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VEGETATIVE COVER AS PART OF A GEOGRAPHICAL LANDSCAPE
(ON THE EXAMPLE OF A PART OF EASTERN SLOVAKIA)

The task of this study is, in the first place, to give the methodical process of a geographer in the elaboration of the vegetative cover of a certain territory. As an example, I have chosen a part of the east Slovakian region. Our territory extends (see map) from the eastern district of the Slovakian Karst (Slovenský kras) and the crystalline part of the Slovakian Ore Mountains (Slovenské Rudohorie) through the Košice Basin (Košická kotlina), Slánske Mountains (Slánske pohorie), to the Ondava Highland (Ondavská vrchovina otherwise called Low Beskid — Nízky Beskyd) and the East Slovakian Lowland (Východoslovenská nížina otherwise called Tisa Lowland — Potiská nížina). I have chosen the district as it contains as many as possible of the fundamental geographical terms, characterizing the territory of Slovakia. The district includes parts of three basic Carpathian zones: the flysch (Ondava Highland — Ondavská vrchovina), the crystalline — mesozoic (Slovakian Ore Mountains — Slovenské rudohorie), and the volcanic (Slánske Mountains — Slánske pohorie). Besides, there are represented here mountains, a basin, a lowland; we also find here plains, hilly country, low mountains and highlands.

I shall first make a concise analysis of the individual factors upon the vegetation. I shall direct my attention to those aspects of geological-geomorphological, climatical, hydrographical and soil conditions, as well as upon the activities of man which have a relation to the plant cover. Finally, I shall make a synthesis. I shall delimit the vegetative district and sub-districts of the territory. I shall pay attention to the forest cover. In judging the forest associations I base myself on the phytocenological analysis. Since in the synthesis I also direct my attention to the reconstruction of the plant cover, I follow the system of plant associations according to the literature No. 9.

Geological-geomorphological conditions. In the *East Slovakian Lowland* there may be distinguished two degrees: the lower which is occupied by the alluvial plains; above this there stands the higher hilly degree. The extensive aggradation bars of the Topľa, Ondava and Laborec were formerly occupied by meadow associations (more detail in the section about hydrographic conditions). The hillocks belonging to the East Slovakian Lowland extend in our territory in the neighbourhood of the Slánské Mountains and the Ondava Highland. The southern part of the hilly country is lower (up to 200 m. above sea level), less rough, with extensive wide flat backs and small tablelands which represent the remains of a pediplane of the Upper Pliocene. The neogenic underlying layer is covered by extensive covers of loess clays, or loess. On the contrary, the northern part built up of flysch, has less covers of loess clays, is higher, vertically more rugged. The neogenic part is much deforested and mostly changed into arable land. On the flysch part there are less fields, besides the forest enough of pastures and pasture forests. In the southern part there is a lack of beech forests (*Fagus silvatica* L.). At the boundaries

of the forest remains the oak is especially spread [the summer oak and the winter oak — *Quercus robur* L. et SIMK and *Quercus petraea* (MATTUSCH) LIEBL.], and on the sunny southern slopes and the broad backs with loess clays especially, however, with loess, the associations have a xerothermic character. As against this in the northern flysch portion of the hilly country the associations are more mesophilic and on the steeper slopes of the northern expositions the beech encroaches on the forest growth (or prevails there).

A considerable portion of the *Košice Basin* is occupied by hilly country with remains of river plains. It is built up of acid substrate (Košice gravel formation). The acid substrate is also provided for the vegetation by the extensive alluvial cones deposited by streams flowing down from the crystalline complex of the Slovakian Ore Mountains. Warm oak forests are spread over them with an abundant mixture of acidophilic elements. Floristically they are relatively poor. They sharply contrast with the fragments of forestgrowth on the loess clays, on the loess as well as on the alluvial cones of streams flowing from the karst portion of the Slovakian Ore Mountains. The latter were formerly covered mostly with xerothermic oak forest, with the occurrence of felt oak (*Quercus pubescens* WILLD).

A considerable area of the bottom of the basin as well as its low height above sea level favourably influence the development of xerothermic growths.

A portion of the *Ondava Highland* falling into our territory is the flysch district with no big islands of klippen and rhyodacites. On the tops of the more expressive sand backs with shallow soils on the southern sides, the oak forests have an admixture of xerothermophytes while on the southern slopes of the shale flysch with a less rough relief, the mesophilic oak forests are typical. Similarly, the admixture of the xerothermophytes in the southern expositions is also observed on the strong residuals of the resisting rhyodacites (Lipová).

The occurrence of the klippen (in the district of Lysá hora — Podčičva) jutting out of the flysch is suddenly expressed by an increased energy of the relief and a local jutting out of limestone small rocks. This has for result a limestone vegetation, numerous lime-loving heliophytes on the southern side of the small rocks. On the steep northern slopes of the klippen there is a strong development of beech forests. Since the flysch rocks contain enough of carbonates, in the whole of our region there is a lack of acid beech forest vegetation and acid oak forest vegetation. At the same time there is here a lack of scree forests (with the exception of the klippen).

The strato-volcanic build of the *Slánske Mountains* is expressively shown in the relief of the mountains and it influences, by means of other factors, the over-all character of the vegetative cover. The more resisting effusive rocks (andesites) weather from less resisting pyroclastic rocks ordinarily in the shape of expressive rock ridges and hills ordinarily covered with scree forests. From these centres the ash-tree (*Fraxinus excelsior* L.) is spreading into the neighbouring beech forests, while the maples (mountain maple — *Acer pseudoplatanus* L. and the milk maple — *Acer platanoides* L.) which are taking root on an increasing scale on free areas of uprooted trees by windstorms, on clearings and so on. The sunny higher portions of expressive hills and backs built up of resisting effusive rocks on the border of the mountain chain there are light oak forests with an abundant admixture of xerothermophytes. They strikingly stand out among the mesophilic oak and forests which surround them.

In our portion of the *Slovak Ore Mountains* there may be distinguished on principle two geological-geomorphological, as well as vegetative different units: the crystalline and the karst.

The crystalline complex in our territory is built up of acid substrates mostly from

crystalline shales. Deep valleys generally following the fault zones alternate with high backs.

The forms of the surface are well rounded off. Rocks jutting out as well as screes are few. As a result of this fact the nitrophilic scree associations are only weakly represented. The acid substrate in the boundary region with the beech on the border portions of the mountains slows down the progress of the beech in comparison with the basic substrates, so that oak forests in places take up extensive areas and reach relatively high altitudes (up to 650—700 m.). In the beech region the acid substrate with the interference of man, quickens the degradation and helps the rise of acid beech forests of an inferior quality.

The karst portion of the Slovak Ore Mountains stands out as an expressive morphological region, which causes an unusual variety and particularity of vegetation considerably different from the vegetation of the rest of our territory. The Slovakian karst is distinguished by a great wealth of plant species. It belongs floristically to the richest territories in Central Europe. Vegetation inversions are here characteristic. In the deep canyon — like valleys (Zádiel, Háj and others), there occur dealpine and prealpine types of vegetation which are currently found above the upper limit of the forest in the dwarfed pine degree, while in the adjacent slope 200—300 m. higher, there occur xerothermophytes of the forest-steppe regions. Numerous lithophytes are found on the rocky formations and on fields of lapies (fig. 4). Scree forests are also commonly found, among which those on the lower altitudes are especially distinguished by their variety.

Climate. In the East Slovakian Lowland can be observed the differences caused especially by the climate between the northern and the southern portions of the hilly country belonging to the Lowland. The southern part of the hilly country and the eastern border of the Slánske Mountains adjacent to it which are under the direct influence of the climate of the open Lowland have a much greater extent of warm oak forests than the northern part of the hilly district forming the spur between the Slánske Mountains and the Ondava Highland. The Košice Basin too, especially on account of its considerable extent and its low altitude has a relatively warm climate, so that warm oak forests are spread here crossing over the border of the karst and here and there also to the western border of the Slánske Mountains, occupying (similarly as on its eastern border) expressively jutting out hills and ridges with shallow rocky soils.

At the passage of the East Slovakian Lowland and the Košice Basin into the mountains the climate becomes colder and more humid. The warm oak forests are replaced by mesophilic oak forest which border upon the mountains. In the direction towards the interior of the mountains the mesophilic oak forests get gradually rarer extending over the steep portions of the sunny slopes (where there is a decreased vitality of the beech) and gradually they are replaced by the beech forests.

With the increasing altitude above sea level as also with the increasing distance from the border of the Lowland and the Basin the temperature decreases, the amount of precipitation and relative humidity of air increase, which influences favourably the development of beech forests which generally prevail here in the mountains. In our portion of the Ondava Highland as well as on the border portions of other mountains, there are widespread beech forests characteristic of the lower part of the beech degree; phytocenologically they are related to the mesophilic oak forests. The substantial portion of the mountains is covered with flowery beech forest vegetation (in the Slánske Mountains maple beech forests are also much spread), which in the highest portions of our part of the Slovakian Ore Mountains cross over to the cooler beech forests of the upper part of the beech degree with an admixture of spruce elements.

A greater occurrence of uprooted trees (in the region of Jahodná — Črmel in the

Slovakian Ore Mountains, Oblazy in the Slánske Mountains and elsewhere) reveal that the calamity is generally caused by strong northern winds and north-western winds which, after dashing down the chief ridges, acquire a falling character with a big mechanical effect.

The over-all character of the associations in our territory has a more mesophilic character when we compare them with similar territories for instance in south-western Slovakia. The beech forests reach strikingly low up to the border of the East Slovakian Lowland (for instance near Podčičva up to 160–170 m. and similarly also in the flysch hilly country in the valley of Zlatník and elsewhere), while in the neighbourhood of the Danubian Lowland their lower border lies generally higher. This phenomenon is very likely connected with a different distribution of precipitation in the vegetative period. While in the Danubian Lowland the second half of the vegetative period is much drier, the average total amount of precipitation for July is about 60, August 50–60 and September 45–50 mm), in the East Slovakian Lowland it is more humid (July about 70, August 70, September a little below 60 mm), which favourably influences the development of the beech that generally expressively replaces the oak in the boundary region.

Hydrographic conditions influence to a great extent the plant associations in the alluvial river valleys. The Bodva in the Košice Basin flowing through a graben forms extensive marshlands, formerly covered with true alder forests (*Alnion glutinosae* Meyer Drees 1936); they are at present entirely deforested and drained. The inundation territories of the larger rivers of the East Slovakian Lowland (Bodrog, Latorica, and others) have remains of willow-poplar meadow forests (*Populion albae* Szaf. 1935). In drier, only sometimes inundated parts of the alluvial river valleys there were formerly spread ash-elm forests (*Ulmion* Oberd. 1953). The alluvial valleys get narrower in the direction from the lowland towards the mountains. The mountain elements get mixed up with the lowland elements. In the alluvial valleys of the Topľa, Ondava, Laborec, before they flow through the East Slovakian Lowland, we meet with the viscous alder [*Alnus glutinosa* (L.) GAERTN] in the inundation territory, besides several species of willows spread in the lowlands, and the grey alder [*Alnus incana* (L.) MOENCH], a representative of the alluvial valleys belong to the *Alnion glutinoso-incanae* Oberd. 1953.

In the analysis of the relations of vegetation to the hydrographic conditions, it is also necessary to take into account the regime of flow in the course of the year. For instance the flow of the rivers flowing from the flysch territories strongly oscillates (the flysch is characteristic, it is true by abundant but little voluminous and easily drying sources). In summer with a small flow the level of ground water decreases which, on principle, influences the character of the vegetation in the gravel benches of the inundation territory.

Soil conditions. In the alluvial river valleys there are spread alluvial and meadow soils. The gley soils with a layer of moorland peat are bound with true alder forests (the alluvial plain of the Bodva, already mentioned).

In places on the loess in the East Slovakian Lowland, and here and there also in the southern portion of the Košice Basin chernozems have been preserved, which points to a very old settlement, (man from the Neolithic did not allow afforestation and kept up a cultivated steppe).

Brown soils are much spread in the Lowland and in the Basin (R. Šály 1962) and illimerized soils, as well as their transition from brown soils up to illimerized soils. The latter are more connected with flat straight terrains. On the loess clays they also cross over to the border of mountains for instance they have been found in the beech forest in the Ondava Highland, in the district of Benkovec.

In the mountains there are generally spread brown forest soils. In the lower altitudes,

especially on the basic substrates (Slánske Mountains) brown non-acid forest soils are much spread. Acid substrates (the crystalline complex of the Slovakian Ore Mountains) favour the development of brown forest acid soils. In the highest part of the Slovakian Ore Mountains (under the spruce monocultures on acid foundations even in low altitudes) there are found podzolized soils.

The eroding andesite currents in the form of masses of débris up to rocky hills and ridges are closely bound with rankers. In the Slánske Mountains they condition an abundant occurrence of scree forests with numerous nitrophilic species.

A varied mosaic of soil types is found in the Slovakian karst. On the whole rendzinas are much spread here. In those places in which there is no sufficient supply of limestone gravel, there have developed other soil types. In the under-slope deluviums (for instance Nižný vrch) there occur brown forest soils. On the karst plateaus, at the bottom of wide sink-holes we find even podzolized soils with the growth of oligotrophic species [for instance the hard grass *Nardus stricta* (L.)], while only a few dozen metres farther, on the slope of the sink-hole with rendzinas, there are found varied and rich associations with an abundant representation of eutrophic species.

Among the most significant factors which influence the vegetation in our region is man. He has practically entirely deforested the alluvial river forests, especially the areas outside the inundation territory and he has changed them into fields and alluvial meadows. On the hillocks of the East Slovakian Lowland, as well as in the Košice Basin remains of forests have persisted while on the less fertile soils with the Košice gravel formation as the foundation, even larger forests have remained. On the whole, however, even the hillocks mentioned have been mostly deforested.

The forest growth on the border of the mountains has since long ago been damaged by the grazing of cattle. Especially the urban and communal forests which were weakly protected have been much damaged by grazing and laid waste. In these the hornbeam (*Carpinus butulus* L.) is much spread and as a result of a well developed ability to rejuvenate from stumps, it is better fit to resist the destructive activity of man. There is here an abundance of pastures and pasture forests in which, besides various light loving bushes, the birch (*Betula verrucosa* EHRH.) thrives well, and on the dry and acid soils of the Košice gravel formation the pine (*Pinus silvestrus* L.) grows well, and these form the successive stages of the return of the forest to the abandoned pastures.

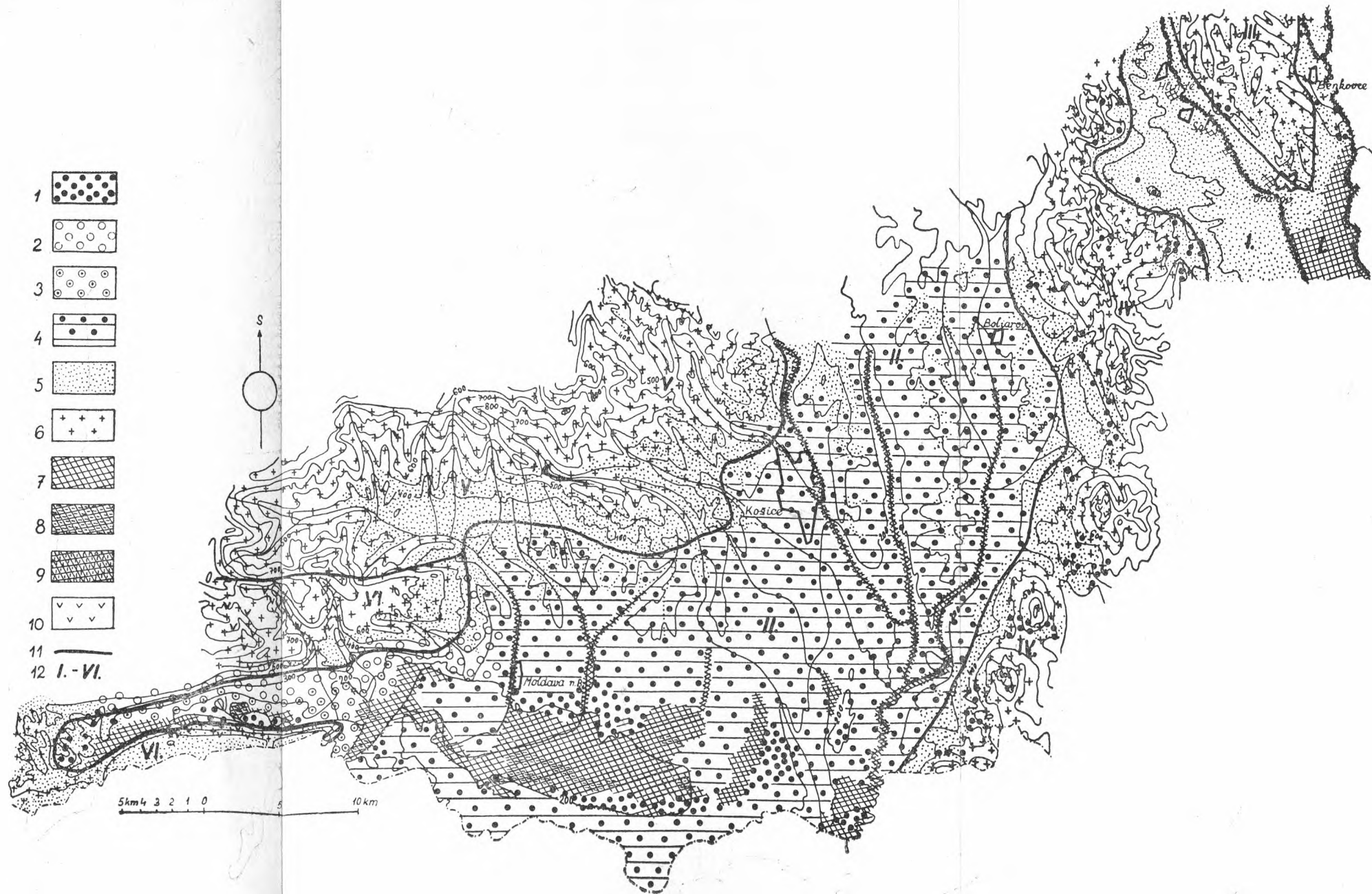
Another region where pastures and forests occur in our territory are the high backs and ridges of the Slovakian Ore Mountains in the district Kojšovská Hoľa — Železný vrch. The forest growth on the ridges generally suffers from the increasing mechanical and physiological action of winds (Fig. 1), the soils are shallower, subject to gradual drying, the forest growth is uglier, less valuable, hence its owners were removing it and establishing pastures. In the Slovakian karst the forest growth is suffering from the grazing of goats.

The forest growth in the crystalline part of the Slovakian Ore Mountains has since long ago suffered from mining. Much wood, especially the beech, was used for the making of char-coal which was brought here even from the distant neighbourhood. In the lonely mountain communes there flourished the house wood manufacture (especially of pitch-forks, rakes, hafts, brooms, showels, yokes, looms, spinning-wheels and so on). For this purpose a certain type of wood was needed, so that from the forest growth generally only certain woods were used (especially the maple and the ash-tree), which also had an influence on the composition of the forest growth. Much fir wood was used for the manufacture of shingles in the district Opátka—Košické Hámre.

Man has strongly influenced the wood composition of forests as the forester. In the clearings, after cutting down deciduous forests, or fir and beech forests (especially in



Map 1. Map showing the spreading of forest woods in a part of Eastern Slovakia. 1 - oak (*Quercus*), 2 - hornbeam (*Carpinus betulus* L.), 3 - beech (*Fagus sylvatica* L.), 4 - pine (*Pinus silvestris* L.), - sometimes also cultures of the black pine (*Pinus nigra* ARNOLD), 5 - fir-tree [*Abies alba* (MILL.)], 6 - spruce [*Picea excelsa* (LAM) LINK] - cultures, 7 - cultures of the pseudoacacia (*Robinia pseudoacacia* L.), 8 - woods of scree forests (especially the ash-tree - *Fraxinus excelsior* L., maple - *Acer*, lime - *Tilia* and others.), 9 - pasture forest (oftenest wart birch - *Betula verrucosa* EHRH., sometimes the oak, the beech and others). 10 - willow-poplar meadow woods (the willow - *Salix*, poplar - *Populus*), 11 - ash - elm - meadow woods (ash-tree, elm-tree - *Ulmus*, the maple).



Map 2. Map showing the original forest associations in a part of Eastern Slovakia. 1 — warm oak woods, 2 — xerophilic oak woods of the felt oak (*Quercus pubescens* WILID), 3 — warm oak woods and xerophilic oak woods of the felt oak, 4 — warm oak woods with an admixture of acidophilic elements, 5 — mesophilic oak woods, 6 — flowery beech woods, 7 — meadow ash-elm forests (*Ulmion* Oberd. 1953), 8 — true meadow forests, with the viscous alder (*Alnion glutinosae* Meyer-Drees 1936), 9 — meadow forests with the viscous alder and the grey alder (*Alnion glutinoso-incanae* Oberd. 1953), 10 — scree forests, 11 — boundary of vegetation regions, 12 — numbers of vegetation regions I. The East Slovakian Lowland, II. Košice Basin, III. Low Beskid, IV. Slánske Mountains, V. Slovakian Ore Mountains, VI. Slovakian Karst.

the Slovakian Ore Mountains) he has planted monocultures of the spruce [*Picea excelsa* (LAM) LINK.] especially looked for building constructions. Here and there, he has also planted the pine, and the larch (*Larix decidua* MILL.). In the agricultural regions (especially in the south of the Košice Basin) he has also planted the pseudoacacia (*Robinia pseudoacacia* L.) which gives small useful wood for the production of agricultural implements and serves also as good firewood.

The beech which in the mountains of our territory generally prevails, as long as there were not found suitable technological means of working it up, was considered as a less valuable wood. It was mostly cut only for the production of firewood, or for charcoal.

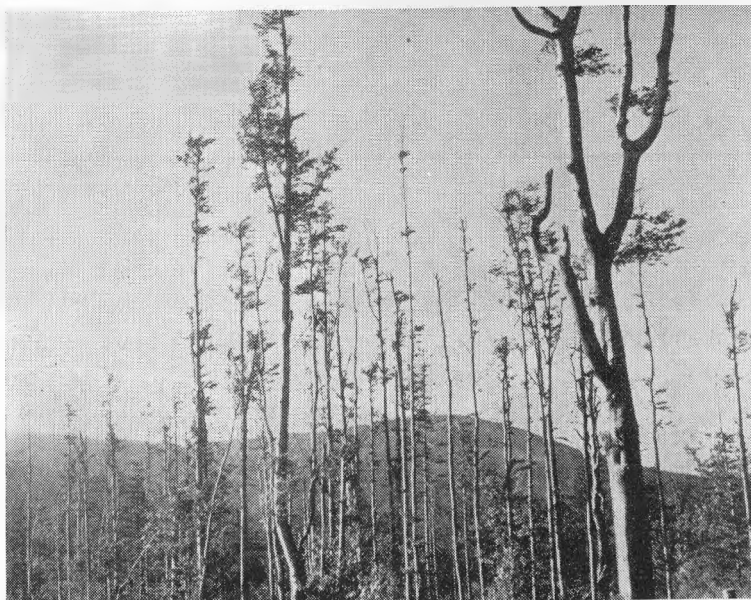


Fig. 1. The forest growth on the high ridges strongly suffer from the effects of strong winds. The Slovakian Ore Mountains (district of Opátka — Zlatá Idka).

Hence in the interior parts of the Slánske Mountains where the communications are more difficult (as well as in the non-mining regions of the Slovakian Ore Mountains) the virgin beech forests were untouched up to the second half of the 19th century, or the beginning of our century. Businesses provided with mechanizing equipment and disposing with hundreds up to thousands of expert wood-cutters (they were grouped mostly from Rumanians from the region of Marmaroš who settled down similarly as in other mountains of Slovakia), at the beginning of our century in our district also. They cut immense continuous forests especially in the region of Jusková Vola in the Slánske Mountains. In those places where in the old forest growth the beech had not rejuvenated, less valuable light-loving woods took its place in empty spaces, mostly the birch and the sallow (*Salix capraea* L.). In the neighbourhood of the scree forests and in a large measure in the clearings, there took root the maples, the mountain maple — (*Acer pseudoplatenus* L.) and the milk maple — (*Acer platanooides* L.) and the ash-tree (*Fraxinus excelsior* L.).

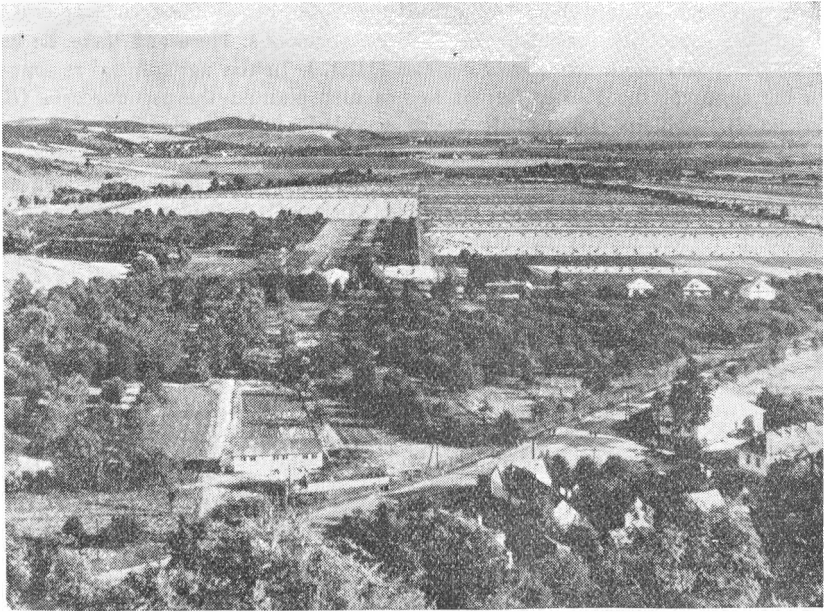


Fig. 2. Vegetation of the "cultured steppe". The East Slovakian Lowland in the district Vranov Podčižva.



Fig. 3. Sproutlings of an oak wood in the Košice Basin.

In the boundary district of the beech and mesophilic oak, man quickens the natural process of pushing out the oak by the beech. The beech in our region not only comes down to low altitudes very strikingly, but it is intensively rejuvenating and this even in the pure oak growth of mesophilic character. We often meet here with the phenomenon that in the old and some centuries old oak forest there is a luxuriant beech forest growth. We meet with beech young forests in which only the old oak trunks reveal that there was here an oak forest. This process of retreating of the oak in favour of the beech, being connected with historical condition, is going on in Eastern Slovakia more intensively than in western Slovakia, which is very likely connected with the more uniform

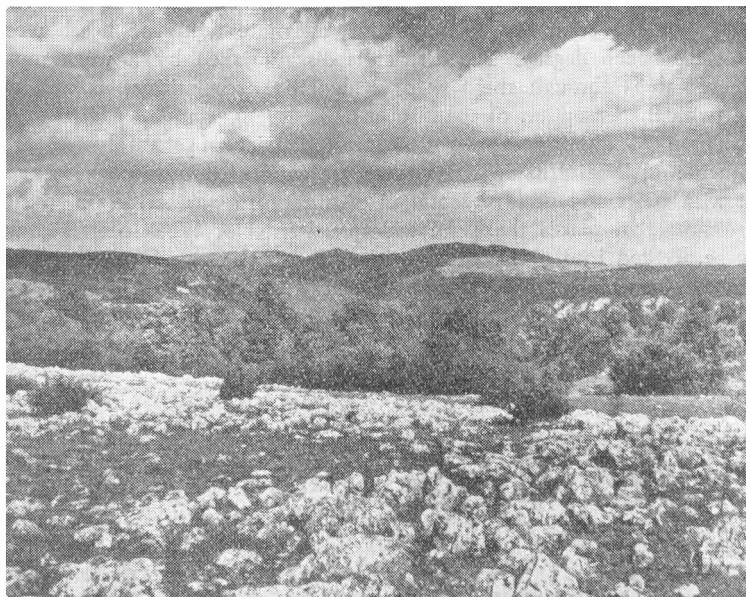


Fig. 4. Karst plateaus of the Slovakian Karst. In the foreground a field of lapias with xerophilic vegetation (not far from Turňa nad Bodvou).

distribution of precipitation during the vegetative period, already mentioned. By the fact that man prematurely cut down the long-living oak, he quickens the process of growing of the beech at the expense of the oak.

On the basis of the analysis of influence of geographical factors we can make a synthesis and divide our territory into the following *regions of vegetation*:

1. The East Slovakian Lowland. It is practically totally deforested (Fig. 2). We may divide it into a) the meadow district, b) the hilly country. The latter represents a district of oak forests. In the southern part there also occur warm oak forests, while in the northern, there prevail absolutely mesophilic oak forests with the hornbeam, or with the beech (in the flysch district). In the alluvial river valleys we may distinguish (with regard to the original vegetation) roughly three units: *Populion albae* Szaf. 1935 by the great water courses in the southern part of the territory; *Ulmion Oberd.* 1953 in the drier portions of the alluvial valley and *Alnion glutinoso-incanae* Oberd. 1953 in the narrow alluvial valleys, on the border of the mountains.

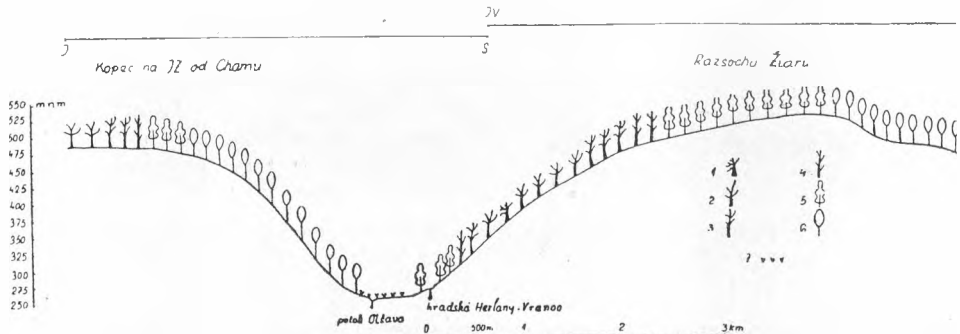
2. The Košice Basin is divided into two parts:

a) The alluvial part, nearly entirely deforested, in which we may distinguish Ulmion Oberd. 1953 and *Alnion glutinosae* Meyer-Drees 1936 (a considerable part of the alluvial plain of the Bodva in the territory of the graben).

b) The hilly country which is also in a substantial measure deforested, although here and there, there may be seen remains of oak woods and even greater forest complexes (Fig. 3). It is question here of the warm oak district. Through the influence of the substrate, the forest growth in the major portion of the Basin has a considerable admixture of acidophilic elements.

3. A portion of the Ondava Highland belonging to our district constitutes a transitory belt, formed by mesophilic oak forests in the neighbourhood of the East Slovakian Lowland which, in the direction of the mountains, alternate with the beech woods of the lower part of the beech degree. The district is distinguished by a weak representation of needle leaved trees through the lack of acidophilic associations, as well as of scree associations (with the exception of the klippen).

4 The Slánske Mountains represent a forest district of strongly prevailing beech forests. With the surface effusive rocks there are connected numerous rocky and scree associations with an abundant representation of nitrophilic species. As a result of extensive forest clearing, in places there are widespread inferior types of mixed woods. The region may be divided into a) a border belt of mesophilic oak forests with enclaves of warm oak woods (especially in the neighbourhood of the open East Slovakian Lowland), with a larger occurrence of pastures and pasture forests and b) an interior belt of beech forests, maple-beech woods and scree forests.



Profile through the summit and the southern slope of the forked branch, deviating Žiar towards ESE and through the hill towards SW from Cham. 1, 2 — xerophilic oak growth (without the felt oak — *Quercus pubescens* WILLD), 3, 4 — transition between the xerophilic and mesophilic oak growth, 5 — mesophilic oak growth, 6 — beech growth, 7 — grass growth.

5. The crystalline part of the Slovakian Ore Mountains represents a mountain forest district with an abundant occurrence of fir trees and larger areas of spruce monocultures. The forest growth is strongly marked by the consequences of mining and grazing of cattle. From the mountain district proper, we may distinguish the border belt in the neighbourhood of the Basin. It is characterized by the occurrence of mesophilic oak woods with the hornbeam and the beech, as well as with extensive pastures forests.

6. The Slovak Karst represents a very peculiar type of territory as regard vegetation.

It is characterized by a richness of species and by varied plant associations, forming a whole scale of xerophilic oak woods with the felt oak (*Quercus pubescens* WILLD.) through mesophilic oak woods with the hornbeam up to the flowery beech woods with the fir. The occurrence of rocky and scree associations is very abundant as well as vegetative inversions are found. The devastation by grazing (Fig. 4), especially on the shallow rocky rendzinas goes on very intensively, so that it is necessary to take measures to stop it as soon as possible.

Reviewed by J. Michalko

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Pavol Plesník

VEGETÁCIA AKO SÚČASŤ ZEMEPISNEJ KRAJINY (NA PRÍKLADE ČASTI VÝCHODNÉHO SLOVENSKA)

Práca je zameraná metodicky. Na základe rozboru vplyvu jednotlivých geografických činiteľov na vegetáciu (geologicko-geomorfologických, klimatických pomerov, podzemných a povrchových vôd, pôdnych pomerov a človeka — najmä z hľadiska baníctva, pasenia dobytky, poľného a lesného hospodárstva) bola urobená syntéza a vymedzené vegetačné oblasti.

1. Potiská nížina predstavuje teplú, dnes takmer totálne odlesnenú oblasť, v ktorej môžeme z vegetačno-geografického hľadiska vyčleniť dve zásadne odlišné jednotky: lužnú a pahorkatinnú. V inundačnom území veľkých tokov (Bodrog, dolná Ondava, dolný Laborec a i.) boli pôvodne rozšírené vřbovo-topolové lesy (*Populium albae* Szaf. 1935). Na suchších dostatočne podmáčaných častiach nív dominovali „tvrdé“ lužné lesy (brest, jaseň, javory — *Ulmion* Oberd. 1953). V inundačnom území výbežkov nížiny do pohorí miešajú sa nižinné prvky s horskými (*Alinion gutinoso-incanae* Oberd. 1953).

Južná časť pahorkatiny s neogénnym podložím, pokrytým sprašovými hlinami, resp. sprašami je nižšia, menej rozčlenená, so širokými plochými chrbtami a kopcami, vrcholové plošinky ktorých predstavujú zvyšky vrchnopliocénnej (poriečnej) rovne. Klíma otvorenej Potiskej nížiny podporuje xerofytizáciu vegetácie. Je takmer totálne odlesnená. Severná časť s flyšovým podložím vybiehajúca medzi Slánske pohorie a Nízky Beskyd je vyššia a má silnejšie akcentovaný reliéf. V porovnaní s južnou časťou sú tu oveľa menej rozšírené polia, je tu dosť pašienkov a pašienkových lesov, prechádzajúcich do normálnych kmeňovín. V dôsledku spomenutých skutočností vegetácia severnej časti pahorkatiny má mezofilnejší ráz. V podstate ide o mezofilné dúbavy prechádzajúce na strmších severných svahoch do bučín, kým v pôvodnej rastlinnej pokrývke južnej časti boli okrem mezofilných dúbav dosť rozšírené aj teplé dúbavy.

2. Košická kotlina sa delí na dve časti: a) Nivná, takmer úplne odlesnená, v ktorej môžeme rozlíšiť *Ulmion* Oberd. 1953 a *Alinion glutinosae* Meyer-Drees 1936 (značná časť nivy

Bodvy v území priekopovej prepadliny). b) Pahorkatinná, ktorá je tiež v podstatnej miere odlesnená, tu a tam sa udržali dubové remízy, prípadne aj väčšie lesné komplexy. Ide zväčša o teplú dubovú oblasť. Vplyvom substrátu v prevažnej časti kotliny porasty majú značnú prímies acidofilných elementov.

3. Časť Nízkeho Beskydu, patriaca do našej oblasti, zaberá prechodný pás tvorený mezofilnými dúbavami v susedstve Potiskej nížiny, ktoré smerom do pohoria sú vystriedané bučínami dolnej časti bukového stupňa. Oblasť sa vyznačuje slabým zastúpením ihličičanov, nedostatkom acidofilných elementov, ako aj sutinových spoločenstiev (s výnimkou bradiel).

4. Slánske pohorie predstavuje lesnú oblasť silno prevládajúcich bučín. Na vystupujúce efúzie sa viažu početné skalné a sutinové spoločenstvá s hojným zastúpením nitrofilných druhov. V dôsledku rozsiahlych holorubov miestami sú silne rozšírené pleveľné dreminy. Oblasť sa dá rozdeliť na okrajové pásmo mezofilných dúbav s enklávami teplých dúbav (najmä v susedstve otvorenej Potiskej nížiny), väčším výskytom pašienkov a pašienkových lesov a vnútorné pásmo bučín, javorových bučín a sutinových lesov.

5. Kryštalinická časť Slovenského rudohoria so značnými absolútnymi a relatívnymi výškami predstavuje horskú oblasť. Podstatnú časť zaberajú kvetnaté bučiny s hojne zastúpenou jedľou, ktorá schádza aj do dúbav, zastupujúc mezofilnejšiu zložku spoločenstva. Kyslý substrát podporuje rozvoj acidofilných elementov (najmä vo vyšších polohách a činnosťou človeka). Lesy sú poznačené dávnym vplyvom baníctva (oddávna uskutočňované holoruby v súvislosti s uhliarstvom), pasenia dobytka a domáceho drevárskeho priemyslu. Okraje možno vyčleniť ako pás s prevládajúcimi mezofilnými dúbavami.

6. Slovenský kras vystupuje ako svojrázna floristicky veľmi bohatá vegetačná oblasť s hojnými vegetačnými inverziami, spôsobenými predovšetkým krasovým reliéfom a pestrou mozaikou rastlinných spoločenstiev s nedostatkom acidofilných druhov a hojným zastúpením litofytov. Z lesných spoločenstiev sú zastúpené najmä xerofilné dúbavy duba plstnatého, mezofilné dúbavy, kvetnaté bučiny a sutinové lesy.

Mapa 1. Rozšírenie lesných drevín v časti východného Slovenska. 1 — dub (*Quercus*), 2 — hrab (*Carpinus betulus* L.), 3 — buk (*Fagus silvatica* L.), 4 — borovica sosna (*Pinus silvestris* L.), niekde aj kultúry borovice čiernej (*Pinus nigra* ARNOLD), 5 — jedľa (*Abies alba* MILL.), 6 — smrek [*Picea xelsa* (LAMK) LINK], 7 — kultúry agátu (*Robinia pseudo-acacia* L.), 8 — dreminy sutinových lesov (najmä jeseň — *Fraxinus excelsior* L., javor — *Acer*, lipa — *Tilia* a i.), 9. — pašienkové lesy (najčastejšie breza bradavičnatá — *Betula verrucosa*, EHRH., prípadne dub, buk a iné), 10. — vřbovo-topolové lužné lesy (vřba — *Salix*, topoľ — *Populus*), 11 — jaseňovo brestové lužné lesy (jaseň, brest — *Ulmus*, javor).

Mapa 2. Pôvodné lesné spoločenstvá v časti východného Slovenska. 1 — teplé dúbavy, 2 — xerofilné dúbavy duba plstnatého (*Quercus pubescens* WILLD.), 3 — teplé dúbavy a xerofilné dúbavy duba plstnatého, 4 — teplé dúbavy s prímiesou acidofilných elementov, 5 — mezofilné dúbavy, 6 — kvetnaté bučiny, 7 — lužné lesy jaseňovo-brestové (*Ulmion* Oberd. 1953), 8 — pravé lužné lesy, s jelšou lepkavou (*Alnion glutinosae* Meyer-Drees 1936), 9 — lužné lesy s jelšou lepkavou a jelšou sivou (*Alnion glutinoso-incanae* Oberd. 1953), 10 — sutinové lesy. 11 — hranice vegetačných oblastí, 12 — čísla vegetačných oblastí: I. Východoslovenská (Potiská) nížina, II. Košická kotlina, III. Nízky Beskyd, IV. Slánske pohorie, V. Slovenské rudohorie (kryštalinikum), VI. Slovenský kras.

Profil slemenom a južným svahom rázsochy, odbočujúcej od Žiaru k VJV a kopcom na JZ od Chamu. 1 — xerofilné dubové porasty (bez duba plstnatého — *Quercus pubescens* Willd); 2, 3 — prechody medzi xerofilnými a mezofilnými dubovými porastami, 4 — mezofilné dubové porasty, 5 — bukové porasty.

Obr. 1. Porasty na vysokých horských hrebeňoch veľmi trpia účinkom vetrov. Slovenské rudohorie (oblasť Opátka — Zlatá Idka).

Obr. 2. Vegetácia „kultúrnej stepi“. Potiská nížina v oblasti Vranov — Podčičva.

Obr. 3. Výmladková dúbava v Košickej kotline.

Obr. 4. Krasové plošiny Slovenského krasu. V popredí škarповé pole so xerofilnou vegetáciou (neďaleko Turne nad Bodvou).