

KAZIMIERZ BROWICZ

On the geographical distribution of *Platanus orientalis* L. in Bulgaria

The eastern plane belongs to the tree species that already in the Ancient World, were under cultivation, particularly in the Eastern Mediterranean, and were being distributed widely. It was valued not only for its decorous, attractively peeling bark and original wide leaves, but also, and perhaps primarily for its dense, compact crown, through which almost none of the scorching sun rays are able to pass. Thus it became the favourite shade tree planted wherever the inhabitants of villages or settlements used to meet for a moments rest and coolness, to eat or to joke, to discuss and trade. It is hardly surprising therefore that the plane tree was cultivated near households, near springs and wells, over watering canals, on market places, near churches and other places of religious cult. Its longevity and considerable size have undoubtedly influenced the development of various legends, often very poetical, and superstitions which in places survived until this day. These beliefs have spread far beyond what is now considered as the native range of the eastern plane. For example in the countries of Middle Asia one can often see old plane trees, with their lower branches overhung with coloured strips of material. These are torn out by women from their dresses and tied to the branches in the belief that it will assure them a successful delivery, or protect them against infertility.

The above mentioned facts to a large extent make it impossible to demarkate with any accuracy the original range of the species. This is particularly difficult since *P. orientalis* when it finds in the region of cultivation favourable conditions for dispersal, easily turns wild, and behaves similarly as in endogenous conditions. The difficulties involved in distinguishing artificial stands from natural ones are intensified by age long cultivation on one hand, and absence of archival data on the other. In the circumstance, the range of *P. orientalis* is variously delimited by different authors, and the disagreements are often considerable. Without discussing the many controversial views on the subject, two main interpretations are worth mentioning. Boissier (1), Velenovsky (23), Hehn (8) and Hegi (7) believe that the range of eastern plane extends from southern Italy and Sicily in the west to the Himalayas in the east. On the other hand Elwes and Henry (3) believe that the species was introduced into Italy by the Greeks in 390 B.C. and that in Iran, Afghanistan and Kashmir it is also a planted tree only.

In 1943 M. Rikli (15) published a map of *P. orientalis* distribution and V. Grubov (5) did so in 1954. According to Rikli the range of distribution includes Italy and Sicily, most of the Balkan Peninsula, northern and western Turkey, Aegean Islands, Crete, Cyprus, Rhodos, the Lebanon and the mountain regions of the southern shores of the Caspian sea (Talish, Gilan). From north west Iran a few stands of the eastern plane are reported by M. K oie (12) and from Jordan by H.R. Oppenheimer (13), it is not known however, whether these stands are natural. Rikli on his map gives the southern limit of the range as passing through Jordan (fig. 1).

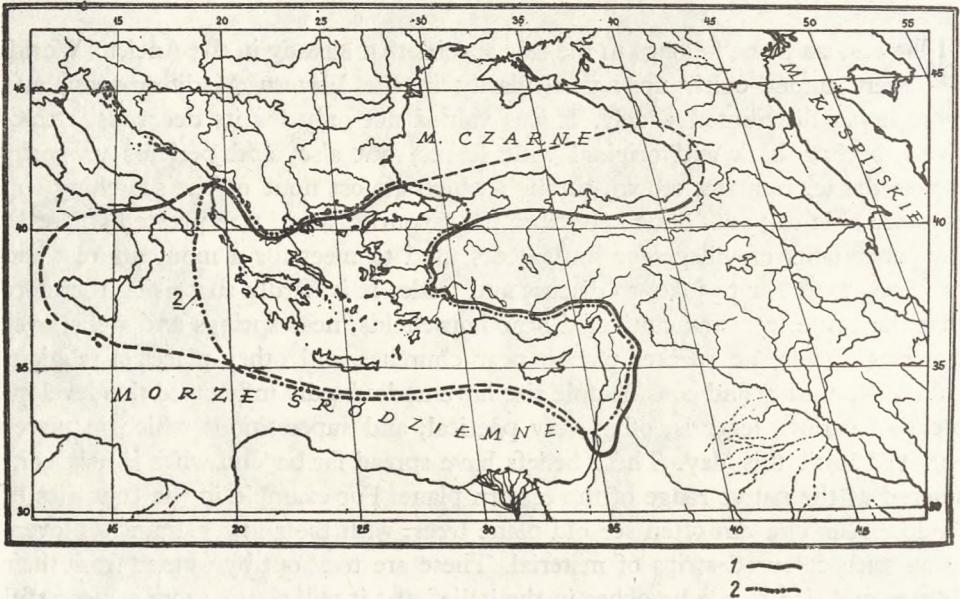


Fig. 1. The range of *Platanus orientalis* L. distribution according to M. Rikli (1) and V. Grubov (2)

On Grubov's map, in comparison with that of Rikli, the range of eastern plane distribution is much more limited. Grubov has excluded from it Italy and Sicily, northern Turkey, Iran and regions further east (fig. 1). In this interpretation Grubov is in agreement with the views of Elwes and Henry. Taking into consideration the cultivation and the going wild of eastern plane in many regions of Middle East and Central Asia, and the information supplied by I.T. Vassilczenko, Grubov (4) allows for the possibility of the existence of natural outliers of the species in Central Asia, but only in the Hissarian mountain range. If that were so, also the plane stands in Kopet-Dagh, Iran and northern Turkey could be considered as endogenous.

The above mentioned authors, as well as several others discuss the distribution of *P. orientalis* in very general terms and do not give the actual localities, so it is not possible, to decide through which regions passes the limit of the range. On the Balkan Peninsula this applies particularly to Yugoslavia and Bul-

garia. Boissier (1), Elwes and Henry (3) and Hayek (6) report the eastern plane in Macedonia, however this is not necessarily proof, that it grows over all of that country, in Yugoslavia as well as in Greece and Bulgaria. The northern limit of the range on the maps of Grubov and Rikli appears to be completely excluding Bulgaria, or at least passing along its frontier with Turkey and Greece.



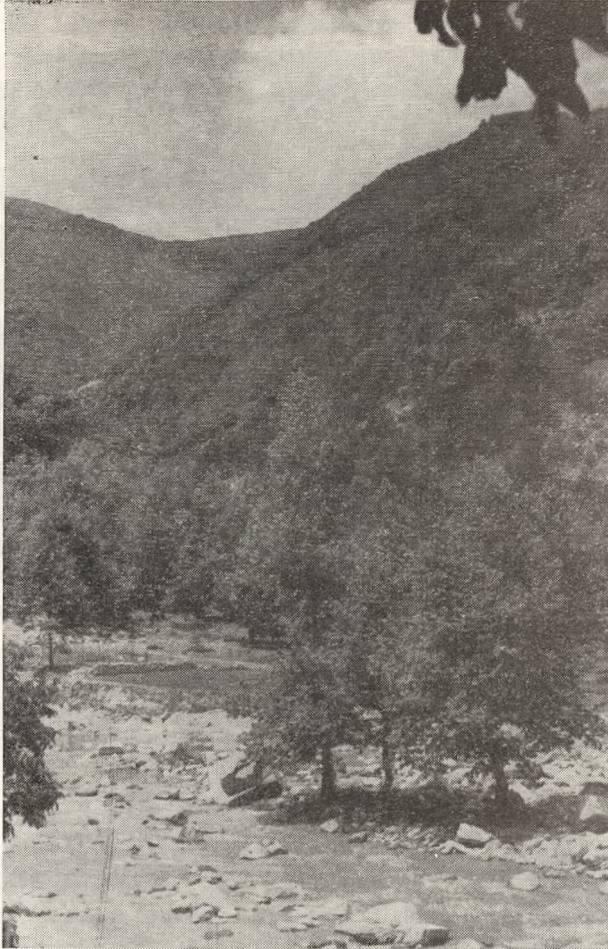
Phot. K. Browicz

A gigantic specimen of the eastern plane in the village Gyrlen. It is probably the largest and oldest individual in Bulgaria

According to Grubov (5) *P. orientalis* grows on the Balkan Peninsula only in Albania, Greece and Turkey.

The first data on eastern plane in Bulgaria come from the end of XIX c. J. Velenovsky (23, 24) reports the tree as growing wild in Rhodope, particularly in the vicinity of Stanimaka (now Asenovgrad), and that in southern Bulgaria it is often planted in villages and near monasteries. Some of these planted trees

reach considerable size. The Bulgarians call it "alban" while the Turks refer to it as "činar". A few years before Velenovsky, J. Bornmüller (2) wrote about *P. orientalis* in Bulgaria. However he does not mention any stands and he believes that there the species is primarily cultivated and goes wild.



Phot. K. Browicz

A stand of *Platanus orientalis* L. on the river Chepelarska, near the Abbey in Bachkovo

More detailed, though fragmentary data has been collected by such Bulgarian botanists as: A. Toszev, B. Davidov, N. Stojanov, B. Stefanov, T. Georgiev, B. Achtarov and B. Kitanov (publications and herbarium collections).

The data concern Bulgaria as well as adjacent regions of Turkey and Greece. This work was summarized in a map of distribution of the eastern plane in Bulgaria, published by B. Stefanov in 1943 (16). Unfortunately the map was made on such a scale that it is very hard to read and the range itself was not discussed separately by the author.

In May and June 1962, during a 5-week stay in Bulgaria (on an exchange basis between the Polish and Bulgarian Academies of Science) I was able to visit several of the localities with *P. orientalis*. I was not able to reach all the reported stands, none the less, on the basis of personal observations, and the



Phot. K. Browicz

The Valley of Sandanski Bistrica — a solitary specimen of *Platanus orientalis* L. of a very original columnar form, in front of the Pirin Massif. In the front, shrubby planes growing in the middle of the river

herbarium specimens available in Bulgarian herbaria, and also drawing on the data from the Bulgarian botanical literature, I can undertake a critical discussion of the northern limit of the eastern plane in Bulgaria. In my work I have also made use of information provided by Bulgarian colleagues, for which I express sincere gratitude.

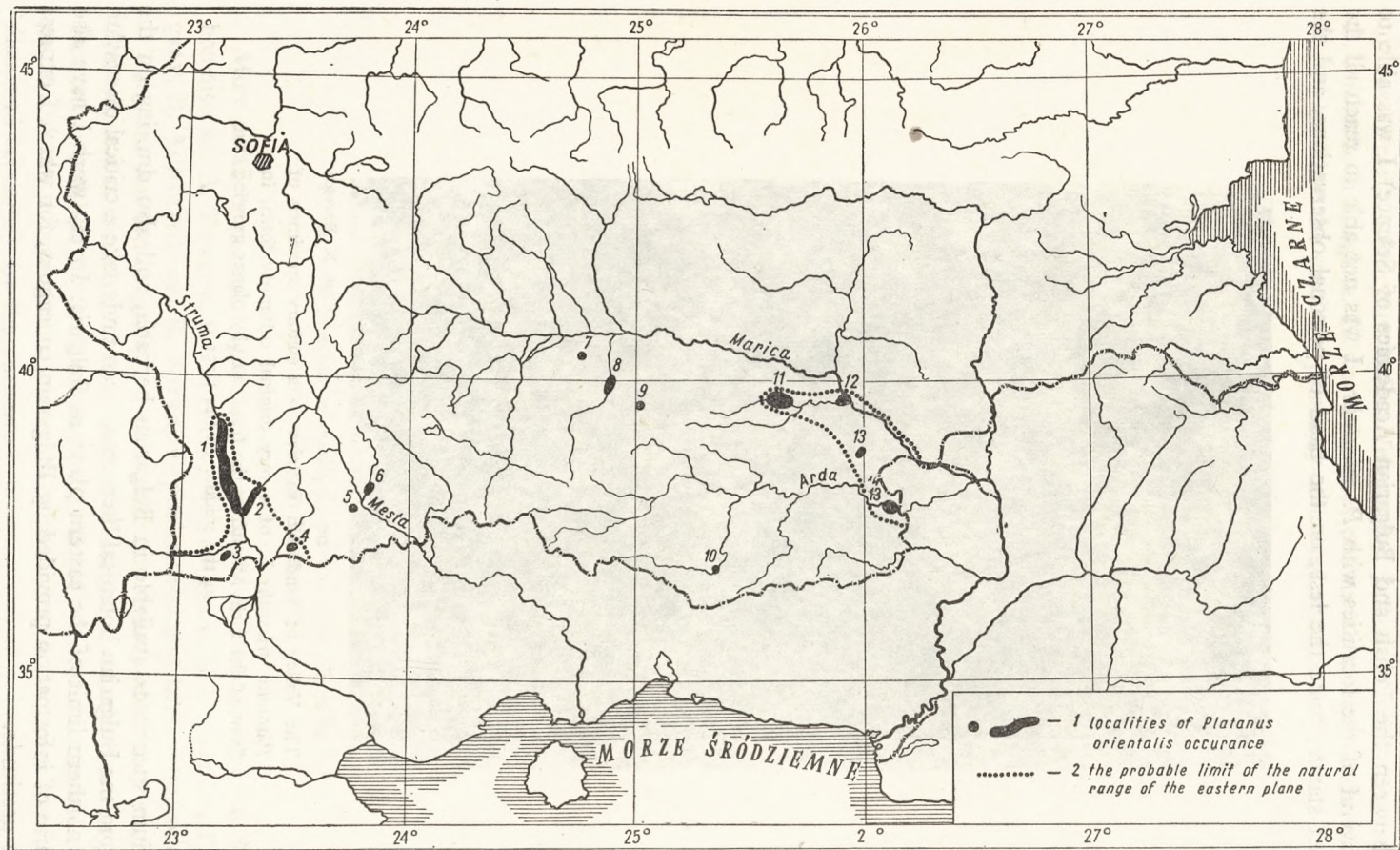


Fig. 2. The distribution of *Platanus orientalis* L. in Bulgaria

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Below is given a list of localities with *P. orientalis* in Bulgaria, with ones personally visited discussed more fully. The numbers of these localities correspond to those given on the map (fig. 2) starting from west to east. With each individual locality references are quoted, both of the literature and of herbarium specimens. The herbaria are referred to according to the following abbreviations: Botanical Institute of the Bulgarian Academy of Science — SOM; University of Sofia — SO; Department of Botany of the Sofia Agricultural College = SOA.

1. Struma river valley, from Krupnik to Sandanski. It is one of the first and best known localities. It was mentioned by A. Toszev in 1902 (22), also by N. Stojanov (18) as well as F. Hermann (9). Herbarium collections made here by Stojanov and Fenenko are also known (SOM, SO, SOA).

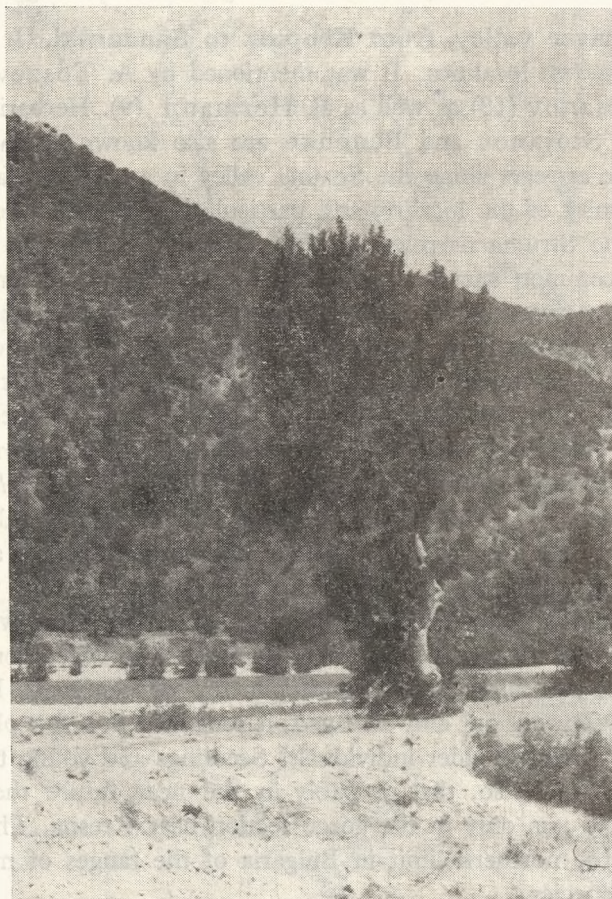
Eastern plane appears along the Struma valley in an uneven fashion. On the northern extremity of the locality, and particularly between Kresna and Gara Pirin, where the Struma narrows its channel and cuts through solid rock, *P. orientalis* is a common species, sometimes even dominant. It grows as a rule only along the river bank, on broken rocks, covered with water during the spring floods. In places it forms, dense narrow rows, consisting of only one or two trees. They are usually tall, leaning over the water, with twisted trunks, damaged by water carried stones, or with exposed water washed roots. They are sometimes associated with *Populus alba* L., *Ulmus campestris* L., *Populus nigra* L. and also with climbers like *Vitis silvestris* Gmel., *Periploca graeca* L., and *Humulus lupulus* L. The distribution of the plane onto neighbouring slopes is hindered by a road and railway, which in places runs through a tunnel made in solid rock, as well as by the dry, steep and crumbling rock walls. Further south, the Struma valley widens and becomes more flat. Here willow thickets, poplar plantations and agricultural crops dominate the vegetation and the eastern plane does not find suitable conditions for development. Eliminated by human intervention, cut out and damaged, it remained in a few places only and there, primarily as single older individuals. Seedlings and young trees are completely absent so much so, that probably in the near future the species will remain on the Struma only in the gorge section near Kresna. This gorge is at the same time the northern limit in Bulgaria of the ranges of many southern Mediterranean species.

North of Krupnik, the eastern plane presumably does not occur (no data available). However it grows in Boboshevo, but it appears that it was planted there (SO).

2. Sandanski Bistrica Valley. This locality was first mentioned in 1918 by B. Davidov (SOM). The richest stand of *P. orientalis* in Bulgaria extends from Sandanski to the village Lilianovo.

The river Bistrica, which passes through Sandanski and joins the Struma, is a typical mountain river with a considerable slope. It divides in places into several streams which later join with the main channel forming larger and smaller islands. The valley itself is quite wide, gradually narrowing in higher areas,

with rocky, isolated and dry slopes overgrown with xerothermic vegetation. On the Bistrica the eastern plane grows very well; in lower areas together with *Alnus glutinosa* Gaertn., *Ulmus campestris* L., *Salix alba* L., *Cornus sanguinea* L., *Ligustrum vulgare* L., *Prunus spinosa* L., *Clematis vitalba* L. and *Solanum dulcamara* L.; higher up it completely dominates the vegetation or is associated with *Fuglans regia* L.



Phot. K. Browicz

Valley of the Struma, south of the gorge. Only single individuals of the eastern plane grow here

Where the river valley is somewhat wider it may contain clean, somewhat sparse woods, parklike in appearance without any undergrowth or ground vegetation. Only where due to a larger break in the crown more light reaches the forest floor plants like *Rubus ulmifolius* Schott., *Pteridium aquilinum* Kuhn. and *Artistolochia clematidis* L. appear. However this type of plane woods do not extend beyond 30—50 meters from the river bank.

That *P. orientalis* grows here on its natural site is indicated by its growth and regeneration. On the Bistrica, old trees, over 20 m tall, in shady places slender and in full sunlight branchy with a thick trunk, as well as young individuals and seedlings can be found. They are not necessarily attached exclusively to the gorge of the valley, but they can also be found on rocky slopes, well above the surface of the water. These are primarily single trees, rarely small clumps.



Phot. K. Browicz

An eastern plane seedling growing on the rocky slopes of the Bistrica Valley near Lilianovo

In the latter case they are as a rule distributed along small rock crevices, through which water flows down to the river, or else on seepage sites. The plane seedlings are never to be found on completely dry ground, whereas on seepage sites and on riverside sands gravels and stones the seeds germinate profusely. Only few

seedlings manage to survive. Some are washed away by the sharp streams rushing from the mountains in the spring, others are unable to develop a sufficient root system in the very small rock crevices.

In contrast to *Platanus* × *acerifolia* Willd., which peels its bark in the form of large thin flakes, and that even on the lower parts of the stem, the bark of *P. orientalis* is thicker and fructured in the form of regular rectangles; in the upper regions of the stem the type of bark peeling is identical with that in *P. × acerifolia*.

A special characteristic of the eastern plane in the valley of the Bistrica is the particularly deep fissuring in the bark, which is not to be found anywhere else. In some individuals the fissures between the rectangular flakes of bark are up to 2 cm deep. Such bark fissuring resembles icicles since the individual flakes are wider at the base and gradually narrow towards the tip. The bark in these trees is completely black, only in places covered with slightly developed lichens.

Above the village Lilianovo (c. 840 m elev.) the eastern plane gradually disappears. Only in places single individuals may still be found, usually dwarf or bushy; they are considerably damaged by large boulders rolling down together with water, particularly at the time of the spring water flow.

In Sandanski itself, that is below the locality on the Bistrica, a few old eastern planes grow, the biggest of which is growing in the middle of the town, on the market place near a well (a covered spring). The tree has a broad dense crown and a wide irregular trunk, a few meters in girth. It is possible that it is a living evidence for the natural occurrence of the eastern plane on the Bistrica, also in the area of what is now the town.

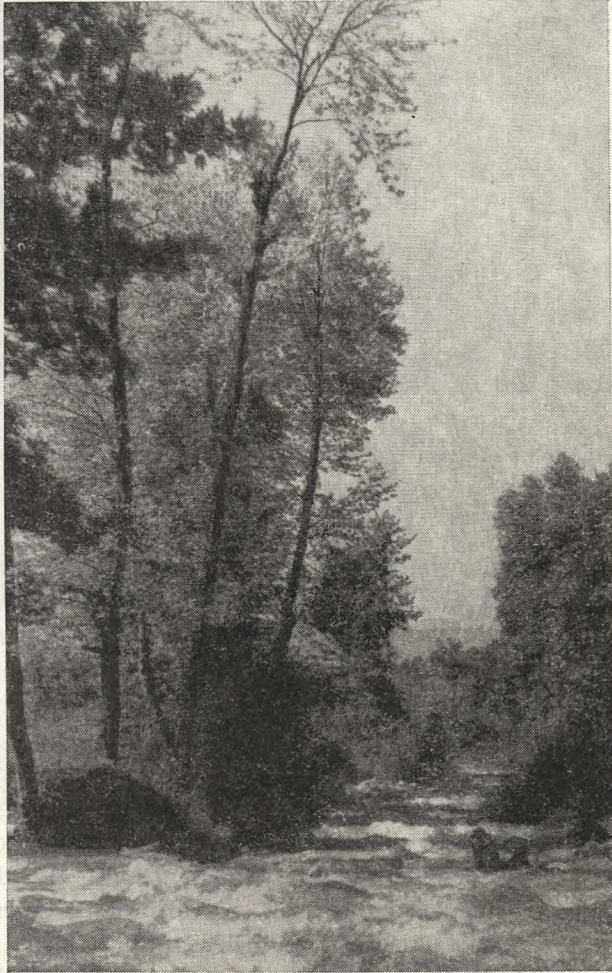
3. Belasica. The eastern plane grows also further south from Sandanski, namely at the foot of the Balasica Mountain, close to the Greek border. Such stands were reported by A. Toszev (22) as well as by N. Stojanov (1936 — SOM). According to Stojanov *P. orientalis* is known from the vicinity of Petrich, that is from the valley of the river Strumitsa, which joins the Struma.

4. Ali Butus. Further to the east, at the foot of the Slavianka (Ali Butus), south of Mielnik near the village Petrovo, B. Stefanov has found in 1933 the eastern plane growing near rivulets (nr. 677 — SOA).

5. Gotse — Delchev (Fenenko, 1931 — SOM). In the middle of the town, near a bridge there grow a few old plane trees, over 20 m tall. They reproduce along the regulated and the free streams. Seedlings appear even in wall cracks, and in spite of difficult conditions demonstrate considerable vitality. Some of them have even grown into small trees, flower and fruit, however due to persistent cutting do not reach appreciable size.

6. Gyrlen, north east of Gotse — Delchev. In the village there are several ancient plane trees, of which the biggest, measuring 10 meters in girth, has considerably advanced butrot. These trees undoubtedly belong to the biggest and oldest eastern planes in Bulgaria. As in Gotse-Delchev, they reproduce naturally, and the numerous seedlings, which are distributed along the stream

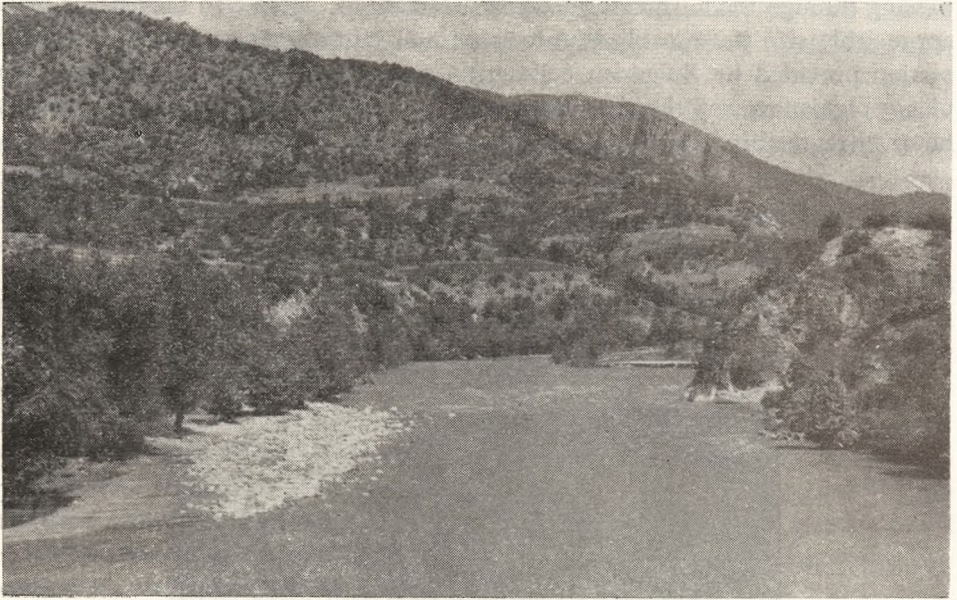
passing through the village, form dense associations. Here also they never reach appreciable size presumably due to persistent cutting. According to the information provided by Bulgarian colleagues, somewhat north of Gyrlen, near the village Ognianovo, on the river Kanina, the plane trees grow in greater numbers, however regrettably I was unable to visit that locality.



Phot. K. Browicz

Valley of the Bistrica near Sandanski. Near the banks of the river the eastern plane appears together with the black alder

7. Belastica — a village placed at the foot of Rhodope, south of Plovdiv. In an old Turkish garden, there grow several enormous plane trees, which were already known to Velenovsky (24). According to that author, in 1898 the thickest trees measured 8,5 m in girth, that is they were not inferior in size to the Gyrlen specimen.



Phot. K. Browicz

A general view on the valley of the river Struma near Gara-Pirin. Along the river banks only the eastern plane appears

The planes from Belastica were recognized in Bulgaria as trees under protection and were supplied with special notice boards to that effect. The trees are not particularly tall, but have wide spreading crowns and low irregular trunks. Not far from them, flows through the village a small stream on which the eastern plane copiously regenerates. Here one can find not only seedlings and small trees, but also tall trees with straight trunks, up to 15–20 m tall. In one place a small wood of eastern plane is formed bearing a very original appearance. The plane trees were cut out by the local population, but due to a great coppicing ability, form near the streams characteristic clumps consisting of several thin stems. They resemble a coppice of *Alnus glutinosa*, with the difference, that a plane coppice wood is much darker than that formed by alder, and the soil is much drier. Nowhere else in Bulgaria have I seen a plane coppice stand. It may be a good suggestion for foresters to exploit economically the eastern plane by culturing it in the form of coppice stands.

8. Valley of the river Chepelarska, from Asenovgrad to Bachkovo. Besides the Struma valley, this is one of the best known, and most often mentioned locality of *P. orientalis* in Bulgaria. It is already mentioned by Velenovsky in 1891 (23) and Toszev in 1902 (22). Herbarium material was collected on the Chepelarska by Urumov in 1907 (SOM) and Střibrný in 1910 and 1914 (SOM, SOA).

The plane grows here in conditions similar to those on the Struma, but not

as copiously (primarily younger individuals). It grows exclusively along the banks of the river Chepelarska, as well as its tributaries, but close to their mouths. Seedlings and older trees appear on the slopes of the valley only exceptionally. Nowhere does the plane form larger associations, but it grows together with such species as *Populus alba* L., and *P. nigra* L., *Salix alba* L., *Alnus glutinosa* Gaertn., *Carpinus betulus* L., *Ulmus campestris* L., and rarely *Tilia tomentosa* Moench. It is more numerous only near the Abbey at Bachkovo. In the Abbey itself, and more strictly speaking outside the walls near the main entrance, there grow several old plane trees with thick, regular trunks. They are mentioned among others by Toszev (22) and Urumov (1907 — SOM). Thanks to the dense and wide crown they provide shade for the numerous pilgrims.



Phot. K. Browicz

A coppice wood of the eastern plane in the village Belastica

9. Topolovo, on the river Mechka, south east of Bachkovo. This locality was reported by Hermann in 1936 (9), but without any description.

10. Fotinovo — a Turkish village on the river Vyrbica, in the eastern Rhodope. I have seen here only one old plane tree in the middle of the village near a well — presumably planted here. However in this part of the Rhodope the eastern plane is also reported from a different place, namely from the river Dermendere, which flows into Vyrbica, a tributary of the Arda (Velenowsky 24).

11. District Khaskovo — a stand reported in „Flora of Bulgaria” by Stojanov and Stefanov (21) and marked on Stefanov’s (16) map of *P. orientalis* distribution in Bulgaria.



Phot. K. Browicz

The last specimens of the eastern plane in the valley of the Sandanski Bistrica, north of the village Lilianovo

12. District Kharmanli. A short information about this locality can be found in the work of Hermann (9) however without any details. Also there are no herbarium specimens to confirm this report. It is reasonable to assume, that the eastern plane, similarly as in other parts of Bulgaria, grows in the valley of a river, namely Maritsa. On Stefanov's map (16) the Kharmanli District is clearly marked.

13. Siva-Reka in the Svilengrad District. Here the plane tree occurs above the village in the valley of a small tributary of the Maritsa, where it forms thickets of young trees. This stand was first reported by Stefanov and Jordanov in 1931 (17), and later by Stojanov, Achtarov and Georgiev in 1934. Also in the herbarium of the Botanical Institute at Sofia there is a specimen collected here in 1933 by Stojanov and Georgiev. Ten years later B. Kitanov (11) reports the occurrence of 48 individuals of this species between the village Mezek and Siva Reka.

14. Apart from that Stojanov and Stefanov (21) as well as Hermann (9) when discussing the general range of *P. orientalis* claim that it is also known from the Arda Valley (at the mouth of the Maritsa) which has also been marked on Stefanov's map (16).

It is very notable that the last four localities are very superficially described in the Bulgarian literature, and at the same time they are not documented (except the stand in Siva-Reka) by herbarium collections. On this basis it can be supposed

that the plane is in this part of Bulgaria a rare species, or even very rare. Unfortunately I have not visited these localities.

On most of the above mentioned localities *P. orientalis* occurs in very similar conditions. They are primarily valleys of rivers, rivulets and streams, and particularly fast flowing ones, in the parts where the river channel cuts through rock massives. In such conditions the plane grows almost entirely along the banks of the river itself, on rocky substrata, not rarely on all sorts of beaches and islands. During the spring thaws, when the river channels widen substantially, most of the tree trunks are covered by water. The survival of seedlings under such conditions is extremely difficult, and as a result very rarely does the plane form greater associations or small riverside woods. Also single old trees of the plane, as for example in Gotse-Delchev, Gyrlen or Sandanski, grow near springs and wells. This data, and the observations on the dispersal of the plane on seepage sites and along wet cravasses indicate clearly that it has to be considered as a typically hygrophyllous species. It is described as such by K.H. Rechinger (14), who when discussing forest formations in Greece refers to plane tree forests as hygrophyllous stands.



Phot. K. Browicz

The interior of the eastern plane wood on the Sandanski Bistrica

According to Stojanov and Kitanov (20), on the isle of Thasos in Greece *P. orientalis* is the main component of a *Platanetum orientalis* association, in which among trees and shrubs the following species participate; *Ilex aquifolium* L., *Ostrya carpinifolia* Scop., *Quercus ilex* L., *Ulmus procera* Salisb., *Abies alba* Mill. var. *acutifolia* Turrill, and *Hedera helix* L. I. and V. Kárpáti (10) describing

the riverside plane forests of Albania (*Platanion orientalis* Knapp. 1959) distinguishes the three following associations; *Platanetum orientalis balcanicum*, *Petasiti-Platanetum orientalis* and *Nerio-Platanetum orientalis*. In comparison with these associations, the plane communities in Bulgaria are much poorer in species and



Phot. K. Browicz

The characteristic bark — peeling on the trunk of the eastern plane (stand on the Sandanski Bistrica)

lack completely *Cercis siliquastrum* L., *Tamarix parviflora* D.C., *Ficus carica* L., *Nerium oleander* and *Hedera helix* L. One can presume that they represent only fragmentary, considerably deformed types of the *Platanetum orientalis balcanicum* association, or perhaps *Petasiti-Platanetum orientalis* (e.g. the stand on the Bistrica). These communities in Bulgaria on the northern fringe of the species

range, have not reached such a stage of development as in the more southerly regions where the conditions are optimum for the species.

Finally it is necessary to consider the correct evaluation of the nature of these stands; are they natural or have they developed as a result of the going wild of trees under human cultivation, started perhaps in ancient times. An answer to this question is not easy, particularly since there are no written records. One has to base the interpretation entirely on the present distribution of the species and on its vitality.



Phot. K. Browicz

Low, damaged by floods, eastern planes near the village Kresna, in the Struma Valley

If the eastern plane has remained in Bulgaria in the wild state, then it appears to have been possible only on the south of the country, and in the valleys of the rivers that flow into the Aegean. Such valleys provided an easy pathway for the migration north of many mediterranean species. On the one hand they were xerophyllous species, occurring on dry, insolated slopes of the valleys in sibiljak and macchia type of communities, and on the other they were hygrophyllous, closely associated with the specific conditions of the lowest placed regions of the valley, on the river banks. The eastern plane is one of such species, in the dispersal of which besides wind (light seeds) a considerable part is played by water.

A separate discussion is necessary of the stand in the central Rhodope, on the river Chepelarska. It is striking, that the plane reaches only as far as the Abbey in Bachkovo, even though further south the conditions for its occurrence are no different. Furthermore there are no thick old trees on the Chepelarska — most of them are even age and similar in size. Thus the conditions are opposite to those on the Struma and Bistrice. The only old specimens are from the Abbey

in Bachkovo, where they have certainly been planted, together with the cypress and persimmon, which grow in the Abbey courtyard. Thus everything indicates that these planted trees have given a start for the stand on the Chepelarska. The wind dispersed trees were later water carried with the river current northwards, towards Asenovgrad. Thus I consider the stand of *P. orientalis* on the Chepelarska as well as the one in the village Belastica as artificial stands, and the occurrence of the eastern plane in the central Rhodope as doubtful.

Taking all this into consideration, one can suppose, with a fair degree of probability, that the eastern plane in a natural condition grows only in two regions of Bulgaria; in Macedonia (the valleys of the Struma and Sandanska Bistrica) and in the easternmost parts of the Rhodope (Maritsa, Arda). It is not impossible that the stand in Ognianovo on the river Kanina is also natural. This river is a tributary of the Mesta, which like Struma and Maritsa flows into the Aegean sea.

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O geograficznym rozmieszczeniu *Platanus orientalis* L. w Bułgarii

Streszczenie

Platanus orientalis L. należy do tych gatunków drzew, które już od czasów starożytnych były uprawiane i rozpowszechniane na dużą skalę. Wykreślenie granic jego zasięgu jest sprawą bardzo trudną, tym bardziej że platan znajdując na terenach uprawy dogodne warunki łatwo dziczeje i zachowuje się podobnie jak na stanowiskach naturalnych. Wprawdzie zasięg platana wschodniego był bardzo różnie wyznaczany (od Włoch po Himalaje), to jednak najczęściej przyjmuje się, że jest on ograniczony tylko do Półwyspu Bałkańskiego oraz Małej Azji. Mapki zasięgu *P. orientalis* opublikowali w 1943 r. M. Rikli (15), a w 1954 r. W. Grubov (5).

Na Półwyspie Bałkańskim północna granica rozmieszczenia platana przebiega przez południową Jugosławię (Macedonia), Albanie i Bułgarię. Z Bułgarii *P. orientalis* podany był z końca ubiegłego wieku przez J. Bornmüllera (2) i J. Velenovsky'ego (23, 24), a następnie przez botaników bułgarskich: A. Toszeva, B. Davidova, N. Stojanowa, B. Stefanowa, T. Georgiewa, B. Achtarowa i B. Kitanowa. W 1943 r. B. Stefanov (16) opracował mapkę zasięgu *P. orientalis* w Bułgarii, niestety sporządzoną w dużej skali i mało czytelną.

W 1962 r. autor w ciągu 5-tygodniowego pobytu w Bułgarii zwiedził tereny, gdzie rośnie *P. orientalis* i na tej podstawie, jak również w oparciu o piśmiennictwo i zbiory zielnikowe bułgarskie, scharakteryzował występowanie platana w tym kraju oraz zestawił znane do tej pory stanowiska.

Na większości tych stanowisk *P. orientalis* występuje w bardzo podobnych warunkach. Są to doliny rzek, rzeczek i strumieni, zwłaszcza szybko płynących, przede wszystkim w tych odcinkach, gdzie koryta rzeki przeżyna się przez skalne masywy. W takich warunkach platan rośnie niemalże wyłącznie wzdłuż samych brzegów rzeki, na kamienistym podłożu, nierzadko na różnego rodzaju łachach i wysepkach. W czasie wiosennych roztopów, kiedy koryta tych rzek znacznie się poszerzają, większość pni drzew stoi zalana wodą. Utrzymanie się siewek w takich warunkach jest bardzo trudne, toteż rzadko gdzie platan tworzy większe skupienie lub też małe galeriowe lasy. Również pojedyncze stare okazy platana, jak np. w Goce-Delčew, Gyrlen, czy też w Sandanski, rosną w pobliżu źródeł i studzien. Dane te oraz spostrzeżenia nad rozsiewaniem się platana na wywierzykach oraz wzdłuż cieków wodnych wskazują wyraźnie, że należy go uznać za typowy gatunek higrofilny.

Zbiorowiska roślinne, w których występuje platan w Bułgarii przedstawiają szczątkowe, silnie zniekształcone formy zespołu: *Platanetum orientalis balcanicum* względnie *Petasiti-Platanetum orientalis* (10).

Na zakończenie autor zastanawia się, czy stanowiska *P. orientalis* w Bułgarii mają charakter naturalny, czy też powstały na skutek zdziczenia drzew uprawianych przez człowieka. Autor dochodzi do wniosku, że jeśli w Bułgarii zachował się platan w dzikim stanie, to, jak się wydaje, może to mieć miejsce tylko na samym południu i tylko w dolinach tych rzek, które wpływają do Morza Egejskiego. Doliny takie stanowiły dogodną drogę dla migracji na północ szeregu śródziemnomorskich gatunków kserotermicznych, jak i higrofilnych. Jednym z takich gatunków jest właśnie platan wschodni, w którego rozprzestrzenianiu się odgrywa ważną rolę obok wiatru (lekkie nasiona) także i woda. Biorąc to wszystko pod uwagę można z dużym prawdopodobieństwem twierdzić, że *P. orientalis* dziko rośnie w Bułgarii tylko w dwóch rejonach: w Macedonii (dolina

Strumy i Sandanskiej Bistricy) oraz w najbardziej wschodniej części Rodopów (dolina Maricy i Ardy). Nie jest jednak wykluczone, że naturalnym jest również stanowisko w Ognianowo nad rzeczką Kanina, która jako dopływ Mesty, podobnie jak Struma i Marica, wpada do Morza Egejskiego (patrz załączona do pracy mapka).

КАЗИМИР БРОВИЧ

О географическом размещении *Platanus orientalis* L. в Болгарии

Резюме

Platanus orientalis принадлежит к видам деревьев, которые уже в древние времена культивировались и распространялись в большом масштабе. Определить границы его ареала очень трудно, тем более, что платан восточный, находящийся на местах культуры благоприятные условия, очень легко становится диким и ведет себя так же, как в натуральных местонахождениях. Несмотря на то, что размещение восточного платана отмечалось по разному (от Италии по Гималаи) то однако чаще всего принимается, что ограничивается оно Балканским полуостровом, а также территорией Малой Азии. Карты ареала *P. orientalis* были в 1943 г. опубликованы М. Рикли (15), а также в 1954 г. В. Грубовым (5).

На Балканском полуострове северная граница ареала восточного платана проходит через южную Югославию (Македонию), Албанию и Болгарию. В Болгарии *P. orientalis* был найден в конце прошлого столетия Ю. Борнмюллером (2) и Ю. Веленовским (23, 24), а также занимались этим вопросом болгарские ботаники: А. Тошев, Б. Давидов, Н. Стоянов, Б. Стефанов, Т. Георгиев, Б. Ахтаров и Б. Китанов. В 1943 г. В. Стефанов (6) составил карту распространения восточного платана в Болгарии. К сожалению, карта составлена неясно и в большом масштабе.

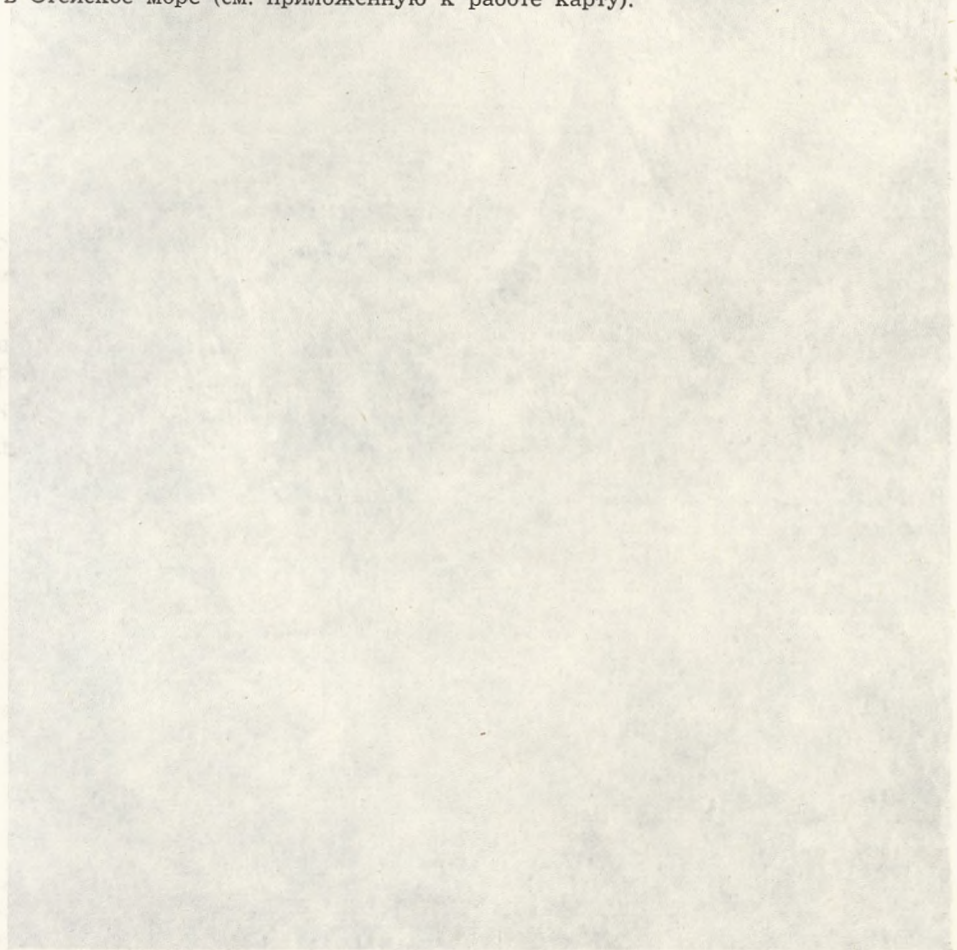
В 1962 г. автор за 5 недель пребывания в Болгарии, посетил места, где растет *P. orientalis* и на этом основании, а также опираясь на литературу и материалы болгарских гербариев определил характер размещения восточного платана в этой стране и собрал известные до сих пор местонахождения.

В большинстве этих местонахождений *P. orientalis* выступает в похожих условиях. Это долины рек, ручьев, особенно с сильным течением, прежде всего на участках, где русло реки прорезает массивы скал. В таких условиях растет восточный платан почти исключительно вдоль самих берегов рек на каменистой почве, лишь иногда на различного рода островках или вдоль рукавов реки. Во время весенних разливов, когда русло этих рек значительно расширяется, большинство стволов деревьев стоит в воде. Сохранить сеянцы в таких условиях очень трудно, потому восточный платан очень редко образует большие совокупности или же небольшие галерейные леса. Отдельные, старые экземпляры восточного платана как напр. в Гоце-Дельчев, Гырлен и в Сандански растут вблизи источников и колодцев.

Эти данные, а также наблюдения за самовысеиванием восточного платана на местах с просачивающейся влагой, а также вдоль берегов рек и ручьев, отчетливо показывают, что следует его признать типичным гигрофильным видом.

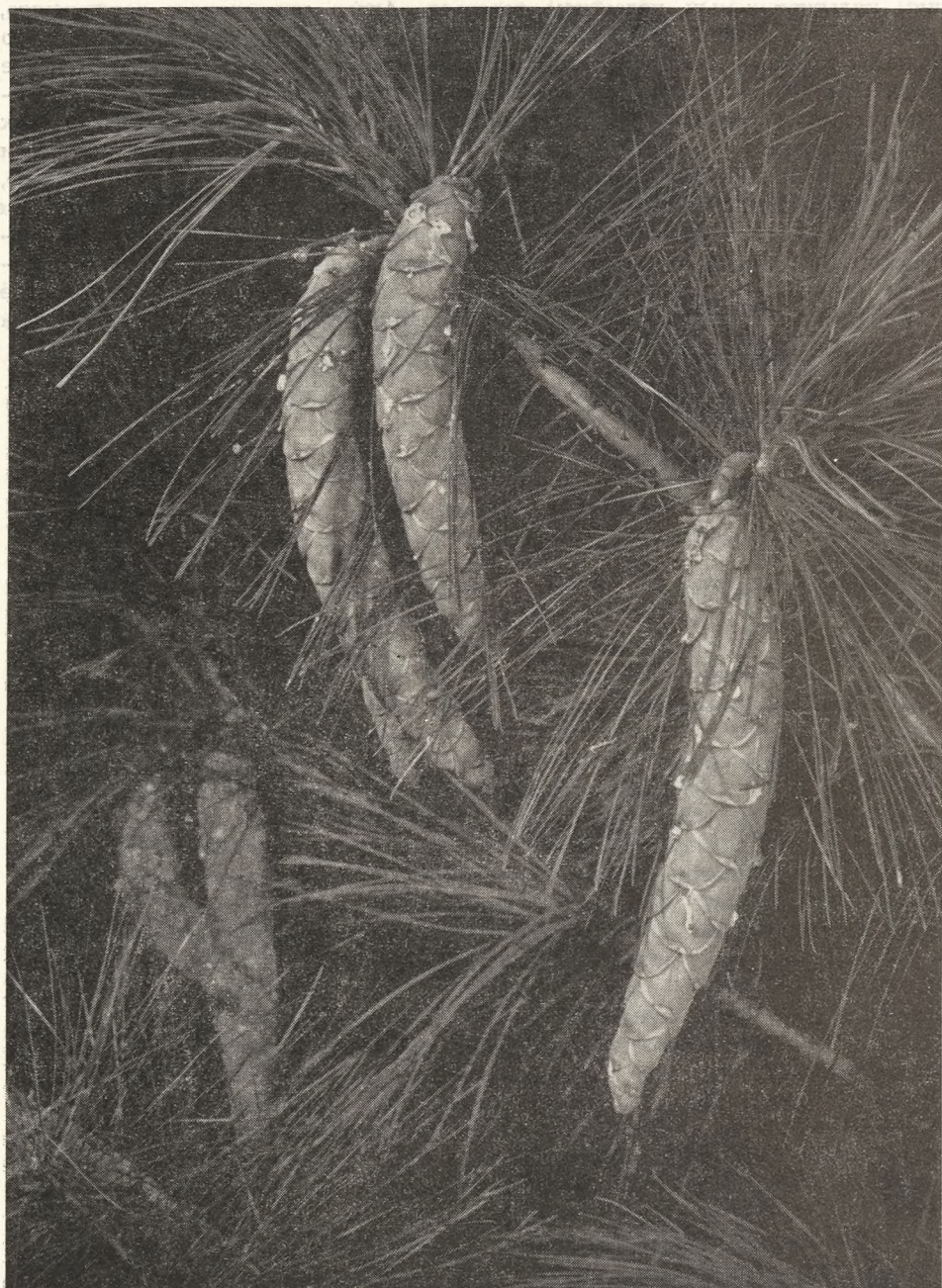
Растительные сообщества, в которых выступает платан восточный в Болгарии, представляют последние, сильно деформированные формы ассоциации: *Platanetum orientalis balcanicum* или же *Petasiti-Platanetum orientalis* (10).

В заключении автор уделяет внимание вопросу, являются ли местонахождения *P. orientalis* естественными, или же образовались они вследствие одичания, культивируемых человеком деревьев. Автор приходит к заключению, что если в Болгарии сохранился восточный платан в диком состоянии, то кажется только на юге и только в долинах тех рек, которые текут в Эгейское море. Эти долины были удобным путем для миграции на север ряда средиземно-морских видов ксеротермических как и гигрофильных. Одним из этих видов является восточный платан, в распространении которого наряду с ветром (легкие семена) важную роль играет вода. Принимая это все во внимание, можно с некоторой уверенностью утверждать, что *P. orientalis* в Болгарии растет в диком виде только в 2 районах: в Македонии (долина Струмы и Санданской Быстрицы), а также в самой восточной части Родопов (долина Марицы и Арды). Не исключена возможность, что естественным является также местонахождение в Огнянове над рекой Каниной, притоком Месты, впадающей в Эгейское море (см. приложенную к работе карту).



Родина (Linn.)

Rodzaj Syngly reprezentowany przez Bluszcz. W naturalnym występowaniu i środkowej Azji. Dwa gatunki występują w Europie (Balkany), natomiast brak jego przedstawicieli w Ameryce Północnej.



Fot. K. Jakusz

Pinus strobus L. — szyszki przed dojrzaniem