 2.

TYPE LOCALITY: Chiriqui, Panama.

RECORDED DISTRIBUTION: Guatemala south to Panama.

NEW RECORD FOR PERU: Tingo Maria, Huanuco, Peru, May 16, 1947.

This species has heretofore been recorded only from Central America. The Peruvian specimen extends the known range far to the south.

92. *Rhinthon anthracinus* (Mabille)

Telegonus anthracinus MABILLE, 1877, Petites nouvelles entomologiques, vol. 2, no. 179, p. 162.

TYPE LOCALITY: Colombia.

RECORDED DISTRIBUTION: Northwestern South America.

NEW RECORD FOR PERU: Tingo Maria, Huanuco, Peru, May 16, 1947.

This Peruvian specimen extends the known range of this species considerably to the south. Other specimens of this apparently rare species will probably be found in favorable locations throughout the Humid Upper Tropical Zone.

93. *Rhinthon proximus* Bell

Rhinthon proximus BELL, 1934, Amer. Mus. Novitates, no. 745, p. 6, fig. 5.

TYPE LOCALITY: Putumayo River region, Peru.

RECORDED DISTRIBUTION: Peru; Trinidad, British West Indies.

NEW RECORDS FOR PERU: Tingo Maria, Huanuco, Peru, December 28, 1946, January 2, 1947.

The two specimens taken on the expedition, from the same locality but

on two different dates, add additional information in regard to the distribution of this rather rare species. Although described from Peru and recorded from Trindad, it will undoubtedly be found distributed over a large part of the intervening area.

94. *Cobalus cannae* Herrich-Schäffer

Cobalus cannae HERRICH-SCHÄFFER, 1869, Corresp. Blatt Zool. Min. Ver. Regensburg, vol. 23, p. 203.

TYPE LOCALITY: Not designated.

RECORDED DISTRIBUTION: Mexico, through Central America, to Colombia, Venezuela, Peru, Bolivia, and south into Argentina.

NEW RECORDS FOR PERU: Tingo Maria, Huanuco, Peru, November 1, 1946; Pucallpa, Loreto, Peru, November 6, 1946; Quillabamba, Cuzco, Peru, March 11, 1947.

Three specimens of this rather common and widespread species were taken on the expedition from three widely separated localities. Two of these are definitely from the Upper Tropical Zone, the third, from Pucallpa, is in the Lower Tropical Zone. As presently known, the distribution of this species seems to be the mountainous areas of Central America and a somewhat narrow strip along the eastern foothills of the Andes. For this reason I consider it as belonging to the Upper Tropical Zone, but as invading the Lower Tropical Zone along the western and northern margins.

95. *Cobalus virbius* (Cramer)

Papilio virbius CRAMER, 1777, Papillons exotiques, vol. 2, p. 75, pl. 143, fig. G.

TYPE LOCALITY: Surinam.

RECORDED DISTRIBUTION: Panama to British Guiana, south through Colombia, Peru, Bolivia, and into northern Argentina.

NEW RECORD FOR PERU: Juanjui, San Martin, Peru, December 2, 1946.

Evidently this is a species of the Humid Upper Tropical Zone, for it follows the foothills and river valleys, ascending to an elevation of about 4000 feet, in a broad area from the Guianas to Argentina. It may spread over the border into the Humid Lower Tropical Zone in favorable situations, but at the present time there seem to be no distributional records from the interior of the Amazonian area.

96. *Cobalus decinea* (Hewitson)

Hesperia decinea HEWITSON, 1876, Ann. Mag. Nat. Hist., ser. 4, vol. 18, p. 452.

TYPE LOCALITY: Not designated.

RECORDED DISTRIBUTION: Brazil.

NEW RECORDS FOR PERU: Quincemil, Cuzco, Peru, April 26, 1947; Tingo Maria, Huanuco, Peru, May 20, 1947.

Not before recorded from Peru. The two specimens taken on the expedition were from two widely separated localities, but from river valleys in the Humid Upper Tropical Zone. This may be a species of the Humid Lower Tropical Zone which has dispersed into the Upper Tropical Zone by following along the river valleys. Although rather widely distributed it apparently is not common throughout its range.

97. *Eutychide complana* (Herrich-Schäffer)

Goniloba complana HERRICH-SCHÄFFER, 1869, Corresp. Blatt Zool. Min. Ver. Regensburg, vol. 23, p. 195.

TYPE LOCALITY: Not designated.

RECORDED DISTRIBUTION: Guiana.

NEW RECORD FOR PERU: Tingo Maria, Huanuco, Peru, October 13, 1946.

This Peruvian record extends the known range of the species considerably to the southwest.

98. *Euroto compta* (Butler)

Pamphila compta BUTLER, 1877, Trans. Ent. Soc. London, p. 152.

TYPE LOCALITY: Oca, Rio Trombetas; Matatebem, opposite Itaituba; Villa Bella, Amazonas, Brazil.

RECORDED DISTRIBUTION: Costa Rica, Panama, and the Guianas, south to Peru and into Argentina; Trinidad.

NEW RECORDS FOR PERU: Tingo Maria, Huanuco, Peru, November 27, 1946, May 24, 25, 1947; Juanjui, San Martin, Peru, December 6, 1946.

The four specimens of this skipper taken on the expedition, on four different dates, came from two localities in the Huallaga River Valley in the Upper Tropical Zone. It is a widespread species throughout tropical Central and South America.

99. *Euroto micythus* Godman

Euroto micythus GODMAN, 1900, Biologia Centrali-Americana, Rhopalocera, vol. 2, p. 551; vol. 3, pl. 99, figs. 34, 35.

TYPE LOCALITY: Not designated.

RECORDED DISTRIBUTION: Mexico, Costa Rica, British Guiana, south to Peru and Brazil; Trinidad.

NEW RECORD FOR PERU: Pucallpa, Loreto, Peru, November 14, 1946.

A species of the Lower Tropical Zone occupying about the same region as the preceding species but apparently not extending very far into the Upper Tropical Zone.

100. *Euroto saramacca* Williams and Bell

Euroto saramacca WILLIAMS AND BELL, 1931, Trans. Amer. Ent. Soc., vol. 57, pp. 276, 277, pl. 25, fig. 28.

TYPE LOCALITY: Kwakoegron, Dutch Guiana (type); Sint Barbara Plantation, Dutch Guiana (allotype).

RECORDED DISTRIBUTION: Dutch Guiana; Trinidad.

NEW RECORD FOR PERU: Tingo Maria, Huanuco, Peru, March 23, 1947.

Recorded only from a small area in northeastern South America. The Peruvian record broadens the known range far to the southwest for this rather rare skipper.

101. *Phlebodes tiberius reticulata* (Plötz)

Hesperia reticulata PLÖTZ, 1883, Stettiner Ent. Zeitg., vol. 44, p. 208.

TYPE LOCALITY: Laguayra; Chiriqui, Panama.

RECORDED DISTRIBUTION: Mexico, south into northern South America.

NEW RECORDS FOR PERU: Pucallpa, Loreto, Peru, November 10, 1946; Moyobamba, San Martin, Peru, December 19, 1946; Tingo Maria, Huanuco, Peru, May 22, 28, 1947.

Described as a species, this form is now considered a subspecies of *P. tiberius* Möschler. Typical *tiberius* ranges throughout the northern part of the range from Mexico south into Columbia, while *reticulata* replaces *tiberius* in the southern part. Four specimens from three rather widely separated localities were taken on the expedition.

102. *Thargella caura* (Plötz)

Hesperia caura PLÖTZ, 1882, Stettiner Ent. Zeitg., vol. 43, p. 315.

TYPE LOCALITY: Surinam.

RECORDED DISTRIBUTION: Nicaragua, south through Panama, to Colombia, Peru, Brazil, Paraguay, into Argentina.

NEW RECORD FOR PERU: Tingo Maria, Huanuco, Peru, December 31, 1946.

A widely distributed species throughout Central and South America.

103. *Papias sobrinus* Schaus

Papias sobrinus SCHAUS, 1902, Proc. U. S. Natl. Mus., vol. 24, p. 448.

TYPE LOCALITY: Rio de Janeiro, Brazil.

RECORDED DISTRIBUTION: The type locality.

NEW RECORDS FOR PERU: Tingo Maria, Huanuco, Peru, October 28, 1946, November 25, 1946, May 22, 1947; Iberia, Madre de Dios, Peru, April 30, 1947.

The Peruvian records extend the known range to the west and northwest for this rare species which seems to belong largely to the Lower Tropical Zone.

104. *Papias potaro* (Williams and Bell)

Euroto potaro WILLIAMS AND BELL, 1931, Trans. Amer. Ent. Soc., vol. 57, p. 277, pl. 25, fig. 10.

TYPE LOCALITY: Tumatumari, Potaro River, British Guiana.

RECORDED DISTRIBUTION: British Guiana.

NEW RECORDS FOR PERU: Tingo Maria, Huanuco, Peru, October 23, 1946, January 2, 1947.

Described from British Guiana. The two specimens taken on the expedition broaden the known range of this species far to the southwest. Careful collecting will undoubtedly reveal the insect from other places throughout Venezuela, Colombia, Ecuador, and probably Bolivia. It seems to be a species of the Humid Upper Tropical Zone.

105. *Vehilius venosus* (Plötz)

Apaustus venosus PLÖTZ, 1884, Stettiner Ent. Zeitg., vol. 45, p. 160.

TYPE LOCALITY: South America.

RECORDED DISTRIBUTION: Panama to Peru, British Guiana, and Brazil.

NEW RECORDS FOR PERU: Tingo Maria, Huanuco, Peru, October 28, 30, 1946, November 3, 27, 1946, December 31, 1946, May 19, 25, 1947; Quincemil, Cuzco, Peru, April 13, 1947.

I consider this a species of the Upper Tropical Zone that follows the mountains and the foothills of the Andes from the Guianas in a broad arc to Peru and probably into Bolivia. The eight specimens taken on the expedition from two localities in Peru show that the insect is apparently on the wing at least over a period of eight months—from October to May.

106. *Vehilius forbesi* Williams and Bell

Vehilius forbesi WILLIAMS AND BELL, 1931, Trans. Amer. Ent. Soc., vol. 57, pp. 280, 281, pl. 25, fig. 7.

TYPE LOCALITY: Georgetown, British Guiana.

RECORDED DISTRIBUTION: Colombia to British Guiana.

NEW RECORDS FOR PERU: Tingo Maria, Huanuco, Peru, October 20, 1946, November 23, 1946, December 29, 1946, January 2, 22, 1947, May 25, 1947; Puerto Maldonado, Madre de Dios, April 18, 1947.

This species follows the same general pattern of distribution as the preceding species. It is an insect of the Humid Upper Tropical Zone but spreads out into the Lower Tropical Zone. The seven specimens from two localities, six in the Upper Tropical Zone and one in the Lower Tropical Zone, were taken on the wing during the same months as the preceding species.

107. *Lerodea noctis* (Plötz)

Hesperia noctis PLÖTZ, 1883, Stettiner Ent. Zeitg., vol. 44, p. 56.

TYPE LOCALITY: Chiriqui, Panama.

RECORDED DISTRIBUTION: Mexico, south through Colombia to Peru, Venezuela, Paraguay, and into Argentina; Trinidad.

NEW RECORDS FOR PERU: Tingo Maria, Huanuco, Peru, October 20, 1946, November 3, 21, 1946, December 31, 1946, January 23, 1947, May 14, 21, 1947; Pucallpa, Loreto, Peru, November 11, 1946; Macchu Picchu (Puebla), Cuzco, Peru, March 22, 1947.

This is a widely distributed species of the Lower Tropical Zone that spreads into the Upper Tropical Zone. Nine specimens were taken on the expedition from three localities: two in the Upper Tropical Zone and one in the Lower Tropical Zone. The dates of collection show that the species was on the wing from October to May.

108. *Lerodea tripunctata* (Latreille)

Hesperia tripunctata LATREILLE, 1822, Encyclopédie methodique, vol. 9, p. 752.

TYPE LOCALITY: Brazil.

RECORDED DISTRIBUTION: Mexico, south through Colombia to Peru, British Guiana, Brazil, and into Argentina.

NEW RECORDS FOR PERU: Tingo Maria, Huanuco, Peru, October 1, 30, 1946; January 2, 1947, May 21, 1947; Puerto Maldonado, Madre de Dios, Peru, April 17, 22, 1947.

A rather common and widely distributed species of the Humid Lower and the Humid Upper Tropical Zones. It occupies the same general region as the preceding species and also has a long flying period.

109. *Lerodea labdacus* (Godman)

Magistias labdacus GODMAN, 1900, Biologia Centrali-Americana, Rhopalocera vol. 2, p. 573; vol. 3, pl. 101, figs. 6, 7.

TYPE LOCALITY: Not designated.

RECORDED DISTRIBUTION: Mexico south to Colombia and Ecuador, Dutch Guiana, to Paraguay and into Argentina; Trinidad.

NEW RECORDS FOR PERU: Moyobamba, San Martin, Peru, December 19, 1946; Puerto Maldonado, Madre de Dios, Peru, April 17, 1947.

This rather common and widely distributed species has not been listed previously from Peru. The two specimens taken on the expedition came from two widely separated localities, one in the Lower Tropical Zone and the other in the Upper Tropical Zone.

110. *Lerodea coroicana* (Weeks)

Pamphila coroicana WEEKS, 1901, Proc. New England Zool. Club, vol. 2, p. 79.

TYPE LOCALITY: Near Coroico, Bolivia.

RECORDED DISTRIBUTION: Type locality.

NEW RECORD FOR PERU: Macchu Picchu (Puebla), Cuzco, Peru, March 22, 1947.

When described this species was known from six specimens only, from the type locality. The one specimen from Peru extends the known range a considerable distance farther to the north. This is apparently a species of the higher ranges of the Andes at elevations of 6000 feet or over, which would place it in the Upper Tropical and the Subtropical Zones. Future collecting will probably find it in small localized areas of the mountainous river valleys not only in Peru and Bolivia but probably also in Ecuador and Colombia.

111. *Lerodea catocala* (Herrich-Schäffer)

Cobalus catocala HERRICH-SCHÄFFER, 1869, Corresp. Blatt Zool. Min. Ver. Regensburg, vol. 23, p. 201.

TYPE LOCALITY: Not designated.

RECORDED DISTRIBUTION: Colombia.

NEW RECORD FOR PERU: Tingo Maria, Huanuco, Peru, May 22, 1947.

The Peruvian record extends the known distribution of this little-known skipper considerably to the south. It appears to be a species of the Upper Tropical and Subtropical Zones where it occurs in localized favorable spots in the Andes.

112. *Anthoptus epictetus* (Fabricius)

Hesperia epictetus FABRICIUS, 1793, Entomologia systematica, vol. 3, pt. 1, p. 330.

TYPE LOCALITY: "In Indiis."

RECORDED DISTRIBUTION: Mexico, south through Central America, to Brazil and into Argentina; Trinidad.

NEW RECORDS FOR PERU: Tingo Maria, Huanuco, Peru, October 12, 23, 1946, May 14, 27, 1947; Quincemil, Cuzco, Peru, April 24, 1947.

Five specimens of this widely distributed species were taken from two distantly separated localities. They were all from river valleys in the Upper Tropical Zone.

113. *Carystus marcus* (Fabricius)

Papilio marcus FABRICIUS, 1787, Mantissa insectorum, vol. 2, p. 87.

TYPE LOCALITY: Cayenne.

RECORDED DISTRIBUTION: Guatemala, south through Panama, to Brazil and into Argentina; Trinidad.

NEW RECORDS FOR PERU: Tingo Maria, Huanuco, Peru, October 18, 28, 1946.

This species was placed by Hayward in the genus *Vettius,* but I am still retaining it in *Carystus.* It is a widely distributed species throughout the Lower and Upper Tropical Zones of Central and South America.

114. *Carystus artona* (Hewitson)

Hesperia artona HEWITSON, 1868, Description of one hundred new species of Hesperidae, vol. 2, p. 27.

TYPE LOCALITY: Rio de Janeiro, Brazil.

RECORDED DISTRIBUTION: Nicaragua, south through Colombia to Peru, the Guianas, Brazil, and into Argentina; Trinidad.

NEW RECORD FOR PERU: Tingo Maria, Huanuco, Peru, December 18, 1946.

Hayward also placed this species, as he did the preceding one, in the genus *Vettius.* As is the preceding species, it is widely distributed and occupies approximately the same region.

115. *Vettius phyllus* (Cramer)

Papilio phyllus CRAMER, 1779, Papillons exotiques, vol. 2, p. 122, pl. 176, figs. B, C.

TYPE LOCALITY: Surinam.

RECORDED DISTRIBUTION: Panama south to southern Brazil.

NEW RECORD FOR PERU: Tingo Maria, Huanuco, Peru, January 2, 1947.

Only one specimen of this species was taken on the expedition. It ap-

pears to be limited to the more tropical parts of South America where, however, it seems to be nowhere common.

116. *Eutocus lucia* (Capronnier)

Carystus lucia CAPRONNIER, 1874, Ann. Soc. Ent. Belgique, vol. 17, pp. 35, 36, pl. 1, fig. 9.

TYPE LOCALITY: Therezopolis, Brazil.

RECORDED DISTRIBUTION: Panama, Venezuela, Ecuador, Bolivia, western Brazil, and into Argentina.

NEW RECORD FOR PERU: Macchu Picchu (Puebla), Cuzco, Peru, March 22, 1947.

Not previously recorded from Peru. One specimen was taken on the expedition. This is a species of the mountainous valleys and foothills of the Andes that spreads down into parts of the Humid Lower Tropical Zone.

117. *Eutocus quichua* Lindsey

Eutocus quichua LINDSEY, 1925, Jour. Sci. Lab. Denison Univ., vol. 21, pp. 111, 112, pl. 26, fig. 5, pl. 28, fig. 11.

TYPE LOCALITY: El Campamiento, Colonia Perene, Peru.

RECORDED DISTRIBUTION: Peru.

NEW RECORDS FOR PERU: Tingo Maria, Huanuco, Peru, October 20, 1946, December 31, 1946; Moyobamba, San Martin, Peru, December 20, 1946.

Three specimens of this species were taken on the expedition from two separate localities, both in the Huallaga River Valley. The species appears to be extremely localized in a limited area of the Humid Upper Tropical Zone of Peru.

118. *Callimormus gracilis* (Felder)

Ancyloxypha gracilis FELDER, 1867, Reise der Osterreichischen Fregatte Novara, Lepidoptera, vol. 1, p. 520; vol. 2, pl. 74, fig. 28.

TYPE LOCALITY: Bogota, Colombia.

RECORDED DISTRIBUTION: Mexico and Nicaragua, south to Peru and Venezuela; Trinidad.

NEW RECORDS FOR PERU: Tingo Maria, Huanuco, Peru, January 3, 1949, May 25, 27, 1947; Puerto Maldonado, Madre de Dios, Peru, April 22, 1947; west slope of Cordillera Azul, Huanuco, Peru, May 17, 1947.

A locally common species taken in three localities in Peru. It is on the wing over a rather long period and appears to be at home under quite varied conditions.

119. *Callimormus corades* (Felder)

Ancyloxypha corades FELDER, 1862, Verhandl. K. K. Zool. Bot. Gesell. Wien, vol. 12, pp. 477, 478.

TYPE LOCALITY: "Rio" (Brazil).

RECORDED DISTRIBUTION: Mexico south through Central America to Peru, Venezuela, Brazil, and into Argentina.

NEW RECORD FOR PERU: San Martin, San Martin, Peru, December 13, 1946.

Only one specimen of this common and widely distributed skipper was taken in Peru. Throughout its extensive range this species shows some variation. A number of the variations undoubtedly will be considered geographical subspecies.

120. *Callimormus fabulinus* (Plötz)

Apaustus fabulinus PLÖTZ, 1884, Stettiner Ent. Zeitg., vol. 45, p. 160.

TYPE LOCALITY: Surinam.

RECORDED DISTRIBUTION: Colombia, Venezuela, the Guianas, Ecuador.

NEW RECORD FOR PERU: Juanjui, San Martin, Peru, December 3, 1946.

A rather rare species of the Upper Tropical Zone. It seems to prefer the more arid portions of this zone.

121. *Carystoides basochesi* (Latreille)

Hesperia basoches LATREILLE, 1822, Encyclopédie methodique, vol. 9, p. 747.

TYPE LOCALITY: Brazil.

RECORDED DISTRIBUTION: Mexico through Central America to Bolivia and Venezuela, south into Argentina.

NEW RECORD FOR PERU: Iberia, Madre de Dios, Peru, April 30, 1947.

One specimen of this rather common and widely distributed species was taken in Peru. Specimens throughout its wide range show some variation, particularly on the under side.

122. *Turesis lucasi* (Fabricius)

Hesperia lucas FABRICIUS, 1793, Entomologia systematica, vol. 3, pt. 1, p. 339.

TYPE LOCALITY: "Americae Meridonalis Insulis."

RECORDED DISTRIBUTION: Panama to Venezuela south through Brazil and Paraguay into Argentina; Antilles.

NEW RECORD FOR PERU: Iberia, Madre de Dios, Peru, April 30, 1947.

The one specimen taken on the expedition comes from the Humid

Lower Tropical Zone of Peru. Specimens will undoubtedly be found throughout this entire zone.

123. *Thracides panimeron* H. H. Druce

Thracides panimeron H. H. DRUCE, 1908, Trans. Ent. Soc. London, pp. 383, 384, pl. 21, fig. 10.

TYPE LOCALITY: Farinas, La Paz, Bolivia, 1500 meters.

RECORDED DISTRIBUTION: Bolivia.

NEW RECORD FOR PERU: Quincemil, Cuzco, Peru, April 15, 1947.

Described from Bolivia, this species appears to be extremely rare, for only a few specimens are known. The one specimen taken broadens the known range to the north. It is the only specimen in the American Museum of Natural History collection. From our present knowledge of this species it seems to be restricted to a very limited area in the Humid Upper Tropical Zone of Bolivia and Peru.

124. *Thracides antoninus* (Latreille)

Hesperia antoninus LATREILLE, 1822, Encyclopédie methodique, vol. 9, p. 746.

TYPE LOCALITY: Brazil, Surinam.

RECORDED DISTRIBUTION: Panama south to Bolivia and the Guianas and into Brazil; Trinidad.

NEW RECORD FOR PERU: Tingo Maria, Huanuco, Peru, May 24, 1947.

A species of the Humid Upper Tropical Zone which follows the mountains in a broad arc around northern South America, with the river valleys the preferred habitats.

125. *Perichares philetes marmorata* Scudder

Perichares marmorata SCUDDER, 1872, Rept. Peabody Acad. Sci., vol. 4, p. 81

TYPE LOCALITY: Venezuela.

RECORDED DISTRIBUTION: Venezuela.

NEW RECORDS FOR PERU: Tingo Maria, Huanuco, Peru, May 17, 19, 1947.

Described as a species, this form is now considered a subspecies of the well-known and widely distributed *P. philetes* which ranges from Mexico to Brazil. The two specimens from Peru of this subspecies extend the known range far to the south. It seems to be a form of the Humid Upper Tropical Zone and will probably be found in favorable places in the mountain valleys throughout the foothills of the Andes.

126. *Pyrrhopygopsis telmela* (Hewitson)

Erycides telmela HEWITSON, 1866, Trans. Ent. Soc. London, ser. 3, vol. 2, p. 485.

TYPE LOCALITY: Amazon (Para).

RECORDED DISTRIBUTION: Brazil.

NEW RECORD FOR PERU: Tingo Maria, Huanuco, Peru, May 14, 1947.

The one specimen of this rather rare species that was taken on the expedition extends the range considerably to the westward. It also indicates that this form of the Humid Lower Tropical Zone extends up into the Humid Upper Tropical Zone. Eventually it probably will be found to be more abundant than the present records seem to indicate.

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ADDENDUM

While the present paper was in press, part 4 of W. H. Evans' "A catalogue of the American Hesperiidae in the British Museum (Natural History)" (London, 1955, sect. 3, Hesperiinae and Megathyminae, pp. 1–499, pls. 54–88) was published.

Evans' "Catalogue" suggests the following possible changes in the nomenclature:

80. *Hylephila boulleti* (Mabille)

The single specimen differs from typical *boulleti* in having a black stigma instead of the usual gray one; otherwise it seems to be closely related.

83. *Polites vibex* subspecies

These specimens apparently represent merely a variation of *Polites vibex praeceps* (Scudder).

84. *Polites athenion* (Hübner) = *Pompeius pompeius* Latreille
86. *Atrytone myron* Godman = *Mellana myron myron* (Godman)
88. *Xeniades cecropterus* Draudt = *Vacerra hermesia cecropterus* (Draudt)
92. *Rhinthon anthracinus* (Mabille) = *Cynea anthracinus anthracinus* (Mabille)
93. *Rhinthon proximus* Bell = *Papias proximus* (Bell)
94. *Cobalus cannae* Herrich-Schäffer = *Quinta cannae* (Herrich-Schäffer)
96. *Cobalus decinea* (Hewitson) = *Decinea decinea decinea* (Hewitson)
100. *Euroto saramacca* Williams and Bell = *Sodalia sodalis* (Butler)
101. *Phlebodes tiberius reticulata* (Plötz) = *Saturnus tiberius reticulata* (Plötz)
104. *Papias potaro* (Williams and Bell = *Cobalopsis potaro* (Williams and Bell)
105. *Vehilius venosus* (Plötz) = *Vehilius stictomenes stictomenes* Butler
106. *Vehilius forbesi* Williams and Bell = *Vehilius vetula* Mabille
107. *Lerodea noctis* (Plötz) = *Corticea corticea corticea* (Plötz)
108. *Lerodea tripunctata* (Latreille) = *Cymaenes tripunctata tripunctata* (Latreille)
109. *Lerodea labdacus* (Godman) = *Vehilius inca* (Scudder)
110. *Lerodea coroicana* (Weeks) = *Corticea mendica mendica* (Mabille)
111. *Lerodea catocala* (Herrich-Schäffer) = *Cobalopsis catocala* (Herrich-Schäffer)
113. *Carystus marcus* (Fabricius) = *Vettius marcus marcus* (Fabricius)
114. *Carystus artona* (Hewitson) = *Vettius artona* (Hewitson)
116. *Eutocus lucia* (Capronnier) = *Lucida lucia leopardus* Weeks
118. *Callimormus gracilis* (Felder) = *Apaustus gracilis gracilis* (Felder)
120. *Callimormus fabulinus* (Plötz) = *Eutocus matildae vinda* Evans
124. *Thracides antoninus* (Latreille) = *Saliana antoninus* (Latreille)
125. *Perichares philetes marmorata* Scudder = *Perichares philetes dolores* (Reakirt)
126. *Pyrrhopygopsis telmela* (Hewitson) = *Thracides cleanthes telmela* (Hewitson)