

**A SWARM OF VANESSA CALIFORNICA
AND SOME NOTES ON A SWARM OF PLUSIA CALIFORNICA**

By J. W. Cockle

Commencing on June 17th of this year a very large number of *V. californica* were to be seen on the lower slopes of the mountains round Kootenay Lake. It is usual to see a few hibernated specimens of this butterfly in the early spring, just as soon as the weather is warm enough to permit them to emerge from their winter quarters, but what amounted to a large swarm in the middle of June was most unusual. All of the specimens were very fresh and looked as if they might be freshly emerged, but my supposition was that they were part of a brood that had hibernated at a very high altitude and consequently did not leave their winter quarters until the snows had melted in the neighbourhood in which they had hibernated. This supposition is backed up by the fact that the mountains round Kootenay Lake rise to an altitude of over 9,000 feet and their only known food plant, *Ceanothus sanguineus*, grows most abundantly up to near the summits.

About the first week in August the new brood began to make their appearance and in a few days they were to be seen in countless thousands, not alone round Kootenay Lake but eastward across the mountain range in the valley of the Columbia and westward into the valley of the Arrow Lakes district. The emergence seemed to reach its zenith about the 15th of August, at which time they were everywhere; along the roads in the afternoon they were to be seen settled on the roadbed in sufficient numbers to almost obscure the ground.

I kept a good lookout for any aberrations but none were seen, whereas in the swarm that was here in the summer of 1890 several dimorphic specimens were captured by a collector here; these are, I believe, now in the Cambridge Museum in England.

The time of their arrival and subsequent emergence shows that their entire larval and pupal stages were completed in five weeks; this is remarkable as those that occur here ordinarily will take from the beginning of May until August to complete their life-history.

I have also to record a swarm of *Plusia californica* which emerged at the end of September. They were much in evidence in the afternoon and early evening flying over the clover, as many as twenty or thirty might be taken on the clover blossoms within a space of a square yard. Though they were so plentiful in the fields, they were very scarce at light, which is quite the reverse of their usual habit. It was curious that *P. californica* was so numerous, when the scarcity of all other varieties of *Plusias* was so marked, the only other species of this genus that occurred sparingly here last summer was *viridisignata*, all other members of this family were conspicuous by their absence, not a single specimen was taken here by either of the collectors.

As **P. californica** when numerous has proved a bad pest amongst the alfalfa fields, it remains to be seen if they will pass the winter in sufficient numbers to make them a bad pest in the coming summer. Regarding the economic value of records of swarms of insects, it may be well to conclude this article with a few notes. **V. californica** feeds only on the **Ceanothus** which, when attacked by a swarm, is completely defoliated, areas of many acres have been observed which had been entirely stripped of every vestige of foliage, and it is not unusual to find the pupæ suspended from the leafless branches. I have seen instances where the pupæ hung in rows (with an intervening space in some cases not exceeding one inch) right along the branches. The fact that **V. californica** only feeds on the **Ceanothus** forms an exception to the many insects which favour this shrub as a food plant, most of the other insects which feed on it will attack the foliage of the apple trees which have superseded the wild brush on the cleared land.

Another fact that was observed after the swarm of 1890 was the almost entire absence of the insect for several years following. This year swarms of them are hibernating. During January I had occasion to remove some lumber which had been piled in the roof of the barn and found thousands of them packed in between the stacks of boards; it would have been easy to fill a quart measure with them.

As regards **P. californica** I have reason to believe that all the **Plusias** that occur in this section of British Columbia are single brooded. **Californica** hibernates and in the spring of 1914 was greatly in evidence flying round the fruit tree bloom, to which I believe they acted as good pollinators.

I would like to refer to a pamphlet issued by the Entomological Department, being a re-print of an article by Mr. Arthur Gibson which was published in the Agricultural Gazette, entitled "The Alfalfa Looper," in which the statement is made that there are probably two distinct broods each year; this statement I believe to be incorrect. It is a fact that freshly emerged specimens may be found during July, but it is also very probable that some specimens may have been confused with **Pseudogamma**. These two species are so much alike that a correct identification is sometimes difficult.

Pseudogamma flies during July, August and September and passes the winter in the larval stage. I have never seen a hibernated specimen of it. I have records of **Californica** from July to the following June, but all those taken in the spring are hibernated; the records of **Pseudogamma** run from July to October, with no record of any hibernated specimens in the following spring.

I have no records of the capture of hibernated specimens of any of the fifteen species of **Plusia** that occur here, except as stated in the case of **Californica**.