

were certainly rare fifteen years ago, even in the cities, and it is only within very recent times that the country farm buildings have become inhabited by them. The western birds almost surely introduced themselves from the south, as the wide chain of hills to the east would greatly retard a movement from that direction. It is, however, of small importance how the birds arrived; they are here to stay and their injurious habits present us with an excellent example of the danger of introducing animals of questionable value.

The most remarkable attribute of English Sparrows is the way in which they have already become adapted to wide climatical conditions. Heat, cold, wet or dry, has apparently little effect in retarding their increase. This is unquestionably due, in part, to their habit of seeking shelter in buildings from weather extremes, especially cold. There is, however, a limit, as was shown in Manitoba last January during an exceptionally cold spell, when shelter of some sort became absolutely necessary for the preservation of life. Where this was not secured there is no doubt that great mortality occurred, even shelter in sheds, etc., not being sufficient to save them.

During the period mentioned above, lasting ten days, with an average temperature of about 21 degrees Fahr. below zero and a minimum of 40 below,* sparrows were found dead in city streets and around farm buildings by observant farmers in many parts of the province, while a number of the birds hardly able to fly were also noticed. The chirp so commonly associated with them remained unheard for days, as if the fear of death was upon them and all were struggling for very existence, as indeed was the case with those individuals obliged to pick up a living in the open air. Many undoubtedly perished from cold and starvation, the latter being the direct result of the former.

Thus it is seen that there is a limit to the birds' range, so far as open air is concerned. This was also demonstrated in southern Greenland by introduced sparrows failing to survive more than a few seasons.

There are, therefore, but two ways in which the House Sparrows can withstand our northern climate: (1) by sheltering themselves in buildings containing animals of some kind, or (2) by migrating to warmer regions during the colder months. Both these methods have already been adopted. Migration has taken place, to some extent, for several years past and is apparently becoming rapidly more general, so that now it is not an uncommon occurrence to see fifty or more birds moving south or north according to the time of the year. Of course,

* These researches are from the meteorological station at Aweme.