

receive any eggs of such species, particularly from the mountainous regions of the west. The synonymy, as now known, I would place as follows:

- ausonides, Bdv.
 = coloradensis, Hy. Edw.³
 creusa, Dbl. & Hew.
 = var. elsa, Beut.
 var. hyantis, Hy. Edw.
 var. lotta, Beut.

ERRATA.

The following corrections may be made to my Notes on the new *Rhopalocera* described by W. G. Wright in his Butterflies of the West Coast:

- P. 238—No. 178, *Melitæa eremita*, Wright, = *palla*, ♀ (*blackish form*).
 No. 181, *Melitæa sabina*, Wright, = *palla*, ♀ (*reddish form*).
 No. 186, *Melitæa leona*, Wright, = *obsoleta*, Hy. Edwards (from type locality).

SOME RECENT PAPERS ON HEMIPTERA.

BY J. R. DE LA TORRE BUENO, NEW YORK.

From time to time, notes, papers and monographs on some branch of Entomology are published, but, unfortunately, not always in the most widely read nor even accessible publications. Such, for instance, are three papers, one of great interest, not only to American Hemipterists, but also to the general student of biology. Of the other two, one should receive the notice of Hemipterists in general, and the other of those whose interest is mainly in water-bugs.

The first is a paper on fauna, by Dr. G. Horvath, of Buda-Pesth, entitled, "Les Relations entre les Faunes Hémiptérologiques de l'Europe et de l'Amérique du Nord." This important contribution was read at the opening session before the 7th Zoological Congress at the Boston meeting in 1908, and its author now publishes it in the, to us, inaccessible "Annales Historico-naturales Musei Nationalis Hungarici."¹

3. Hardly worthy of rank, as, in good series, all intergradations are to be found.

(1) 1908, vol. vi., pp. 1-14.

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He calls attention to the great resemblance already noted between the faunas of Europe and North America, going so far in many cases as to the identity of genera and species, and this after rejecting mistaken identifications on the one hand, and demonstrating the identity of American species, reputed as new, with well-known European forms on the other. His researches have given 161 species and 261 genera of European-American Hemiptera, and this includes the imported and naturalized forms, of which 31 have come to America from Europe, and only 2 have been exported to the other side of this continent. The imported species, except *Clinocoris lectularius* and *Reduvius personatus*, are all Homoptera—more or less injurious to cultivated plants. Deducting imported species (the number of which does not include certain forms held by our entomologists to be imported because found here later than in Europe, from which view Horvath differs), there are 128 species common to both continents, 59 Heteroptera and 69 Homoptera. In the former he lists 3 Pentatomias (or Cimicids); 9 Lygæids; 4 Aradids; 1 Gerrid, *Gerris rufoscutellatus*, Latr.; 6 Reduviids, of which 5 are Reduvioli; 4 Acanthids (or Saldids); 2 Anthocorids; no less than 28 Mirids (or Capsids); 1 Notonectid and 2 Corixids. The Homoptera are mainly Jassids, Cercopids, Aphids (by far the most abundant) and Coccids.

In examining these lists one is struck by the fact that the vast majority belong to the colder parts of Europe, and only 6 are from the South, and also found in the Southern United States. Their artificial spread is inadmissible, and while he does not consider theories of a great continent between Europe and America, nor that the dispersal was by way of Iceland and Greenland when these had a milder climate, Dr. Horvath considers that the fact that the common species are also Palæarctic forms evidently shows that the dispersal was by way of Behring Strait. In confirmation of this supposition we have the fact² that five species have been found only at the extreme north-west of America, and that certain others have not penetrated far into the Palæarctic region, and still others are common only to north-western America and north-eastern Asia.

As to the genera, he finds that of those common to the two faunas, no less than 138 are of Palæarctic origin, 31 are Nearctic, 23 Holarctic, 13 Neotropical, 5 Oriental, 4 Ethiopian, 12 intertropical and 22 cosmopolitan.

(2) Dr. Horvath cites six, but one is known to me *positively* to be a mis-identification.

Moreover, there are 8 of uncertain origin. From this tabulation he deduces that nearly 84 per cent. of the common genera have migrated by the Behring route.

His conclusions are as follows :

1st. There is a certain number of species and genera of Hemiptera which are common to Europe and North America.

2nd. The greater part of these common Hemiptera is native to the Palæarctic region and belongs to the temperate zone.

3rd. The migration of these Hemiptera has taken place mainly by way of Behring Straits.

4th. The few southern types common to the two continents originated in the intertropical region, whence they came independently to enrich the Palæarctic and Nearctic faunas.

5th. Artificial importation plays only a secondary role in the spread of European-American Hemiptera ; but it is Europe that has supplied America, along with cultivated plants, with more species than the latter has received from Europe.

(To be continued.)

THE BITER BIT.

Everybody knows that toads are great insect destroyers, accepting nauseous species, and not refusing even stinging bees, so I was surprised the other day, on hearing the cry of a toad in pain, to find one nearly the size of a hen's egg attacked by a ground beetle a little over an inch long and half an inch broad, belonging to the genus *Dicaelus*. These beetles are broad and flat, black, with a blue line on the outer edges of the elytra. The toad was held by the middle of the upper arm by the powerful jaws of the beetle, and vainly struggled to push off its assailant with the other limbs, and the beetle actually tried to carry the toad away, pushing it ahead two or three inches while I watched. The toad had a bloody wound in its shoulder, and bite-marks, corresponding to the beetle's jaws, all along its flank and thigh, so the fight must have lasted a considerable time. The beetle frequently relaxed its hold slightly to take a better bite; it held on like a bulldog, with no intent of letting go while I carried them to the house to show to my wife, and indeed I had to pry the beetle's jaws apart to separate the combatants. These *Dicaelus* beetles are rather common here, but I never knew them to prey on vertebrate animals before.—THEODORE L. MEAD, Oviedo, Fla.