Canadian Arctic Expedition, 1913-18

They constitute a very natural little family; with the exception of Pyrolagrandiflora and the typical P, rotundifolia, they are sylvan types and they often grow associated with each ether forming small colonies; reproduction by means of root-shoots is characteristic of several of the species. We have seen from the geographical table (Table 6) how Pyrola minor extends clear across the northern hemisphere, reaching the arctic regions on this continent, including Greenland, in Scandinavia, and in Russia; a similarily wide distribution is exhibited by P, rotundifolia, it being absent only from our arctic coast, Greenland, and Iceland, and by P, secunda which is absent from the northeastern corner of Asia: Terra Tschuktchorum and Kamtchatka. Then with regard to Moneses, this shows the same distribution as P, secunda but is absent from Caucasus. Finally, P, chlorantha is absent from ten of the eighteen districts enumerated on the table, namely: our north coast Greeuland, Russia, Siberia, and Iceland, but it is represented in Europe from Finmark south to the Alps and the Pyrences.

We have thus four species of a remarkably wide distribution in both Worlds. Nevertheless, the Pyrolaceae are best represented on this continent, the home of three species of *Chimaphila*, besides of *Pyrola clliptica*, *P. picta*, *P. chimaphil*oides, and *P. aphylla*, and the foliage of the last three species resembles that of *Chimaphila* more than that of *Pyrola*; in Europe there is a somewhat isolated type: *P. media*. It is interesting to notice that while *P. chlorantha* is absent from Asia, Maximowicz⁴ discovered a near ally of it, *P. renifolia*, in coniferous woods in the Amur district where, moreover, *P. secunda*, *P. rotundifolia*, *Mon*cses, and *Chimaphila umbellata* were collected.

It would thus appear as if the centre of the Pyrolaceae might have been located on this continent, rather than in the Old World, inasnuch as the Monotropeae, the nearest allied family, are also best represented here, with seven mostly monotypic genera of which *Monotropa* is the only genus occurring also in Europe.

However, when we bear in mind that *P. minor* and typical *P. rotundifolia* are much more abundant in Europe than on this continent, it might be more orrect not to include them in the American element, I mean the element which presumably originated on this continent.

With respect to *P. chlorautha* it seems difficult to combine its distribution in Europe with that on this continent and, as stated above, it is absent from all of Asia. The occurrence of *Chimaphila umbellata* in Europe causes also some difficulty but its distribution in Asia, Altai for instance, may point towards a former, much wider distribution, at present disconnected.

Taking all points into consideration it seems a most difficult task to treat the distribution of this singular little family, almost exclusively confined to the temperate regions of both Worlds, and being mostly sylvan types. For whether their centre of distribution, or let us say development, be placed on this continent or in Europe, the question will necessarily arise how these little plants have remained so unchanged on both continents when, as stated by Darwin,² "by comparing the now living productions of the temperate regions of the New and Old Worlds, we find very few identical species, but we find in every great class many forms, which some naturalists rank as geographical races, and others as distinct species; and a host of closely allied or representative forms which are ranked by all naturalists as specifically distinct."

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With respect to the Pyrolaceae some certain "geographical races" have become developed, notably of *Chimaphila umbellata*, *Pyrola secunda*, and *P. rotundifolia*, but, nevertheless, the typical species are represented in both Worlds. Otherwise with r spect to the plants with which they are associated.

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¹ Primitiae Flor. Amur. l.c. p. 190.

² Origin of Species, p. 441.