—Dr. Howard asked the members of the Society to make observations during the coming summer on the resting position of mosquitoes of the genera Anopheles and Culex with a view to attempting to substantiate the observation made by Ross in Sierra Leone that Culex resting on a perpendicular wall holds its body parallel to the wall, while Anopheles holds its body nearly at right angles.

—Dr. Dyar presented the following paper:

A REMARKABLE SPHINX LARVA (LOPHOSTETHUS DUMOLINII LATR.)

By Harrison G. Dyar.

The supposed near relationship of the Saturniidæ and the Sphingidæ has been regarded as strongly indicated by the African spined Sphinx (*Lophostethus dumolinii*) as well as, to a less degree, by the American horned Sphinx (*Ceratomia amyntor*). I have been able to show that the mature armature of the horned Sphinx is secondary, having no relation to the primary tubercles, and hence valueless as an indication of relationship. In this Sphinx the horns and roughly toothed lines are a hypertrophy of the secondary granules, occurring in the position of the ordinary Sphinx markings, converting these markings into structural elements, all apparently in adaptation to the rough and toothed leaves of the elm, its food plant.

In the African spined Sphinx, however, we have long spines, occurring, apparently, in the position of the primary tubercles. The published accounts fail to give the exact location of these spines, so that, without seeing this larva, I felt myself to be at a disadvantage in the discussion of this general subject. Very recently, however, I have been so fortunate as to secure a fine mature larva of *Lophostethus dumolinii*, received through the kindness of Mr. C. P. Lounsbury, now of Cape Town, Cape Colony, collected by Mr. J. F. Queckett, of Durban, Natal.

The insect has a remarkably Ceratocampid-like appearance, suggesting, except for the nearly equal length of all the spines, the American *Citheronia regalis*. But let us consider the structure more in detail.

The annulets.

The segments are divided faintly into eight annulets, as in the Sphingidæ.

The secondary hairs.

These are degenerate and nearly obsolete, though, with a lens, their numerous, minute tubercles may readily be detected.

The spines.

These are long, stiff, black thorns, occurring on all the segments, though but weakly developed on the prothorax and 9th abdominal, none on the 10th abdominal segment. The subventral ones are shorter than the subdorsal ones, and the upper spine on meso- and metathorax as well as the unpaired median spine on the eighth abdominal segment are slightly longer than the other subdorsals and shortly forked at tip. The spines are smooth in the case of the shorter ones; the longer ones have from one to six short side thorns or branches.

The number of the spines.

On the prothorax, one each side, above the base of the foot; on meso- and metathorax four on each side; on the first to sixth abdominal segments, five; on the seventh segment, four; on the eighth segment, one on the dorsal line and three on each side; on the ninth segment, two; on the tenth segment (anal plates) no true spines, but a lump on each side of the middle of suranal plate. Two to three short spines on the leg-plates of the third to sixth abdominal segments.

The position of the spines.

On the pedal abdominal segments the position is: First spine subdorsally on third annulet; second spine laterally on fourth annulet; third spine substigmatally on second annulet; fourth spine upper-subventrally on fourth annulet; fifth spine lower subventrally above base of foot (sixth annulet). On the first and second abdominal segments the subventral spines are more remote and more in line transversely, being both on the fifth annulet. On the sixth and seventh segments the fifth spine is missing. On the ninth segment the upper spine is lateral, the lower pedal, being in front of the anal foot. On the thorax the first spine is subdorsal, the second lateral, the third substigmatal and a little anterior, the fourth subventral.

The homology of the spines.

The position of these spines seems to indicate that they represent the primary tubercles. Tubercle ii is not represented, and there is an extra subventral spine on the third to sixth abdominal segments; otherwise the position is exactly that of the setæ in stage I of any Sphinx. Therefore, on the pedal abdominal segments the first spine corresponds to tubercle i; the second to tubercle iii; the third to tubercle v; the fourth to tubercle iv; the fifth to tubercle vi (subprimary). On the thorax, the first spine corresponds to tubercles ia + ib as proved by the cleft tip; the second to tubercle iia, iib being lost, or to iia + iib, the cleft tip

being lost—stage I would decide; the third to tubercle iv; the fourth to tubercle vi. The first stage is needed to confirm these homologies.

Coloration.

This is, in effect, not Sphingid, but Ceratocampid. The head and cervical shield are conspicuously striped with black; the anal plates are red with black borders; the body is green, the spines black with yellow bases, the foot shields black. A white or yellow bar extends between the second and third spines on the first to seventh abdominal segments.

Conclusion.

The larva of *Lophostethus dumolinii* is a true Sphinx, not more nearly related to the Ceratocampids than any other Sphinx, since it possesses true Sphingid tubercles, iv above v and before the spiracle, not united with v as in all the Saturnian phylum. Functionally, indeed, it is a Saturnian like the African Saturnians with thorn-like tubercles; but the character is evidently adaptational, an irregular hypertrophy of the tubercles superimposed on the phylogenetic characters of the Sphingidæ.

With the exception of tubercle ii on the abdomen, vii on 7th and 8th abdominal segments and viii on all the apodal segments, all the primary tubercles are represented by spines. I am inclined to refer the fifth spine of first and second abdominal segments to tubercle vii rather than to vi. Stage I, when at hand, will decide the point.

As to the subprimary tubercles, there is no indication of their presence on the thorax, and on the abdomen tubercle vi only on second to fourth segments. I am not yet fully clear as to the significance of this unexpected condition. Apparently the Sphingidæ are descended from forms possessing the subprimary tubercles, though the character holds but weakly in the group at present. On the other hand the apparent weakness of the character may be due to the irregularity of the spine formation which has affected only a part of the tubercles.

A full account of all stages of this curious larva is much to be desired.

The paper excited much interest and a number of questions were asked as to the important differences between the larvæ of Ceratocampidæ and Sphingidæ and as to the value of certain larval characters. Among other questions, Mr. Ashmead inquired as to the exact characters separating Lepidopterous larvæ from Tenthredinid larvæ, stating that he understood that the absence of