

SOME REMARKS ON LASIOCAMPA QUERCUS, L.

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In 1931 (*Bull. Soc. Léop. Genève*, 6: 126) A. Pictet published a very interesting article on the habits of *Lasiocampa quercus*, L., during and after copulation, entitled: "Recherches expérimentales sur l'accouplement bilatéral et la double ponte de *Lasiocampa quercus*, L." (Experimental researches on the bilateral copulation and the double egg laying of *Lasiocampa quercus*, L.). The article may be summarized as follows:

1. As soon as a ♂ is placed into a cage with a virgin ♀ it sets to the *left side* of the ♀ and copulates with it for the first time during about 20 minutes. Then the ♂ separates from the ♀ and remains motionless at a short distance from her for about 15 minutes. Thereupon it returns to the same ♀, takes place at her *right side* and copulates again, a bit longer than the first time.

2. Immediately after the second copulation the ♀ deposits a first series of eggs, then she remains quiet for one to five days, depending on the temperature, and lays the rest of her eggs (about one quarter).

3. The first (left) copulation is the normal one with the object to fecundate the eggs. The second (right) copulation, during which the penis is not introduced into the vagina but into the ovipositor ("l'orifice de ponte"), serves to facilitate the emission of the eggs.

4. If a ♀ has received the ♂ only at its left side, it waits some days before depositing her eggs which are fertile.

5. If a ♂ which has copulated with a first female at her left side is placed with a second virgin female, it copulates with her, but only at her *right side*. This female at once lays her eggs which are *infertile*.

6. A ♀ has copulated for the first time (to the left). Now the ♂ is taken away and replaced by another virgin one. After some hesitation this copulates to the *right side* of the ♀ (deviation from the rule) and after the usual pause for the second time to the right side.

This summer (1946) I bred a good series of *Lasiocampa quercus* in order to learn something about the race which inhabits the northern provinces of our country. This race is characterized in the first place by its caterpillars, which are of a fine dark red-brown when full-grown, strongly reminding one of *Macrothylacia rubi*, L. Yet they cannot be true representatives of race *callunae*, Palmer, as the very great majority of them (more than 95 per cent.) have a life-cycle of one year.

The remainder of our country is inhabited by the ordinary race with grey-brown caterpillar, so excellently figured in *Svenska Fjärilar*, pl. 12, fig. 11.* The imagines are not so easy to distinguish owing to the great individual variability, though in series the difference between the two races is obvious.

I had about 50 pupae and so was in an excellent position to check the results of Pictet with our race. My results were as follows:

1. On 12th July a ♂ was found in *cop.* with ♀ No. 1 at 17.15. It sat at the left side of the ♀. At 17.20 the couple separated. The box

*This does not mean, however, that this Dutch race is identical with the Swedish one. The ♂ and ♀, figured in the Swedish work, are stouter than the Dutch specimens. This is confirmed by the figures given by Wahlgren: span of the Swedish specimens 56-83 mm. But the Dutch specimens measure 47-70 mm. Much has still to be done on the study of the races of this interesting species.

was open and the ♂ did not take a position at a short distance from the ♀ but flew away as far as possible, that is against the window where it flew wildly up and down, trying to escape. It is clear that in a state of nature this ♂ would never have returned to the ♀. I put, however, the ♂ in the box again, where it continued flying wildly about till 17.55. Then it again entered into *cop.* with ♀ No. 1 till 18.06. It again sat *at the left side* of the ♀! From 18.06 till 18.12 the ♂ repeated its violent flying but now I kept the box closed so that it could not escape. From 18.12 till 18.41 it copulated with ♀ No. 2 (it is absolutely certain that this was a virgin one!) and sat *at the right side* of her. After this *cop.* the ♂ was liberated and the ♀♀ were kept in separate boxes for further observation.

2. On 16th July another ♂ was found in *cop.* with ♀ No. 3, sitting on the left side. This *cop.* lasted at least a quarter of an hour, then the couple separated. The ♂ flew wildly about but could not escape. After some time it again copulated with ♀ No. 3, from 19.20 till 19.45, and sat again *at her left side*. Then the flying about was repeated till 20 hours when the ♂ once more copulated, now with female No. 4, till 20.15. It was now placed *at the right side* of this female. When this couple separated the ♂ was allowed to escape.

It is clear that the behaviour of the two ♂♂ is not in accordance with the rule stated by Pictet. As to the ♀♀, Nos. 1 and 3 had copulated twice, both times at the left side. So they ought to wait some days before they would lay eggs, which would be fertile. Nos. 2 and 4 had only copulated once and that only at the right side. They ought to start at once laying eggs, which would be infertile. The practice was, however, very different. All females kept quiet till it was quite dark. Then they started flying about in their box and the next morning every female had produced a great number of eggs. All remained quiet for several days and died at last without laying a second batch of eggs. The eggs of ♀ No. 1 practically all hatched. Of those of No. 2, which ought to be infertile, about $\frac{3}{4}$ hatched. No. 3, which had copulated twice at the left side for a sufficiently long time, produced eggs of which only 30 per cent. hatched. Several caterpillars were not able to leave the egg shell completely so that the partial hatching is probably caused by weakness. Female No. 4, which had only once copulated, and that on the right side, ought to lay infertile eggs. Practically all her eggs hatched!

So it is quite evident that my results are in complete contradiction with those of Pictet. My experience is:

1. It is highly improbable that in a state of nature the ♂ copulates twice with the same ♀.

2. Copulation may take place at the left side, but also at the right side of the ♀. In both cases the penis is introduced into the vagina for in both cases the eggs are fertile.

3. The same ♀ can attract a ♂ more than once. This need not be the same ♂ at all. Every time a normal copulation takes place.

4. The ♀ starts laying eggs the night following immediately upon the copulation. The question on which side *cop.* took place is of no importance.

Is Pictet wrong? I should not like to express such a definite opinion. I only know for certain that the Dutch race with red-brown caterpillar (I have to do still a good deal of work before I can state the name of this

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