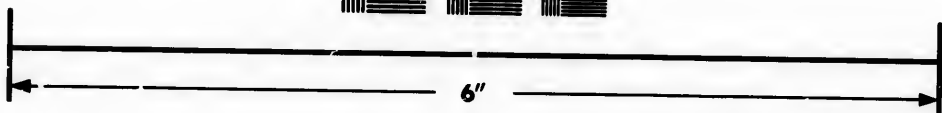
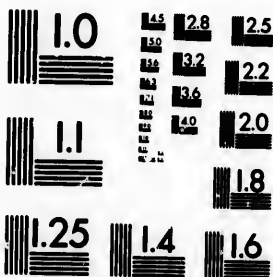


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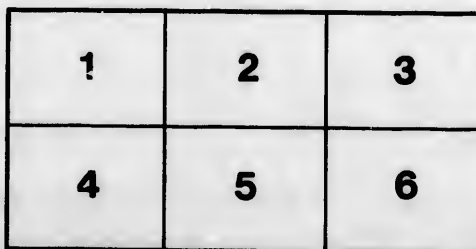
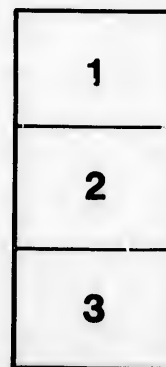
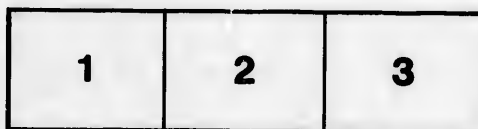
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XII.—Notes on the Occurrence of Certain Butterflies in Canada.

By W. SAUNDERS, London, Ontario.

(Read May 21, 1884.)

Important changes have evidently taken place in the recent past affecting the geographical distribution of some of the butterflies now regarded as Canadian, and similar changes are also occurring at the present time. It is well known that some butterflies occur in considerable abundance every year in many localities, while others, usually rare, occasionally become plentiful. Some are restricted within certain limited areas, others, though extremely rare, are found at widely distant points, while others again, once rare and formerly found only in the most southern portions of our country, are now much more common and have been taken in some of the more northern sections of Ontario and Quebec. Seeing that these gradual changes in the location of species are occurring, it is important that all who are interested in this department of biological study should record any observations they may have the opportunity of making, so as to aid in preparing the way for a fuller knowledge of the geographical distribution of our species, and of the causes which affect such distribution.

Papilio cressphontes, formerly known as *P. Thoas*, is a notable instance of a butterfly once extremely rare in our Province, and found only in its most southern county, having within fifteen or twenty years disseminated itself throughout the greater part of Ontario. I well remember the great interest with which collectors looked upon the first Canadian specimens of this butterfly. They were taken more than twenty years ago in the neighbourhood of Amherstburgh and were regarded as great rarities. This insect was first described by Cramer, and was figured by Boisduval and LeConte in their work on the Butterflies of North America, published in 1833, where it is referred to as a common insect in the Southern States, feeding in the larval condition on the orange and lemon trees. It is still abundant in the South, and is regarded as a noxious insect on account of the injury it does to the foliage of trees of the Citrus family; the larva is known there under the common name of "the orange dog."

The species composing the Rue family, *Rutaceæ*, to which the genus *Citrus* belongs, all have their leaves dotted with pellucid glands containing pungent or bitter aromatic volatile oils. The genera are very unlike each other. We have in this country, besides the orange and lemon, the northern and southern prickly ash, *Xanthoxylum Americanum* and *Carolinianum*; the hop-tree or wafer-ash, *Ptelea trifoliata*; and two introduced plants, the garden Rue, *Ruta graveolens*, and *Dictamnus fraxinella*, the latter being cultivated in gardens as an ornamental herbaceous plant. Wandering from its home among the orange groves, this butterfly is enabled to recognise the allied genera in this family as suitable

food for its larvæ, and in the West lays its eggs on the prickly ash or on the hop tree, or with equal readiness selects the herbaceous dictamnus, and occasionally the heavy-odored garden Rue.

Doubtless these different plants are distinguished by their odor. It is difficult to imagine in what other way an insect could be attracted to a plant brought from some distant shore, of which none of its ancestors have had any knowledge. That insects possess the power of distinguishing and appreciating odors is evident. The carrion beetle traces out the decomposing substance wherever it may be placed on the surface, and butterflies, moths, and other insects swarm around sweet exudations or deposits. It may be asked how is it that the permanent migration of this insect northward has been so long delayed, and what circumstances have brought about the result. There was no lack of food plants, for the shrubs it now feeds on have been growing here for thousands of years; neither is there any marked change in the climate. The question as yet remains unanswered. In one respect the instinct of this butterfly appears to be at fault. It seems to be unable to appreciate the difference in climate between the south and the north, and continues to deposit eggs until quite late in the season, too late to admit of the larvæ maturing before winter. Last year I found some eggs and newly hatched larvæ as late as September 2nd. Most of the larvæ hatched at this period did not attain much more than half their growth before severe frost rendered them torpid, when they became the prey of a species of Hemiptera which pierced them and sucked them almost dry. Several specimens which were a few days older escaped attack and grew with unusual rapidity, attaining sufficient growth to admit of their entering on the chrysalis state, in which condition this insect passes the winter. A similar fault is also observed in the common cabbage butterfly, *Pieris rapae*, a comparatively recent importation from the milder climate of England, which continues to deposit eggs on the cabbage until cold weather puts an end to its powers.

Another of our large and handsome species is *Papilio philenor*, a butterfly which is extremely rare in Canada, so much so that in the course of more than twenty-five years' experience I have not met with a single example. Two or three specimens were taken in the neighbourhood of Woodstock, Ont., many years ago, and a most remarkable occurrence of this insect in great abundance in West Flamborough, Ont., in 1858, is recorded by the Rev. C. J. S. Bethune, in the "Canadian Naturalist and Geologist" for August of that year. He says, "these butterflies appeared in countless numbers about the lilac trees as long as they continued in blossom and then suddenly disappeared. They lasted from the 7th to the 18th of June, but very few appearing after that date." He also states that they were numerous at that time about Toronto. There is no record of any similar occurrence of this insect during the twenty-five years which have since passed. It is not an uncommon butterfly in Ohio, and this flock may have come across Lake Erie, but it is most unusual to find any butterfly so plentiful during the first brood, as to admit of flocks like this travelling so far from their usual breeding grounds. The larva of philenor feeds on different species of *Aristolochia*, none of which I believe are native to Ontario. *Aristolochia siphon*, known as Dutchman's Pipe, is cultivated as an ornamental climber in some gardens, but whether there were any growing at that time in the vicinity of Flamborough is not known. Had its natural food-plants been abundant, the sudden appearance of such a host would probably have resulted in the species becoming a common one throughout western Ontario.

On June 29th, 1882, while collecting at Point Pelee, I was astonished at capturing in fair condition a specimen of *Terias Mexicana*, an insect, as far as known, hitherto unrecorded anywhere in this western region. Mr. W. H. Edwards, in his catalogue of the Butterflies of America North of Mexico, gives as localities for this species, "Texas to Arizona, California, occasionally in Kansas and Nebraska." It is scarcely possible that the specimen taken by me during a two day's sojourn in that locality was the only one existing there; it is altogether likely there were others, and that the butterfly has established itself in that district. This seems to be another example of a southern butterfly migrating northwards, and it is quite possible that within a few years it may cover a much more extended area, and perhaps become as common as the once rare *Papilio cresphontes*.

Three specimens of another butterfly, new to our Canadian lists, were taken at the same time and in the same locality; these were *Thecla smilacis*, Boisduval, or *T. auburniana*, Harris, a species recorded as occurring in the Atlantic States, the Mississippi valley, and in Texas.

Twenty-three years ago, on May 24th, while collecting in a swamp in the outskirts of London, I captured two specimens of a handsome little *Thecla*, which proved to be a new species, and was named by Mr. W. H. Edwards of West Virginia, *Thecla lata*. For eight or ten years following I regularly visited that locality about the same date, but never saw another specimen. That swamp has long since disappeared, and its site is now thickly covered with dwellings. The next year a single example of the same species was captured near the city of Quebec. Although nearly a quarter of a century has since passed away, and the number of observers in the meantime has greatly increased, we have no knowledge of any other specimens of this *Thecla* having been taken in Canada, but during this interval the insect has been captured in West Virginia, and in one locality in Maine. The flight of a *Thecla*, being short and jerky, seems to be incompatible with the idea of the insect travelling any great distance, and, if this species had always been as rare as it now is, it could scarcely have distributed itself over such an immense area. Doubtless we have here an example of a butterfly once common, but which, from some unexplained cause, has become almost extinct.

