inal segment in a line with the spiracle; on the 3rd abdominal segment a rectangular downward projection is formed including the spiracle and on the 4th a similar rectangular projection extends the dark color to the base of the prolegs with generally the lowest point between the first two pairs of prolegs. From here the edges slope rapidly upward to the subdorsal area of the 8th segment, being at this point about $1-1\frac{1}{2}$ mm. apart, then broaden considerably across the 9th, narrowing again on 10th, thus forming the above mentioned anal diamond patch. At the deepest point of the saddle there is considerably diffuse ochreous shading forming a lateral patch on 3rd and 6th abdominal segments and in late stages there is a marked tendency for the whole saddle area to become paler. From the rear of the metathoracic legs a purple band, bordered on upper side by yellow, extends ventrally backward across 1st and 2nd abdominal segments and there is an oblique band of same color on prolegs which on 7th-10th abdominal segments forms a broad band of dark color, often coalescing with a centro-ventral dark line found on these same legs. Lateral area of body green with sparse yellow sprinkling and orange spiracles.

THE DAILY MAXIMUM FEEDING PERIOD OF *MELANOPLUS FEMUR-RUBRUM*. *

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While making a study of the feeding habits of *Melanoplus femur-rubrum* at Lafayette, Indiana, during the late summer of 1919, it was possible to obtain some data on the time of day the maximum feeding period of this species occurred.

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The observations by which these data were obtained were made in the following manner: Card-board discs one foot in diameter were placed in an infested field and equal amounts of similarly mixed bran mash put in the center of each. By the use of a pair of field glasses counts were made of all grasshoppers either feeding or within the six inch radius of the baits (Fig. 1) at 15 minute intervals from daylight until dark. Fresh mash was supplied when needed to avoid possible error due to drying. Experiments were run on Aug. 8, 1919, with six cards and again on Sept. 25 with 12 cards. The accompanying curve shows the number of hoppers feeding at each 15 minute interval during these two days. (The time used in these curves is that prescribed by the Daylight Saving Law of 1918 and 1919.)

Fig. 1.—Cardboard disk in position in the field showing bran bait and grasshoppers attracted to it.

Although the grasshoppers were much more abundant on Aug. 8 than on Sept. 24, there was but little difference in their maximum feeding periods. The curve for Aug. 8 shows a marked fall at 10.15 A. M. and again at 12.45 P. M., undoubtedly due to the changing of baits at 10.00 A. M. and 12.30 P. M. On Aug. 8 the greater part of the feeding occurred between 8.30 A. M. and 12.30 P. M., while on Sept. 24, 9 A. M. and 12.15 P. M. marked the limits of this period. On Aug. 8 there was considerable feeding activity in the afternoon until 4.15 when it dropped suddenly until 7.15, at which time the last hopper was observed to have fed. On Sept. 24 feeding activities gradually decreased after 2.30 P. M., the last being recorded at 6.30 P. M. These observations indicate that the maximum feeding period for grasshoppers under these conditions occurs between 8.30 A. M. and 12.30 P. M. (new time). Therefore, to obtain the best results from the use of poison bran mash it should be applied in the morning not later than 8.30 A. M. thus having the mash in the field in a moist condition during the maximum feeding period.

While performing these experiments a careful study was made on the habits of grasshoppers with reference to the time of day. It was found that early in the morning the hoppers were inactive and roosting on the tops of grasses and weeds; they would not jump when disturbed, it being possible to pick them off with the fingers. At about 7.30 A. M. some activity was noticed, the hoppers jumping or flying in all directions when disturbed. This activity increased until 10.00 A. M. when it was perhaps at its maximum. They remained in this active condition until about 4 P. M. when they again began to show signs of sluggishness. Between 5.30 and 6.00 P. M. many were found going to roost and by 6.30 P. M. practically all were settled for the night.

SOME CANADIAN BEES

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In the Canadian Entomologist 1916, pp. 270, 271, 312, Mr. F. W. L. Sladen published three supposed new species of Canadian bees, two of them types of new genera. No detailed descriptions were given and the determination of these forms has remained somewhat problematical. I am indebted to Dr. J. H. McDunnough for the loan of the specimens, in order that some further particulars may be given.

Stelis (*Stelidium*) *trypetina* (Robertson).

S. ontariana Sladen was queried by its describer as *trypetinum*, and I am unable to separate it from Robertson's species. There is only one difficulty, concerning the apical ventral segment of the female. Robertson, in his original description, says there is a subapical carina. In *ontariana* this is not easily observed, but with a side light it can be seen that there is a slight longitudinal ridge or elevation. But Robertson, in a later paper (Trans. Am. Ent. Soc., XXIX, 170) says there is a *transverse* preapical carina. This I cannot see at all, and suspect a slip of the pen.¹ Everything else agrees perfectly.

Many years ago, I described a bee from Sante Fe, New Mexico, as *Stelis lateralis* var. *permaculata*. In 1901 I separated it as a distinct species, finding that it had nothing to do with *lateralis*. It is, in fact, a *Stelidium*, very close to *trypetinum* (*ontariana*). The type (male), compared with the male type of *ontariana*, is found to be smaller (length 4.5 mm.), with the basal nervure slightly basad of the nervulus, more so on one side than the other (exactly meeting it in *ontariana*), wings much clearer (strongly suffused with brown in *ontariana*), white lateral face-marks well developed, especially the lower part (nearly obsolete in *ontariana*). It seems quite possible that these differences are only subspecific, in which case *trypetinum* or *trypetina* will rank as a subspecies of the earlier published *permaculata*.

Chelostoma (*Autochelostoma*) *canadense* (Sladen)

♂, Length about 8 mm.; black, the flagellum (except basally) obscurely

¹The broad shining apical margin is rather abruptly separated from the dull basal part of the segment and it is possible that this effect might suggest a carina, which is certainly not present.