XII. *Further Observations on the Curculio Trifolii. In a Letter to William Markwick, Esq. F.L.S. by Martin Christian Gottlieb Lehmann, M.A. of Gottingen.*

Read February 3, 1801.

SIR,

WHEN you favoured me, last summer, with an account of the damage done to your clover by a number of little maggots, and permitted me to gather some of the injured flower-heads, I felt interested in the cause, and became anxious to observe the œconomy and changes of this little destructive animal, and by my observations, in addition to those which you had sent to the Linnean Society, to endeavour to complete the history of an enemy you had so unfortunately become acquainted with.

As far as my limited knowledge in the science of entomology extends, nothing appears to have been hitherto published of the nature and habits of this insect. The French naturalist Geoffroy, who first described the perfect animal, says it is found on flowers, and calls it *le Becmare noir à pattes fauves*, but takes no notice of its larva. Fabricius describes it as an *Attelabus*, and observes “*Habitat primo vere frequens locis apricis calidioribus*,” which perfectly agrees with my own observation, for it was the first insect I found last spring in a sunny meadow near a shrubbery.

The blighted clover heads which I gathered in your grounds in August were, like all the rest in the field, full of maggots of different

sizes, which of course passed into their perfect state at different periods from the middle of August until the end of September.

I preserved half a dozen of them in a flower-pot covered with gauze, in which I had previously sown some turnip seed. They fed a little upon the cotyledons of this plant, but seemed not inclined to perform that duty which nature has imposed on them in their perfect state. On the contrary, they soon retired to a secret corner of their prison *above* the earth, where they remained in a quiescent state; and, after the first cold nights in October, appeared as if dead, but soon revived upon being brought into my warm study.

Few as these observations may appear, yet, added to your interesting discovery, they may form an outline of the history of this little animal, which further and more accurate observations may complete.

Hatched between the calyces of the *Trifolium pratense*, the maggot penetrates with its head into the rudiments of the first seed, as yet in a liquid state, and then proceeds to another more advanced and suitable to its increased strength. Having consumed 3 or 4 of them, it remains in the place of the last, where it is sufficiently sheltered, and changes like other weevils into the pupa or chrysalis state, through the transparent skin of which an experienced eye may trace the different limbs of the future animal. After a few days the insect comes forth in its imago or perfect state, at first soft and white, but soon changing to a shining black colour, except the tibiae and first joint of the antennæ, which remain yellow.

Having taken a short meal, it slowly conceals itself in the small holes of fences, or in the bark of trees, where it *reposes* during the winter, if sufficiently protected from its numerous enemies. Few however, happily, survive; for it appears impossible that many should escape the vigilance and dexterity of the wren, the rodbreast, the
nun,

num, and other birds of the titmouse kind (*Parus*, *Par.*). Such as escape their bills are among the first partakers of the universal life which nature excites in the spring. Last year they appeared in Sussex in the month of March, and, in addition to their numerous persecutors, the *Staphylini* were then particularly formidable to them.

Surrounded by so many dangers, while feeding on the tender leaves of plants, they are employed in seeking their comforts, until the heads of clover and perhaps other papilionaceous flowers break out, when the female deposits on the cup of the swelling seed the egg that produces its destroyer.

The fecundity of this little insect is so prodigious, that the maggots destroyed a whole field which the year before, when not a single insect of this kind was discovered, produced 70 pounds of seed. There is reason to believe, however, that the parents of those millions were then in your grounds, as, the animal being not only destitute of wings but also very slow in its motion, it is not probable that it could have overrun your field to such a degree from a distance in the course of one season.

In the history of this, as in almost that of every other insect, if observed with attention, the œconomy of nature appears wonderful. This little insect seems designed to prevent the boundless increase of the trefoil, and is itself circumscribed in its numbers by numerous enemies constantly on the watch to devour it. The female of this insect could never lay a great number of eggs if she had to search for flowers sparingly spread over a large field, as she would in that case infallibly become a prey to some of her enemies; whereas in the clover field, where flower presses upon flower, she may lay ten thousand in secret.

The wolf is extirpated in these islands, formerly its abode. Insects not less formidable and destructive are yet unsubdued. Our cattle, our
fields

fields, our granaries, &c. often bear witness to this truth. The same spirit which made us masters of the creation is still necessary to preserve the government. Our knowledge must keep pace with our desires, and men in general will soon be compelled by necessity to the universal pursuit of a science to which a philosophic mind needs no such incentive.

November 28, 1800.