

A considerable number of arthropod sara recorded as having been taken on the snow, including mites and spiders and members of almost every order of insects. The occurrence of a good many of these creatures, however, is purely accidental and involuntary, and is due to their having been evicted in some way from their winter shelters. On the other hand, others come out regularly and with intent, or, if you prefer, as the result of some tropism. But with the doubtful exception of *Isotoma salivans* Ag., reported from the glaciers of the Swiss Alps, no hexapod, so far as I know, makes its permanent habitat on the snow. There are some microscopic rotifers and some curious worms (Oligochaeta) that seem actually to live and breed in the snow of glaciers, but the snow-frequenting hexapods merely emerge from the soil and surface detritus for a few hours, more or less, and those that do not perish on or in the snow, eventually retire again to their subnivean shelters. In this class may be mentioned in addition to the Collembola, the Mecoptera genus *Boreus*, and some of the stone-flies, (Plecoptera). I have seen thousands of the latter coming out of the Madawaska River at Arnprior about noon on a fine day in March, and all setting off southwards in obedience to a positive heliotropism that headed them straight into the sunlight. But the best known and most regular frequenters of the snow are certain species of Collembola.

The term "snow-flea" is sometimes used as if it designated a single species. Doubtless the title was first applied to *Achorutes socialis* Uzel, by far the most frequent and abundant species on the snow. But it is necessary nowadays to widen the application of the name; for at least eight genera of Collembola including more than thirty species, have been recorded as appearing on the snow in Europe and North America. Here again, however, we must distinguish between mere chance appearances and regular occurrences. Authors generally have paid little or no attention to this point, but there is no doubt that a good many springtail species appear on the snow, not in the course of a normal life activity, but as the result of an accident. Of the eleven species I have collected on the snow in the vicinity of Arnprior, four had obviously fallen out of logs or been washed from the ground by the running water of a thaw, and the individuals were either dead or numb with cold, although at the same time, the hardier species were quite active on the surface. But even allowing this, the Collembola have still a far larger number of snow species, both actual and proportional, than any other order of insects.

It is remarkable that practically all the snow habitués among the springtails belong to the more primitive of the two sub-orders; the Arthropleona. The only record I can find of a Symphypleona on the snow is given by Schött, who speaks of *Sminthurus aureus* Lubb. as having so occurred in Sweden. But while he mentions no date, the context of his statement leads to the suspicion that the snow fall was an unseasonably early one, and that the creatures were there by accident.

It is also worth noting that, so far as my observations go, none of the white or light-coloured species ever come out in the winter. The snow frequenters are of various shades of blues, browns, yellows, reds, greens and purples, but the colours are all so dark that nearly all the insects look virtually black on the snow. The celebrated Count Rumford, giving practical effect to his studies