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Preliminary report on the Dacian migroelement in the flora of Slovakia

Předběžné sdělení o dáckém migroelementu v květeně Slovenska

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In the present paper the dispersion and distribution of the Dacian migrant in Slovakia are summarized. The survey, carried out in numerical and in graphical ways, is based upon the more detailed elaboration of the distribution of 56 species and subspecies. Overall, three different streams of the Dacian migration have been distinguished, by which this migration penetrated into the borders or the interior of Slovakia at various phases of the Postglacial period, especially at the Atlantic phase. Later on, in most representatives of the Dacian migrants in Slovakia, total or local retreats took place, by which various local disjunctions arose; the most distinct of them being the Ondava disjunction. The closing part of the paper is devoted to the question of the localization of the dividing line between the East and West Carpathians.

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In the literature there has been several references to the dispersion of the Dacian migrant in the flora of Slovakia. In most cases it has been interpreted as an East Carpathian migroelement (migration element). However, these papers did not consider the whole situation (e.g. MÁJOVSKÝ 1956, SOJÁK 1959 etc.). Some authors noticed several aspects of this problem in connection with the localization of the dividing line between the East and West Carpathians. This situation is to a remarkable extent reflected by map No. 22/4 in the Atlas of Czechoslovakia (1966). In this map (cf. BECK 1924 : 383), the existence of the Dacian migration component in the flora of Slovakia, has been totally omitted; the connection of the Dacian nigration component (or of a part of it) with the Sarmatian, Pannonian, and Illyric-Noric migrations and their common characterization as Pontic flora elements is an improper simplification. In the case mentioned several rather different migration streams are in question; they are also often of a very different vegetation character, and cannot be united.

For this reason we tried to evaluate a little more systematically, how the Dacian migroelement reveals itself in Slovakia. It was intended at first to go through the whole species composition of the Slovakian flora and to consider by means of the accessible criteria, which species can be identified with the Dacian migroelement. This part of the work was not easy, and for understandable reasons, it was rather time-consuming.

The next methodological procedure consisted in the construction of dot phytocartograms of all selected species. It required the examination of the main herbarium materials (PRC, PR, BRNM, BRNU, SLO, NI, and partly BU), which was complemented by authentic data from the existing literature.

The working maps were made on the scale 1 : 1 000 000. It regarded the species and subspecies *Aconitum firmum* RCHB. subsp. *firmum*, *A. moldavicum* HACQ., *Aposeris foetida* (L.) LESS., *Campanula patula* L. subsp. *abietina* (GRIS. et SCH.) SIMK., *Carex transsilvanica* SCHUR, *Centaurea montana* L. subsp. *mollis* (WALDST. et KIT.) GUGL., *Cirsium erisithales* (JACQ.) SCOP., *Coronilla elegans* PANČIĆ, *Crocus heuffelianus* HERBICH, *Cytisus supinus* L. subsp. *pseudo-rochelii* (SIMK.) SOÓ, *Dentaria glandulosa* WALDST. et KIT., *Helleborus purpurascens* WALDST. et KIT., *Lathyrus laevigatus* (WALDST. et KIT.) FRITSCH, *Lysimachia punctata* L., *Myricaria germanica* (L.) DESV., *Scopolia carniolica* JACQ., *Scrophularia scopolii* HOPPE in PERS., *Sedum fabaria* KOCH, *Symphytum cordatum* WALDST. et KIT. in WILLD., and *Trifolium sarosiense* HAZSL.

This work was simpler with the species which are rare in Slovakia or occur in quite isolated localities there, as *Aconitum lasiocarpum* RCHB., *Cirsium waldsteinii* ROUY, *Dianthus collinus* WALDST. et KIT. subsp. *glabriusculus* (KITANOV) SOÓ, *D. compactus* KIT., *Iris graminea* L. subsp. *pseudocyperus* (SCHUR) SOÓ, *Laserpitium krapfii* CRANTZ subsp. *krapfii*, *Leucojum vernum* L. subsp. *carpaticum* (HERBICH) O. SCHWARZ, *Ligularia glauca* (L.) O. HOFFM., *L. sibirica* (L.) CASS., *Ranunculus carpaticus* HERBICH, *Rhinanthus rumelicus* VELEN., *Sedum annuum* L., *Senecio papposus* (RCHB.) LESS., *Silene dubia* HERBICH, *Scorzonera rosea* WALDST. et KIT., *Spiraea crenata* L., *Veratrum album* L. subsp. *album*, *Viola dacica* BORB., and *Waldsteinia ternata* (STEPHAN) FRITSCH subsp. *trifolia* (ROCH. in KOCH) TEPPN.

The situation was easy also in the case of species whose distribution has been recently published in the form of dot cartograms and, as a rule, required only minor supplements: *Bupleurum longifolium* L. subsp. *vapincense* (VILL.) TODOR (ŠOURKOVÁ 1970 : 415), *Campanula serrata* (KIT.) HENDRYCH (KOVANDA 1970 : 196), *Chrysanthemum rotundifolium* WALDST. et KIT. (ZELENÝ 1970 : 383—386), *Festuca drymeia* MERT. et KOCH (BAREŠOVÁ in HENDRYCH 1969b : 175), *Genista tinctoria* L. subsp. *campestris* (JANKA) HENDRYCH (HENDRYCH 1963 : 27), *Lathyrus transsilvanicus* (SPR.) RCHB. (HENDRYCH 1977 : 199), *Matteuccia struthiopteris* (L.) TODARO (SCHIDLAY 1966 : 171), *Oenanthe banatica* HEUFFEL, *O. silaifolia* BIEB. subsp. *hungarica* (E. SIMON) BERTOVÁ, *O. stenoloba* SCHUR (BERTOVÁ 1973 : 43, 45), *Peucedanum carvifolia* VILL. (CHRTEK et HENDRYCH 1962 : 145), *Scutellaria altissima* L. (HENDRYCH 1968 : 167), *Sesleria heufleriana* SCHUR (DEYL 1946 : 220), *Silene viridiflora* L. (HENDRYCH 1963 : 48), *Telekia speciosa* (SCHREB.) BAUMG. (HENDRYCH 1972 : 179), *Trifolium pannonicum* JACQ. (HENDRYCH 1968 : 154), and *Waldsteinia geoides* WILLD. (HENDRYCH 1963 : 60).

From the uniformly elaborated cartograms, the data was transferred onto network squares of 10×10 km. Thus, a survey of the total presence of all selected species was achieved and the numbers of their representation in individual fields of the chosen network were ascertained (Figs. 1a, 2a, 3a, 4a). With regard to the relative obscurity of the results achieved in this way, the numerical values in respective fields were converted to graduated quantitative symbols (Figs. 1b, 2b, 3b, 4b), which make the differences distinct although for technical reasons they oversimplify at the same time.

The selection of species, of course, need not be complete. We do not regard it as impossible that by an even more detailed investigation it might be possible to find new species in the flora of Slovakia, which could prove to be representatives of the Dacian migroelement. Moreover, we did not include in the complex some species which appear to be such migrants, because of taxonomic confusion and we left out those species in which the necessary elaboration of their participation in the Slovakian flora would demand an extensive evaluation and revision of the

materials, or where it would be necessary to acquire or gather such a material in a large quantity. We keep in mind species such as *Euphorbia carpatica* WOŁOSZCZAK, *Heracleum sphondylium* L. subsp. *trachycarpum* (SOJÁK) HOLUB, *Hieracium transsilvanicum* HEUFFEL, *Melampyrum herbichii* WOŁOSZCZAK, *M. saxosum* BAUMG., *Rumex arifolius* L. subsp. *carpaticus* (ZAPAŁ.) PAWŁ. etc. Some species likewise were not included, in which we were not able to decide wheather or not they could be identified as Dacian migrants in the territory of Slovakia (a. g. *Campanula carpatica* JACQ., *Gentiana punctata* L., *Juniperus sabina* L., *Veronica urticifolia* JACQ. etc.) We assume, however, that the results obtained have not been essentially influenced by the omission of the examples as given above.

As the Dacian migroelement (it regards, therefore, often no Dacian geoelement or even Dacian genoelement) we define the species which, in the whole of the Carpathians as well as in their surroundings, have the main part (at least in relation to the West Carpathians) or even their whole area fixed to Rumania (BORZA 1931 : 35) and/or to a part of the Ukrainian Carpathians. Here, they have a more continuous distribution and a higher frequency, which is also usually reflected in their greater share in the vegetation. The denotation „Dacian" cannot be fully identified with the denotation „East-Carpathian", because most species are also present in the South Carpathians and/or (sometimes even principally) in the Transsilvanian Highlands. The designation „East-Carpathian" could be preserved in some of them only as an expression of the part route during their penetration into the West Carpathians.

It is natural that predominantly the mountain types are concerned, although also not rarely the subalpine to alpine, or on the contrary the submontane, more rarely the foothills species in some cases occur among them.

During the selection it became evident that not only those species which penetrate into Slovakia via the ranges of the Carpathians or through their close environs may be included into the Dacian migrant. Several species clearly penetrated into Slovakia along the lower parts of slopes of the internal space of the Carpathians, some of them also through a tract between the mountain ranges or their close environs and through the mentioned lower part of slopes of the Carpathians (and/or through their inside foothills). Thus, at the very beginning of the work, the existence of three Dacian migration streams showed in outline. A more detailed investigation confirmed their existence. We have called the first migration stream the upper stream, the second one the lower stream (these streams are spatially distinctly separated each from other), the third one is the middle stream, which locally strongly merges with the first two streams (Fig. 5).

The facts ascertained made it necessary — besides the summarizing survey (Fig. 1) — to elaborate partial surveys for individual streams (Figs. 2, 3, 4) in separate form.

The partial surveys show that the prevailing majority of the species of Dacian migrant penetrated into Slovakia through the upper stream. It concerns the following plants: *Aconitum* firmum*, *A. lasiocarpum*, *A. moldavicum*, *Aposeris foetida*, *Bupleurum* vapincense*, *Campanula* abietina*, *C. serrata*, *Carex transsilvanica*, *Centaurea* mollis*, *Chrysanthemum rotundifolium*, *Cirsium erisithales*, *C. waldsteinii*, *Crocus heuffelianus*, *Dentaria glandulosa*, *Dianthus compactus*, *Festuca drymeia*, *Helleborus purpurascens*, *Laserpitium* krapfii*, *Lathyrus laevigatus*, *Matteuccia struthiopteris*, *Myricaria germanica*,

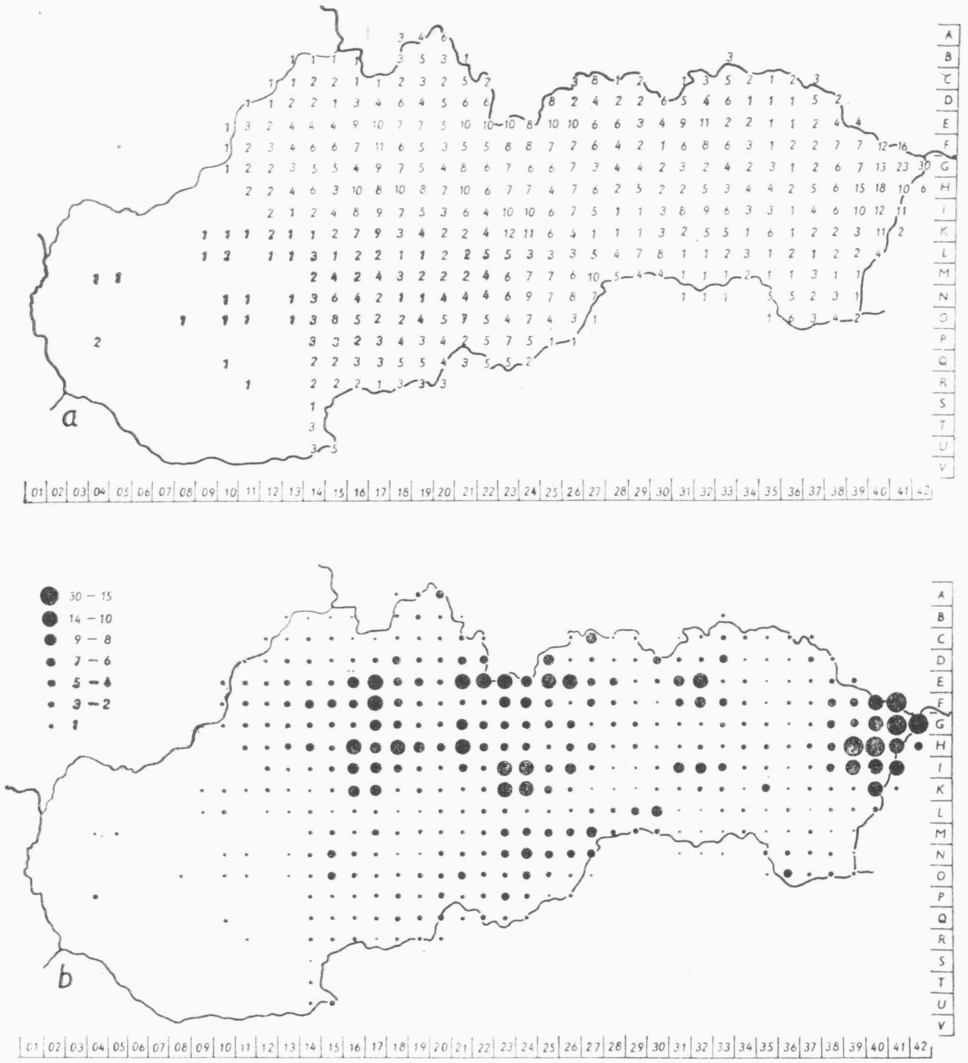

Fig. 1. — Cartoschema of the general dispersion of the Dacian migroelement in Slovakia: a — species numbers in squares, b — simplified symbols showing species numbers in respective squares.

Ranunculus carpaticus, *Scopolia carniolica*, *Scrophularia scopolii*, *Sedum annuum*, *S. fabaria*, *Senecio papposus*, *Silene dubia*, *Scorzonera rosea*, *Symphytum cordatum*, *Telekia speciosa*, *Veratrum* album*, and *Viola dacica*. However, some of these species seem to have penetrated into Slovakia separately through the lower stream, as did *Carex transsilvanica*, *Festuca drymeia*, and *Helleborus purpurascens*. But if the occurrence of some other species of the upper stream in the flora of the North Hungarian highlands (Közép hegység) is taken into consideration (see below), where they are mostly sporadically represented, it seems that some of them penetrated by

this lower route separately again, before they had penetrated by the upper route, and probably also earlier, than the majority of species of the lower stream penetrated into Slovakia by the lower route.

In comparison with the upper stream, the lower stream, fixed to the foothills to submontane zone, appears to be weaker. It concerns the following species: *Cytisus* pseudo-rochelii*, *Dianthus* glabriusculus*, *Genista* campestris*, *Lathyrus transsilvanicus*, *Oenanthe banatica*, *O.* hungarica*, *O. stenoloba*, *Peucedanum carvifolia*, *Rhinanthus rumelicus*, *Scutellaria altissima*, *Sesleria heufleriana*, *Silene viridiflora*, *Spiraea crenata*, *Trifolium sarosiense*, *Waldsteinia geoides*, and *W.* trifolia*.

The middle stream, fixed to the foothills to montane zones, some species of which in various ways extend to the upper and/or lower streams, includes *Coronilla elegans*, *Iris* pseudocyperus*, *Leucojum* carpaticum*, *Ligularia glauca*, *L. sibirica*, *Lysimachia punctata*, and *Trifolium pannonicum*.

The intensity and richness of the upper stream has manifested itself — in contrast to the lower and middle streams — also by the fact that some of its species not only pervaded strongly and distinctly the flora of Slovakia but they also penetrated from the Slovakian (or Polish) Carpathians farther westwards: *Bupleurum* vapincense* (West Sudeten), *Centaurea* mollis* (Moravian Carpathians), *Dentaria glandulosa* (border of the East Sudeten and their foothills), *Matteuccia struthiopteris* (sporadically as far as in the Českomoravská vrchovina Highland?), *Myricaria germanica* (? Moravian Carpathians), *Scrophularia scopolii* (East Sudeten), and *Sedum fabaria* (Moravian Carpathians). No analogies to these cases are to be found in any species of the middle or lower streams.

Exceptional are the species *Aposeris foetida*, *Lysimachia punctata* and *Peucedanum carvifolia*. Here a case of counter migration is evident, because besides the Dacian migration, also the Illyric-Noric migration, albeit slight, came into force in Slovakia. In *Aposeris foetida* it concerns the localities on the Marhát-hill, E. of Piešťany (Suza 1936 : 305), and near the village Lednica in the Biele Karpaty Mts. (leg. Mikuláš 1934, PRC). Connected with these localities is the occurence near Brumov in Moravia (Staněk 1927 : 97).[1]) The occurrence of *Lysimachia punctata* in the Biele Karpaty Mts., Malé Karpaty Mts. and in the basin of the Váh river is of the same origin. In *Peucedanum carvifolia* it concerns the locality near Holíč in the Biele Karpaty Mts. (Krzisch 1857 : 57) and near Lozorno in the Malé Karpaty Mts. (leg. Poitro 1860, BRNU) as well as the Moravian localities near the villages Korytná and Nivnice in the Bílé Karpaty Mts. (Staněk 1926 : 91).

A somewhat analogous conclusions might be drawn concerning the localities of *Scopolia carniolica* in W. Slovakia. We assume, however, that these localities[2]) are secondary; the plants might have escaped from medicinal plant cultures. It is also hardly possible to decide on the locality of *Festuca drymeia* near the village Marianka (leg. Szép, 1911, SLO) in the Malé Karpaty Mts. (a confusion of plants from various localities?). In our opinion the report of *Centaurea* mollis* from Devín near Bratislava (Simonkai 1906 : 307) is rather doubtful (a mistaken determination?).

The examples of a genuine counter-migration, as given above, indicate that in Slovakia (or the W. Carpathians as a whole) the Dacian migration

[1]) Domin (1941 : 105) regarded — without doubt erroneously — these localities as a trace of the East Carpathian migration.

[2]) Near the village Brezová p. Bradlom (leg. Domin, PRC) and above Bratislava (leg. Dlabačová, PRC).

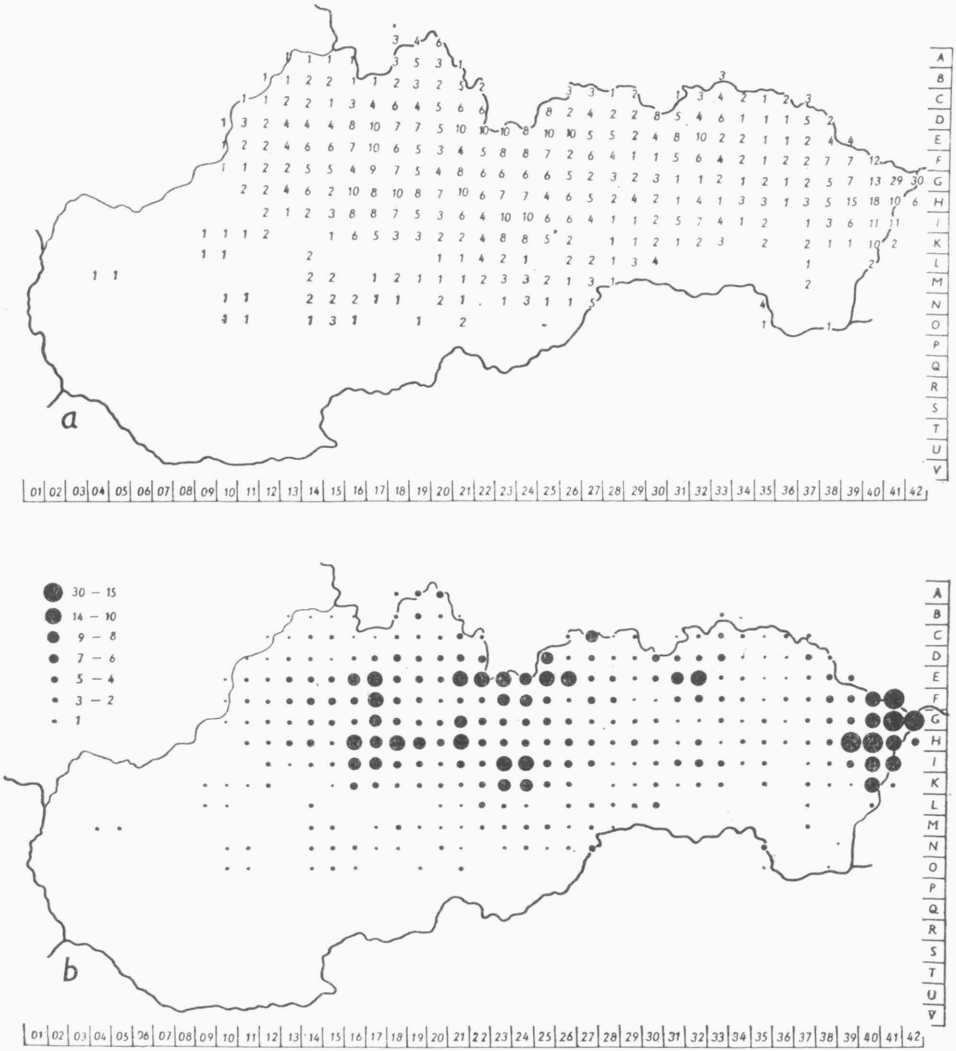

Fig. 2. — Cartoschema of the dispersion of species of the upper stream of the Dacian migrant: a — species numbers, b — species numbers in symbols.

may have been more extensive and more prolific, than it would appear at the present time. Owing to the fact that in many species it met and diffused in the Illyric-Noric migration, it cannot be distinguished by the present methods. The Dacian and Illyric migrations as represented are probably one of the most important routes by which the flora of Slovakia (especially the forest flora) was enriched during various phases of the Postglacial epoch when climate gradually improved and enabled various species from the more southern refuge centres to penetrate into the West Carpathians, the flora of which had been impoverished by the periglacial climate.

From the results obtained it is evident, besides the apparent existence of three streams of the Dacian migroelement that their dispersion in Slovakia,

is uneven. The highest number of species is concentrated on the NE. border, in the area of the Bukovské vrchy Mts. (Nízké Poloniny Mts.), where we have listed 33 species (F40 — G42 — K40), almost all penetrating there by the upper stream: *Aconitum* firmum, A. lasiocarpum, A. moldavicum, Aposeris foetida, Bupleurum* vapincense, Campanula* abietina, C. serrata, Carex transsilvanica, Centaurea* mollis, Chrysanthemum rotundifolium, Cirsium erisithales, C. waldsteinii, Crocus heuffelianus, Dentaria glandulosa, Dianthus compactus, Festuca drymeia, Helleborus purpurascens, Laserpitium* krapfii, Lathyrus laevigatus, Matteuccia struthiopteris, Myricaria germanica, Scopolia carniolica, Scorzonera rosea, Scrophularia scopolii, Sedum annuum, S. fabaria, Senecio papposus, Silene dubia, Symphytum cordatum, Telekia speciosa, Veratrum* album* and *Viola dacica*. From the southeast they are joined by *Coronilla elegans*. By far the majority of the species mentioned here do not cover this territory and the greatest part of them is concentrated on the boundary ridge.

In a relatively close vicinity the distributions of some other species from the east terminate, e.g. of *Alnus viridis* (CHAIX) DC., *Arnica montana* L., *Carex dacica* HEUFFEL, *Centaurea kotschyana* HEUFFEL, *Phyteuma tetramerum* SCHUR, *Pulmonaria rubra* SCHOTT, *Rhododendron myrtifolium* SCHOTT et KOTSCHY, *Sesleria coerulans* FRIV. etc.

Westwards from the Bukovské vrchy Mts., another distinct accumulation of species (E32 and environs) is found in the Čerchovské pohorie Mts. The number of species of the Dacian migrant decreases rapidly but nevertheless the following species of the upper stream are to be found there: *Aconitum moldavicum, Aposeris foetida, Centaurea* mollis, Cirsium erisithales, Crocus heuffelianus, Dentaria glandulosa, Matteuccia struthiopteris, Myricaria germanica, Scopolia carniolica, Scrophularia scopolii, Sedum fabaria, Symphytum cordatum*. Of the species of the middle stream, *Trifolium pannonicum* occurs there and of the lower stream *Trifolium sarosiense* penetrates from the south.

A further local accumulation may be found in the Pieniny Mts. (C27), where *Aconitum moldavicum, Centaurea* mollis, Cirsium erisithales, Dentaria glandulosa, Scopolia carniolica, Scrophularia scopolii, Sedum fabaria*, and *Symphytum cordatum* are present.[3])

In the extensive complex of the Tatry Mts. (E21 — E25) another regional accumulation of the Dacian migrant may be observed, but strangely, a number of its species are only sporadically represented. In total, 15 species are present: *Aconitum* firmum, A. moldavicum, Bupleurum* vapincense, Campanula serrata, Centaurea* mollis, Chrysanthemum rotundifolium, Cirsium erisithales, Crocus heuffelianus, Dentaria glandulosa, Matteuccia struthiopteris, Myricaria germanica, Scrophularia scopolii, Sedum fabaria, Symphytum cordatum*, penetrating there by the upper stream, *Trifolium pannonicum* being the only representative of the middle stream.

A certain connexion with the foregoing accumulation area may be observed farther westwards, in the region of the Malá Fatra Mts. (E17 — F17), where again the species of the upper stream distinctly predominate: *Aconitum* firmum, Bupleurum* vapincense, Campanula serrata, Centaurea* mollis, Chrysanthemum rotundifolium, Cirsium erisithales, Crocus heuffelianus, Dentaria*

[3]) The report of *Aposeris foetida*, at least from the Slovakian part of the Pieniny Mts. (HERBICH 1834 : 575 etc., cf. PAX 1908 : 147), has never been confirmed.

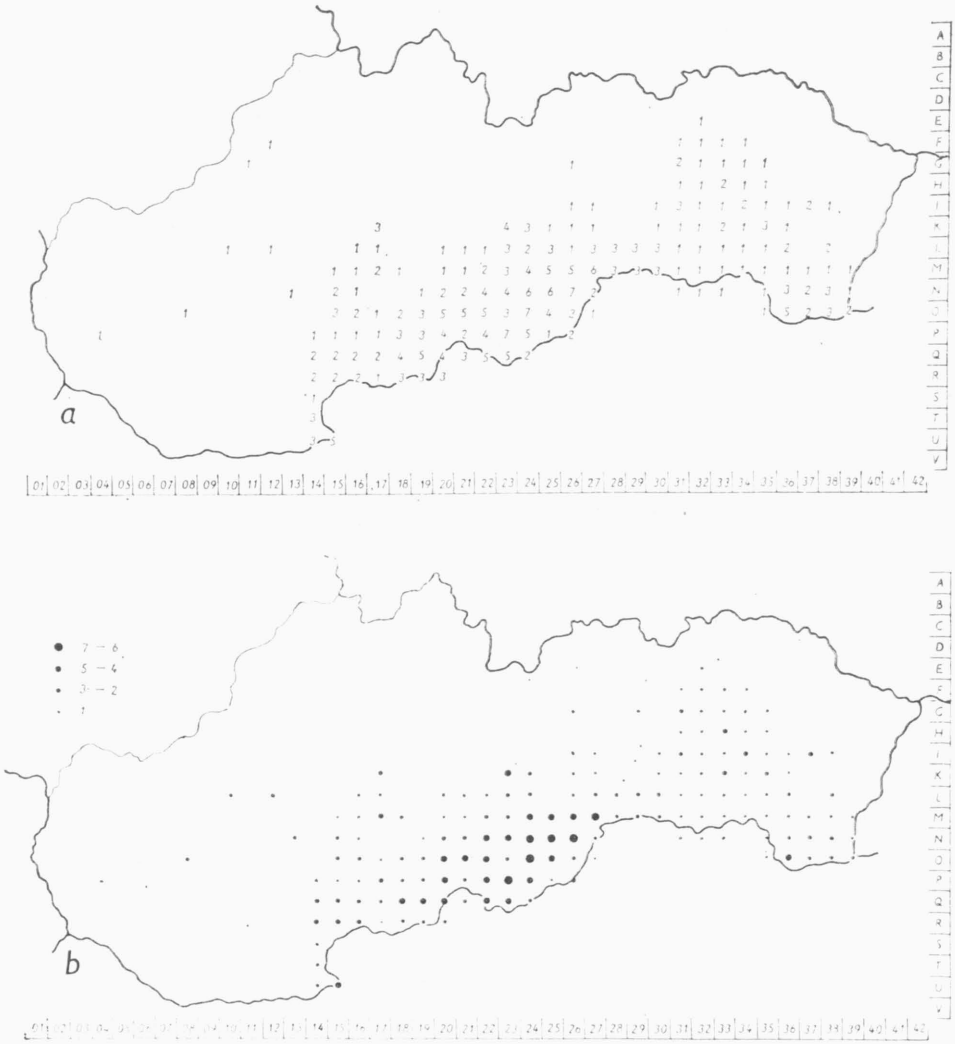

Fig. 3. — Cartoschema of the dispersion of species of the lower stream of the Dacian migrant: a — species numbers, b — species numbers in symbols.

glandulosa, *Myricaria germanica*, *Scrophularia scopolii*; from the middle stream only *Trifolium pannonicum* joins them again.

Analogous is the situation in the Veľká Fatra Mts. (approximately G17 — H17), where the following species, with remarkable frequency differences again, are represented: *Aconitum* firmum*, *A. moldavicum*, *Bupleurum* vapincense*, *Campanula serrata*, *Centaurea* mollis*, *Cirsium erisithales*, *Crocus heuffelianus*, *Dentaria glandulosa*, *Matteuccia struthiopteris*, *Scrophularia scopolii*, *Symphytum cordatum*, *Telekia speciosa;* in all, 12 species of the upper stream, to which is joined an isolated locality of *Lysimachia punctata* (autochthonous?) from the middle stream.

Such an analogy represent also the Nízké Tatry Mts. (H18 — G24) in which *Aconitum* firmum*, *A. moldavicum*, *Bupleurum* vapincense*, *Campanula serrata*, *Centaurea* mollis*, *Chrysanthemum rotundifolium*, *Cirsium erisithales*, *Crocus heuffelianus*, *Dentaria glandulosa*, *Scopolia carniolica* (sporadically), *Scrophularia scopolii* and *Sedum fabaria* are to be found.

In contrast to the extensive Nízké Tatry Mts., the relatively small Muránská vysočina Highland and its immediate neighbourhood (I24 — K24) is richer in the Dacian migrant. First of all, the following representatives of the upper stream should be mentioned (HENDRYCH 1969a): *Aconitum* firmum*, *A. moldavicum*, *Campanula serrata*, *Centaurea* mollis*, *Cirsium erisithales*, *Crocus heuffelianus*, *Dentaria glandulosa*, *Scrophularia scopolii*, *Sedum fabaria*. From the lower stream, *Genista* campestris*, *Silene viridiflora*, *Trifolium sarosiense*, *Waldsteinia geoides* and *W.* trifolia*. However, they penetrate here mostly sporadically and on the border only. However, even in these 14 species the local contact between the upper and lower streams is evident.

A less effective analogy to the Muránská vysočina Highland, especially as regards to contact of the upper and lower streams, represent the Kremnické vrchy Mts. (approx. K16), where the species of the upper stream (*Campanula serrata*, *Centaurea* mollis*, *Cirsium erisithales*, *Dentaria glandulosa* and *Scrophularia scopolii*) locally decrease among several species of the upper and middle stream (*Silene viridiflora*, *Trifolium pannonicum* and *Waldsteinia geoides*).

Almost the same holds true of the Štiavnické vrchy Mts. (N15 — O15). There, however, species of the lower and middle streams already begin to predominate, e.g. *Lysimachia punctata*, *Peucedanum carvifolia*, *Silene viridiflora*, *Trifolium pannonicum*, *T. sarosiense*, *Waldsteinia geoides* and *W.* trifolia*, and are joined by the species penetrating there from the upper stream, viz. *Campanula serrata*, *Centaurea* mollis*, *Crocus heuffelianus*, *Dentaria glandulosa* and *Scrophularia scopolii*. Also in their frequency of representation they appear to be complementary to the species mentioned above.

In the relatively extensive territory of the southern slopes and of the foothills of the Slovenské rudohorie Mts. up to the borders of the Slovenský kras Karst, including the Cerová vrchovina hills (N21 — Q21 — M27), only the following species of the upper stream are to be found: *Aconitum moldavicum*, *Centaurea* mollis*, *Dentaria glandulosa* and *Scrophularia scopolii*, which are moreover only on the border or sporadically represented. The lower stream is richly represented by *Carex transsilvanica*, *Cytisus* pseudo-rochelii*, *Festuca drymeia*, *Genista* campestris*, *Lathyrus transsilvanicus*, *Oenanthe banatica* (sporadically), *Peucedanum carvifolia*, *Rhinanthus rumelicus*, *Scutellaria altissima*, *Sesleria heufleriana* (border), *Silene viridiflora*, *Trifolium sarosiense*, *Waldsteinia geoides*, *W.* trifolia* (sporadically). From the middle stream *Trifolium pannonicum* joins, so that the total number of species of this migroelement is 19.

Again, the southeast border of the Slovenské rudohorie Mts. and the eastern borders of the Slovenský kras Karst (I33 — M30) show a greater participation of the representatives of the upper stream, viz. *Aconitum moldavicum*, *Aposeris foetida*, *Cirsium erisithales*, *Dentaria glandulosa*, *Matteuccia struthiopteris*, *Scopolia carniolica* (sporadically), *Scrophularia scopolii*. From the lower stream there penetrate here *Peucedanum carvifolia*, *Sesleria heufleriana* (on the border), *Trifolium sarosiense*, *Waldsteinia geoides*, *W.* trifolia*

(sporadically), and from the middle stream *Trifolium pannonicum*. This territory is therefore a further complex with a conspicuous contact of relatively opposite streams.

Of a number of breaks appearing as local disjunctions in the distribution of the Dacian migrant in Slovakia, decidedly the most conspicuous is the tract along the river Ondava and between the rivers Topľa and Laborec (approximately in the squares C35 — C36 — K36 — G35). In comparison with the surrounding regions, the Dacian migrant conspicuously decreases to 1 or 2 species only. These differences concern not only the upper stream, but also the lower and middle ones.

There are probably several causes of this local disjunction. The first role plays the relief, because even in the ridge part of the middle section of the Nízké Beskydy Mts. it is distinctly lower between the Zborov saddle and the Dukla pass. This, together with the smaller altitudinal range and with the less rugged condition of the relief, combined with the recent and similar climatic conditions, prevent the local existence of a number of species (not only subalpine or alpine) of the Dacian migration.

The openness of this region southwards — apart from the not too significant narrowing in the river basin between the Vihorlat Mts. and the Slánské vrchy hills — is responsible for a number of climatic differences in comparison with its east and west environs. For example, in the region of this Ondava disjunction (cf. The climate atlas of Czechoslovakia, 1958) a conspicuous regional increase of the mean annual air temperature up to 6—8 °C in comparison with 4—6 °C in the vicinity may be observed. In the same region a decrease of the annual amount of precipitation to 700—600 mm in comparison with 900—700 mm in the vicinity is evident. Through the Ondava disjunction a warm and only moderately humid region with cold winters (with the snow cover maxima decreasing to 30—20 cm in comparison with 60—40 cm in the surrounding regions) penetrates in the form of a notch far northwards, as far as below the ranges of the Nízké Beskydy Mts. Analogous relations of the temperatures and precipitation between the region of the Ondava disjunction and of its south and west surroundings are to be found also in individual seasons or even in individual months. These conditions are also responsible for the evident prolongation of the growing season to 140—190 days in comparison with 100—140 days in the surrounding areas. Under the present and similar climatic conditions, the generally higher continentality of the Ondava disjunction seems to reduce the Dacian migrant against the competition of other plants, for which the present conditions are more convenient and which penetrate here from the south.

In addition to the relief and climatic factors, the secondary, human influences may also come into force here. First of all, it is the conspicuously small proportion of forests (woodiness) about by 40 % lower than in the adjacent regions. The reduction of forests resulted in stronger and more extensive damage or destruction of convenient biotopes which could further reduce the possibility of survival (even sporadical) of at least several representatives of the Dacian migration, i.e. at least a little more than those 1—2 species which have remained there.

Here it might also be taken into consideration that a good deal of the territory of the Ondava disjunction has been less intensively explored botanically than a number of adjacent regions. This undeniable fact, however, as well as the secondary influence of man cannot be responsible for such a distinct manifestation (let alone for the existence itself) of the Ondava disjunction.

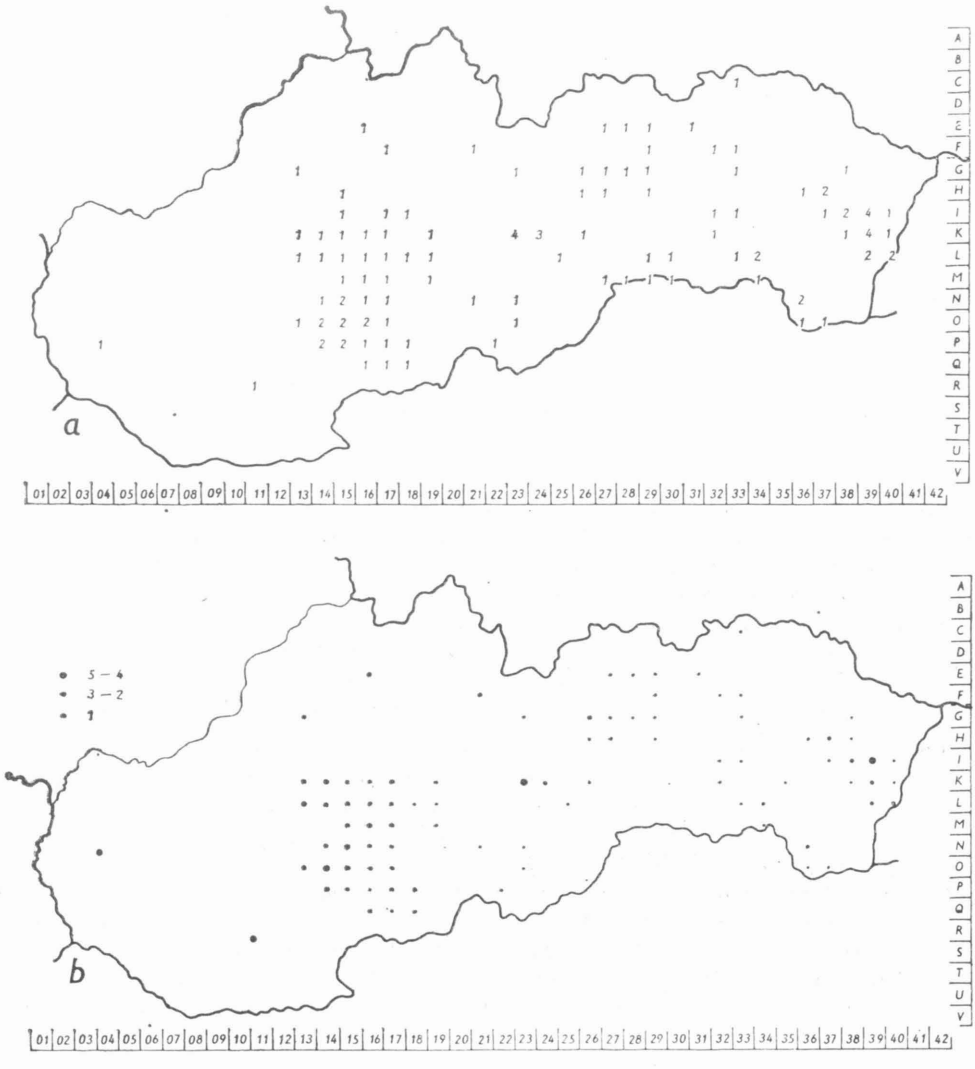

Fig. 4. — Cartoschema of the dispersion of species of the middle stream of the Dacian migrant: a — species numbers, b — species numbers in symbols.

If the dispersion of the Dacian migrant in Slovakia is compared with the situation in Poland and Hungary, conspicuous differences come to light. In Poland all the species penetrating by the upper stream are represented; it concerns also the species of the middle stream, except for *Leucojum* carpaticum* and *Lysimachia punctata*. On the other hand, it is not surprising that in Poland all species of the lower streams are lacking.

A little more complicated is the situation, if Hungary is taken into consideration. Of the species of the upper stream only 10 are present here (sporadically): *Centaurea* mollis, Cirsium erisithales, Crocus heuffelianus, Dentaria glandulosa, Festuca drymeia, Helleborus purpurascens, Matteuccia*

struthiopteris, *Scopolia carniolica*, *Scrophularia scopolii*, *Telekia speciosa*.[4]) They are mostly confined to the Bükk and/or Mátra Mts., but in single cases they also penetrate farther westwards. All the species penetrating in Slovakia by the middle stream are present in Hungary, apart from *Leucojum* carpaticum* and, of course, *Ligularia glauca*. Of the lower stream only *Waldsteinia* trifolia* is absent in Hungary.

However, a comparison with the Transcarpathian Ukraine can be made, where almost all species of the upper, middle, and lower streams which have been investigated in Slovakia, are also present. However, *Ligularia sibirica* from the middle stream and *Waldsteinia geoides* and *W.* trifolia* from the lower are absent. So far, no data on *Genista* campestris* and *Rhinanthus rumelicus* are available from there, although they may be expected to occur there, at least — sporadically, analogously as in the case of *Lathyrus transsilvanicus* and *Ligularia glauca* (HENDRYCH 1977 : 201, FODOR 1974 : 140).

Regarding the geoelement, the representatives of the Dacian migration belong to several groups. The Carpathian geoelement (endemics and/or subendemics of the Carpathians) includes: *Aconitum moldavicum*, *Campanula serrata*, *Chrysanthemum rotundifolium*, *Cytisus* pseudo-rochelii*, *Dentaria glandulosa*, *Iris* pseudocyperus*, *Lathyrus transsilvanicus*, *Leucojum* carpaticum*, *Ranunculus carpaticus*, *Sesleria heufleriana*, *Silene dubia*, *Symphytum cordatum*, *Trifolium sarosiense*, and apparently also *Aconitum* firmum* and *A. lasiocarpum*. In this respect also *Dianthus* glabriusculus* belongs to them.

The next group in the Dacian Migration represents the Carpathian-Balkan geoelement (closely related to the previous one in spite of some Carpathian subendemics), represented by *Campanula* abietina*, *Carex transsilvanica* (also in North Iran?), *Centaurea* mollis*, *Coronilla elegans*, *Crocus heuffelianus*, *Genista* campestris*, *Helleborus purpurascens*, *Laserpitium* krapfii*, *Oenanthe banatica*, *O.* hungarica*, *O. stenoloba*, *Rhinanthus rumelicus*, *Senecio papposus*, *Trifolium pannonicum* (also Alpes Maritimes), *Viola dacica*, *Waldsteinia geoides*. From this viewpoint, *Telekia speciosa* is close to them; it reaches to Asia Minor and the Caucasus. Furthermore it is not insignificant that a good deal of these Carpathian-Balkan species are those which, on the Balkan Peninsula, are confirmed mainly to its eastern, Moesian-Thracian part.

To a lesser degree the Carpathian-Alps-Balkan geoelement is represented in the Dacian migroelement: *Aposeris foetida* (see the counter migration), *Cirsium waldsteinii*, *Dianthus compactus*, *Scopolia carniolica*, *Scorzonera rosea*, *Waldsteinia* trifolia*. In the Alps, however, some of them, are confined to the eastern part and on the Balkan Peninsula mainly to Illyria.

About the same number may be held for the South European geoelement. The following species can be placed here: *Bupleurum* vapincense* (extending to W. Sudeten), *Cirsium erisithales*, *Festuca drymeia*, *Lysimachia punctata*,

[4]) The occurrence of *Veratrum* album* in W. Hungary is connected with the migration of this species from the Alps, and *Myricaria germanica* probably colonized its localities in the Kis Alföld lowlands by a migration from larger distances.

Fig. 5. — Schema of the routes of the Dacian migroelement in Slovakia: a — upper, b — middle, c — lower stream.

Peucedanum carvifolia (see the counter migration), *Silene viridiflora*. In this context *Scrophularia scopolii* can be joined to this group; it reaches as far as Asia Minor. *Scutellaria altissima*, penetrating up to the Pontic region, can also be included here.

In single cases the European geoelement comes into force, viz. by the species *Myricaria germanica* and *Sedum annuum*, to which *Veratrum* album* and *Ligularia sibirica*, both of rather Eurosibirian character, can be joined. Quite unique are the cases of *Spiraea crenata* (South European to Middle Russian), *Ligularia glauca* (Carpathian-Balkan-East European-Sibirian), and *Matteuccia struthiopteris* (circumpolar).

In their distribution areas, most species of all geoelements are characterized by various disjunctions indicating that areas were destroyed mainly during the Ice Age, when these species probably had their temporary recessive (refugial) areas in Southern Europe. Later on, the Balkan Peninsula played the most important role in the evolution of the Dacian migroelement, and as for the Carpathians themselves, it may have been mainly the South Carpathians, in single cases the adjacent part of the East Carpathians. This opinion is also supported by the strongest accumulation of the Carpathian stenoendemics (or of relics, for which the Tertiary Age may be admitted) there.

Only during the Postglacial epoch did individual species begin to migrate northwards or northeastwards, along the whole Carpathian arch or along its inside slopes. There is no evidence that any of the species penetrating in this way to Slovakia from Dacia or across Dacia or a part of it, could survive the Glacial era in Slovakia, as it was or still is assumed for some of them.

The studies and the knowledge of the dispersion and spreading routes of the Dacian migrant in the flora of Slovakia enable us to draw conclusions as to the time of the migration. Not for all species of the migroelement but doubtlessly for the majority of them we must conclude that such a period must have been one when the climatic conditions were more favourable than at the recent time. The climate was probably more humid and also warmer than today. Based on this consideration, the conclusion may be drawn that the period of the strongest penetration was probably the Atlantic phase. At the end of it (the Epiatlantic phase) the intensity of the main part of the Dacian migration probably dwindled and later it probably ceased. Finally, a recess may have begun and local breaks arose which in many species (not only in Slovakia) are very well evident. In this way we can probably find the best explanation of the clear disjunctions in several of these species isolated in the North-Hungarian highlands (cf. Szujkó-Lacza 1957 : 175). They concern not only the lower stream (e.g. *Lathyrus transsilvanicus*), but also the local occurrence of some species which penetrated into Slovakia by the upper stream only (e.g. *Helleborus purpurascens, Scopolia carniolica, Telekia speciosa* etc.).

However, in several species of subalpine to alpine character the Dacian migration, could start before the Atlantic phase, perhaps as early as in the latter phases of the Prae-boreal, before their route along the ridges was blocked in many places by the forest penetrating into higher zones. In some species of the foothills to submontane character the migration, on the contrary, may have been finished later. We assume therefore that the Dacian migration was not monochronic; rather it was polychronic.

The question of the distribution and dispersion of the Dacian species in the flora of Slovakia is connected with the effort (almost one hundred years old) to find the phytogeographic boundary between the East and West Carpathians. Disregarding the opinions of Zapałowicz (1909 : 964) and Domin (1938 : 28, 1941 : 100) who placed this boundary in the Jablonica pass (above the town Jasinja in the Transcarpathian Ukraine) and in the Užok pass, respectively, all considerations on this dividing line concern the Slovakian (and Polish) territory.

In the light of the results gathered here, the effort to locate this boundary in the Tylicz saddle (C 32), appears untenable (see Tacik, Zajączkowna and Zarzycki 1957 : 34). To the level of this saddle there reach distinctly from east only *Aposeris foetida, Carex transsilvanica* (from the south-east) and *Myricaria germanica*. The other species, although penetrating across Slovakia farther westwards (e.g. *Aconitum moldavicum, Campanula serrata, Matteuccia struthiopteris, Sedum fabaria* etc.), are absent in the environs of the Tylicz saddle which is in connection with the effect of the Ondava disjunction.

The opinion that the boundary is the Dukla pass (C36) [see Kotula (1881 : 74), Kláštersky (1930 : 574, cf. 1938 : 99) and more recently Pawłowski (1948 : 64)], does not appear to be well-founded. In addition to species mentioned in the Tylicz saddle, only *Dentaria glandulosa, Festuca drymeia* and *Scrophularia scopolii* reach more or less continuously from the east (or southeast) into the Dukla pass; in all six species only.

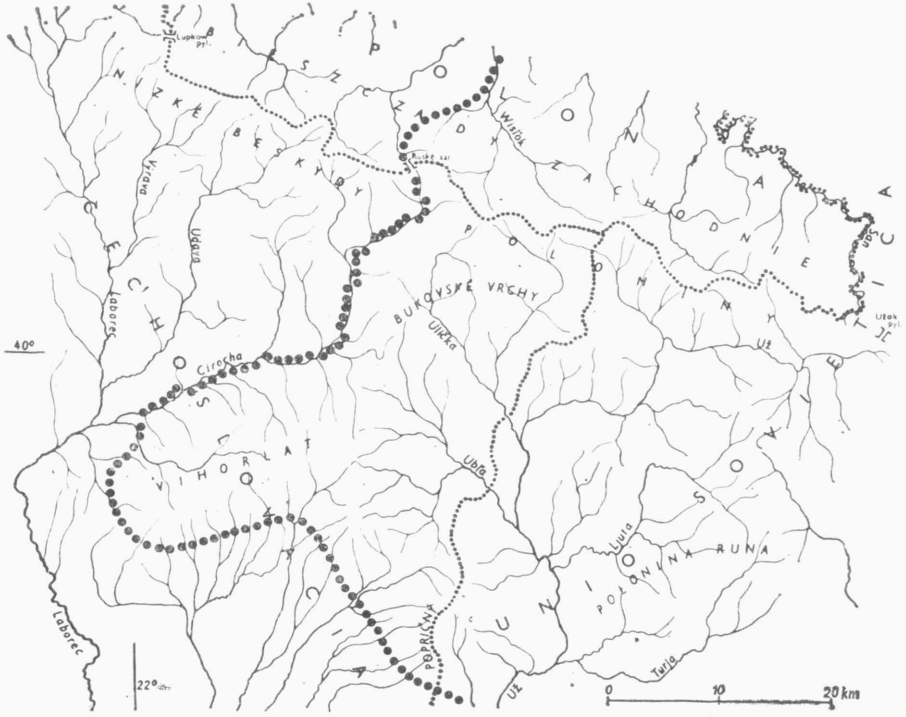

Fig. 6. — Course of the dividing line (conspicuous dotted) between the East and West Carpathians.

We believe that the boundary between the East and West Carpathians should be placed in the Łupków pass area (Wołoszczak 1895 : 124, 1908 : 111, Pax 1896 : 17, 1898 : 184, 1908 : 141; Hayek 1916 : 410; Jávorka 1925 : LXXXVIII et carta; Domin 1935 : carta 13, cf. 1930 : 58; Novák 1954 : 324, 406). According to Dostál (1957 : map) this line should be located somewhat eastwards from the Łupków pass; as far as the scale of his map allows to read the localization. Later on, Dostál (1960 : map) removed this boundary westwards, nearer to the Łupków pass. Futák (1972 : 478) placed the dividing line between the East and West Carpathians exactly in the middle between the Łupków pass and the Ruské saddle, above the village Osadné. In the vicinity of the Łupków pass, less frequently at the level of it, the more or less continuous occurrence of several species ceases. Besides the species mentioned in the Dukla pass, they are: *Aconitum moldavicum*, *Centaurea* mollis*, *Crocus heuffelianus*, *Dianthus compactus*, *Helleborus purpurascens*, *Matteuccia struthiopteris*, *Symphytum cordatum*. However, after a break connected with the effect of the Ondava disjunction, the majority of these species, appear farther in the west mainly in the Polish part of the West Carpathians (Jasiewicz 1965 : 83, cf. Fig. 8).

If further species not penetrating into the vicinity of the Łupków pass are taken into consideration, the boundary between the East and West Car-

pathians could be looked for even more eastwards, in the environs of the Ruské saddle. A substantially greater number of Dacian species penetrate (or almost penetrate) there. Together with the species penetrating farther westwards (see above), the following species should be mentioned here: *Aconitum lasiocarpum*, *A. moldavicum*, *Aposeris foetida*, *Bupleurum* vapincense*, *Campanula* abietina*, *C. serrata*, *Carex transsilvanica*, *Centaurea* mollis*, *Chrysanthemum rotundifolium*, *Cirsium erisithales*, *C. waldsteinii*, *Crocus heuffelianus*, *Dentaria glandulosa*, *Dianthus compactus*, *Festuca drymeia*, *Helleborus purpurascens*, *Iris* pseudocyperus*, *Laserpitium* krapfii*, *Lathyrus laevigatus*, *Matteuccia struthiopteris*, *Myricaria germanica*, *Scrophularia scopolii*, *Sedum annuum*, *S. fabaria*, *Senecio papposus*, *Silene dubia*, *Symphytum cordatum*, *Telekia speciosa*, *Veratrum* album*, *Viola dacica*. This is a substantial difference in comparison with the environs of the Łupków pass, and, moreover, a number of these species have here the absolute limit of their distribution towards the west.

It is evident that the boundary between the East and West Carpathians is not necessarily sharp. It cannot be expected to be a break line; this rather inconvenient term was used by PAX (1896 : 17).[5])

A part of the problem of the dividing line between the East and West Carpathians is the position of the Vihorlat Mts. Most authors included it into the East Carpathians (PAX 1896, 1898, 1908; HAYEK 1916; JÁVORKA 1925; DOMIN 1930, 1933; KLÁŠTERSKÝ 1930; NOVÁK 1925, 1954; UBRIZSY 1942; MICHALKO 1957; DOSTÁL 1957 etc.). SOÓ (1930, 1933) DOMIN (1941) and DOSTÁL (1960) proposed inclusion into the West Carpathians. NOVÁK (1925 : 29) and KLÁŠTERSKÝ (1930 : 575) emphasize (erroneously) that the Vihorlat Mts. lack the East-Carpathian elements, but owing to the character of the vegetation (beech forests) or for orographic reasons, they did include them into the East Carpathians.

It is true, however, that some Dacian species reach to the Vihorlat Mts., at least on the border. This is the case of *Aconitum lasiocarpum*, *A. moldavicum*, *Aposeris foetida*, *Carex transsilvanica*, *Centaurea* mollis*, *Cirsium erisithales*, *Coronilla elegans*, *Dentaria glandulosa*, *Lathyrus laevigatus*, *Leucojum* carpaticum*, *Lysimachia punctata*, *Matteuccia struthiopteris*, *Peucedanum carvifolia*, *Scopolia carniolica*, *Scrophularia scopolii*, *Sedum annuum*, *S. fabaria*, *Symphytum cordatum* and *Telekia speciosa*. The total number is not at all low, even through an impoverishment (e.g. *Helleborus purpurascens*, *Trifolium pannonicum*, *T. sarosiense* etc.) is evident. This is not surprising, because they occur in the vicinity of the Vihorlat Mts. In spite of it, the presence of these species indicates the distinct phytogeographic relationships of the Vihorlat Mts. to the East Carpathians, especially if the vegetation conditions and the orographic connections are taken into consideration.

Thus, the dividing line of the East and West Carpathians in Czechoslovakia (Fig. 6) can be laid along the line: Environs of the Ruské saddle, valley of the river Cirocha almost to its confluence with the river Laborec, from there towards the southeast approximately to the village Klokočov and farther along the south slopes of the Vihorlat Mts. and of the Popričný Mt. group to the state boundary.

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[5]) Later on, PAX (1919:231) speaks only of the dividing line in the Beskyd pass, by which name he means the Łupków pass.

SUMMARY

In Slovakia, the Dacian migration manifests itself by the occurrence of 56 investigated species and subspecies, which are represented to a very different extent and with various frequencies in the Slovakian flora. This migration penetrated there by three separate streams. The strongest of them was the upper stream which runs along the Carpathian mountain ranges and their vicinity. Weaker was the lower stream running along the headland and on the lower slopes of the Carpathians. The middle stream, penetrating into the interior of the Slovakian territory through the middle area of the Carpathian arch, was the weakest.

The Dacian migration occurred in various phases of the Postglacial epoch, the Atlantic phase being probably the most important. During the subsequent phases this migration decreased, resulting in gradual breaks of the more continuous distribution and large or small local disjunctions. Among these the Ondava disjunction in the eastern part of Slovakia is the most conspicuous.

Finally the paper deals with the question of the dividing line between the East and West Carpathians. On the basis of the knowledge gathered, the line can be most safely placed in the surroundings of the Ruské saddle. Through the valley of the river Cirocha it runs southwards, cutting the western border of the Vihorlat Mts. and leading along their southern slopes towards the southern headland of Popričný Mt. group.

SOUHRN

Dácká migrace se v květeně Slovenska projevuje přítomností 56 sledovaných druhů, které jsou v ní zastoupeny ve velmi různém rozsahu a frekvenci. Podkladem k získání souhrnných dat bylo poměrně detailní vymapování všech sledovaných druhů. Vypracované bodové kartogramy daly možnost vyhotovit souhrnné přehledy (obr. 1—4), které jsou v číselné podobě a pro názornost též v grafické podobě k práci přiloženy.

Závěry, které byly tímto způsobem získány, naznačují, že dácká migrace pronikala na území Slovenska třemi oddělenými proudy (obr. 5). Nejsilnějším a nejpočetnějším se rozhodně jeví horní proud (obr. 2), vedoucí prostorem hřebenů Karpat a jejich okolím; zahrnuje následující druhy: *Aconitum* firmum, A. lasiocarpum, A. moldavicum, Aposeris foetida, Bupleurum* vapincense, Campanula* abietina, C. serrata, Carex transsilvanica, Centaurea* mollis, Chrysanthemum rotundifolium, Cirsium erisithales, C. waldsteinii, Crocus heuffelianus, Dentaria glandulosa, Dianthus compactus, Festuca drymeia, Helleborus purpurascens, Laserpitium* krapfii, Lathyrus laevigatus, Matteuccia struthiopteris, Myricaria germanica, Ranunculus carpaticus, Scopolia carniolica, Scrophularia scopolii, Sedum annuum, S. fabaria, Senecio papposus, Silene dubia, Scorzonera rosea, Symphytum cordatum, Telekia speciosa, Veratrum* album* a *Viola dacica*. Z nich některé druhy však na Slovensko pronikly, jak se ukazuje, možná odděleně i proudem dolním, což je patrné u *Carex transsilvanica, Festuca drymeia* a *Helleborus purpurascens*. Když však vezmeme v úvahu přítomnost několika dalších druhů horního proudu v květeně sousedních severomaďarských vysočin (např. *Cirsium erisithales, Dentaria glandulosa, Scopolia carniolica, Telekia speciosa* aj.), kde jsou většinou sporadicky zastoupené, zdá se, že některé z nich pronikly touto dolní cestou opět odděleně, dříve než pronikly cestou horní a také asi dříve než dolní cestou pronikla na Slovensko většina druhů výhradně dolního proudu.

Proti hornímu proudu se slabším (obr. 3) jeví proud dolní, vázaný spíše na stupeň kolinní až submontánní. Jsou to *Cytisus* pseudo-rochelii, Dianthus* glabriusculus, Genista* campestris, Lathyrus transsilvanicus, Oenanthe banatica, O.* hungarica, O. stenoloba, Peucedanum carvifolia, Rhinanthus rumelicus, Scutellaria altissima, Sesleria heufleriana, Silene viridiflora, Spiraea crenata, Trifolium sarosiense, Waldsteinia geoides* a *W.* trifolia*.

Střední proud (obr. 4), vázaný na kolinní až montánní stupeň a jehož některé druhy různě vybíhají směrem k hornímu i dolnímu proudu se týká druhů *Coronilla elegans, Iris* pseudocyperus, Leucojum* carpaticum, Ligularia glauca, L. sibirica, Lysimachia punctata* a *Trifolium pannonicum*.

Výjimečné jsou případy *Aposeris foetida, Lysimachia punctata* a *Peucedanum carvifolia*. U těchto druhů se na území Slovenska uplatňuje případ vstřícné migrace, neboť vedle převládající jejich dácké migrace se na Slovensku uplatnila slaběji též jejich migrace illyrsko-norická. U *Aposeris foetida* se to týká lokalit na vrchu Marhát východně od Pieštan a u vsi Lednica v Bielých Karpatech. S uvedenými lokalitami migračně souvisí její výskyt také u Brumova na Moravě. U *Lysimachia punctata* je stejné geneze její výskyt v Bielých Karpatech, Malých Karpatech a v Považí. U *Peucedanum carvifolia* se to týká lokalit od Holíče v Bielých Karpatech a od Lozorna v Malých Karpatech, právě tak jako lokalit ze sousední Moravy (Korytná a Nivnice).

Obdobím průběhu dácké migrace byly zřejmě různé fáze postglaciálu, takže se jeví jako polychronní; přitom se zdá být nejpravděpodobnější, že její největší část (účast různých druhů) a územní rozsah se asi uskutečnily v období atlantiku, tedy v klimaticky nejpříznivějším období postglaciálu. Jen málo druhů této dácké migrace proniklo přes území Slovenska až na Moravu, kde jejich přítomnost představuje doznívání dáckého migroelementu směrem na západ a kde její druhy jen doplňují celkovou karpatskou migraci, pronikající však až do severní poloviny Čech, kde i tato také jen doznívá.

V pozdějších obdobích dácká migrace na území Slovenska spíše ustávala a nadto u četných jejích druhů postupně docházelo dokonce k přerušení jimi dosaženého souvislejšího rozšíření; popř. došlo i k celkovému, zvláště územnímu ústupu většiny druhů, čímž vznikly větší či menší lokální disjunkce. Z těchto různě rozložených i různě širokých lokálních disjunkcí je na Slovensku souhrnně nejnápadnější Ondavská disjunkce.

Z hlediska geoelementu patří dácký migroelement do několika skupin; z nich je nejdůležitější skupina geoelementu karpatského a skupina geoelementu karpatsko-balkánského. Menší část již tvoří podíl geoelementu karpatsko-alpsko-balkánského, popř. jihoevropského; jiné geoelementy jsou zastoupeny již jen jednotlivě.

Většina druhů všech geoelementů se ve svých areálech vyznačuje různými disjunkcemi, které nasvědčují o silnějším rozrušení jejich areálů předně asi převážně v glaciální době, kdy tyto druhy pravděpodobně měly své přechodně ústupové (refugiální) areály hlouběji na jihu Evropy. Později pro vývoj dáckého migroelementu měl největší význam Balkánský poloostrov (zvláště východní část) a pokud jde o samotné Karpaty, pak to mohly být asi nejvýše jen Jižní Karpaty a ojediněle to mohla být k nim přiléhající část Východních Karpat. Nasvědčovalo by tomu i tamní největší nahloučení karpatských stenoendemitů, popř. reliktů, u nichž lze jednoznačně připustit terciérní stáří.

Teprve s nástupem postglaciálu začaly jednotlivé druhy migrovat k severu, popř. k severozápadu po celém karpatském oblouku nebo po jeho vnitřních úbočích. Nic nebo skoro nic nenasvědčuje tomu, že by některé z druhů, takto pronikajících na území Slovenska z Dácie nebo přes Dácii či její část, mohly přečkat glaciál v prostoru Slovenska, jak se naopak někdy také o mnohých z nich nejednou usuzovalo nebo dosud usuzuje.

Závěrem se práce dotýká otázky hranice mezi Východními a Západními Karpaty (obr. 6). Tato se ve světle shrnutých poznatků dá nejspíše lokalizovat do okolí Ruského sedla. Údolím řeky Cirochy probíhá směrem k jihu a protíná západní okraj Vihorlatu; odtud dále směřuje po jižních úbočích tohoto pohoří k jižním úpatím skupiny vrchu Popričný.

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Ředitel cukrovaru a význačný florista. Floristický výzkum zaměřoval především na okolí svých působišť ve Velvarech, Radotíně, Vysokém Veselí a v dalších místech v Čechách. Podnikl i cesty po Evropě a Asii, odkud shromáždil četný herbářový materiál. Své vzorně upravené sbírky věnoval v r. 1902 Muzeu Království Českého; jen fanerogamů bylo přes 13 600 položek s pečlivě vedeným katalogem. Řada Kabátových údajů byla uveřejněna profesorem L. Čelakovským v „Resultaten der botanischen Durchforschung Böhmens". Od r. 1903 vykonával Kabát v Muzeu svědomitě po dobu deseti let čestnou funkci inspektora botanických sbírek. Společně s profesorem F. Bubákem vydával exsikátovou sbírku „Fungi imperfecti exsiccati". V 18 svazcích po 50 druzích, které byly vydávány z materiálů z různých částí světa, vyšla řada nových taxonů pro vědu.

Wenzel Blasius Mann

* 9. 3. 1799 † 7. 6. 1839

Lékař a florista. Lékařskou praxi provozoval v Zákupech a později v České Lípě. Jeho latinsky psaná inaugurační práce „Lichenum in Bohemia observatorum dispositio succinctaque descriptio", která vyšla v Praze 1825, je první prací o lichenofloře Čech. Je v ní uvedeno 362 druhů lišejníků většinou s konkrétními lokalitami. Na determinaci Mannových sbírek se podílel kromě Ph. M. Opize a I. F. Tausche především profesor G. Floerke z Rostocku. Bohatá lichenologická sbírka, koupená později jedním lékárníkem z Litoměřic, je asi navždy ztracená, fanerogamologické sběry z Opizova Výměnného ústavu jsou zachovány v herbářích Národního muzea. W. B. Mann napsal pro Opizův Naturalientausch statě o pěti druzích a pro českou flóru objevil několik druhů, např. v r. 1819 v okolí svého rodiště Dašic druh *Euphorbia lucida* W. et K. W. B. Mann má také velké zásluhy na tom, že žena lékárníka ve Vrchlabí J. Kablíková se stala naší první vynikající floristkou. Na Mannovu počest pojmenoval Opiz rod *Mannia* (= *Grimmaldia*) a *Thymus mannianus* [= *T. praecox* Opiz var. *mannianus* (Opiz) Ronnig.]. Dále jej připomíná např. i autorská kombinace jména lišejníkového druhu *Dermatocarpon miniatum* (L.) Mann.