Vertigo moulinsiana (Dupuy) in Czechoslovakia

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In Central Europe *Vertigo moulinsiana* (Dupuy) is one of the rare species and its scattered localities represent the relicts of a former far more abundant distribution in the Pleistocene and in the older Holocene. It often happens that relatively well preserved fossil shells are washed out by water from the beds in which they were deposited. Such finds may then easily mislead the collector, and make him assume that he has here a recent occurrence, and thus introduce a series of incorrect records into the literature. Therefore every verified recent occurrence of this zoogeographically remarkable gastropod is of importance. In this brief communication I wish to report on a new find of strong recent populations of *Vertigo moulinsiana* (Dupuy) in Slovakia and to add some remarks concerning its mode of life, and its distribution in Czechoslovakia and in the Carpathian basin. I wish to thank here most sincerely the Hungarian malacologists Professor L. Soós and J. Vágvölgyi for the detailed information they gave me concerning the occurrence of *V. moulinsiana* (Dupuy) in the region of the Carpathian basin.

In June 1955, in my investigations in the vicinity of the village of Jasov, 20 km. west of the town of Košice in south-eastern Slovakia, I discovered a rich recent population of the species *Vertigo moulinsiana* (Dupuy), which lives here abundantly in stands of Carices in the western part of the southern shore of the pond at the lower end of the valley of the stream Teplica. The locality lies on the bottom of this valley at an altitude of 269 m. above sea level. The valley of the Teplica forms the boundary between the South Slovakian Karst and the Slovak Ore Mountains. The limestones of the Karst form the southern slope of the valley, whose bottom and northern slope are formed by the crystalline schists of the Ore Mountains. About 1.5 km. farther west (i.e. upstream) a strong karst spring rises from the southern slope of the valley, called by the local inhabitants „Nagy forrás", which supplies most of its water to the stream Teplica and to the ponds established on it. The flat bottom of the valley is entirely influenced by the calcareous waters of

the karst spring, and is covered with marshy meadows with a strongly calcareous soil. In some ponds, turned into trout breeding ponds, thin layers of freshwater limestone are precipitated in the dense stands of *Chara* spec. div. The hills around the valley attain at its lower end 350 m., but towards the west they rise rapidly to more than 600 m., and are covered with continuous deciduous forests of a primary character.

The locality proper of *Vertigo moulinsiana* (Dupuy) lies on the shore-line of the largest pond at the lower end of the valley near the monastery. The pond is here covered with Carices and has the character of a shallow swamp. Carices grow also in a narrow belt round the flat moist shore, which, however, rises sharply to the road leading through the valley. *Vertigo moulinsiana* (Dupuy) lives very abundantly just in this narrow belt and does not ascend at all the low but steep slope of the road dam. The collecting was carried out after gentle rain in the evening hours. Most of the individuals were crawling on moist dead leaves of the Carices on the ground, associated with the gastropods *Succinea oblonga* Drap., *Cochlicopa lubrica* (Müll.), *Vertigo antivertigo* (Drap.), and *Zonitoides nitidus* (Müll.), but many individuals ascended also on living Carices to a height of about 0.5 m. above the ground, as *Columella edentula* (Drap.) often does. The population was very numerous, as on a single leaf of *Carex* there not rarely sat 5—10 individuals. About two thirds of the total number were immature specimens. I collected sporadic specimens also on leaves of Carices in the water. The occurrence of *V. moulinsiana* (Dupuy) at Jasov is restricted predominantly to the swampy parts of the shores of the pond, i.e. mainly to its south-western end; higher up the valley by the shores of the small ponds I have not detected *V. moulinsiana* (Dupuy); only on the shore of the stream Teplica above the uppermost pond I collected two old empty shells.

The specimens from Jasov are characterised by their considerable size; the height is between 2.2 — 2.5 mm., the width between 1.5 — 1.7 mm., the colour is reddish brown, distinctly lighter than in *Vertigo antivertigo* (Drap.), the dentation and other characters are entirely typical. The measurements ascertained agree with the data which Soós (1943) gives for the Carpathian basin. The size of the specimens from Jasov is especially striking in comparison with the Old Holocene

specimens from the freshwater limestone between Malý Újezd and Mělnická Vrutice near Mělník in Central Bohemia, which attain only 1.9 — 2.2 : 1.4 — 1.5 mm. P. EHRMANN (1933) has already drawn attention to a similar relation of the sizes of recent and Old Holocene specimens.

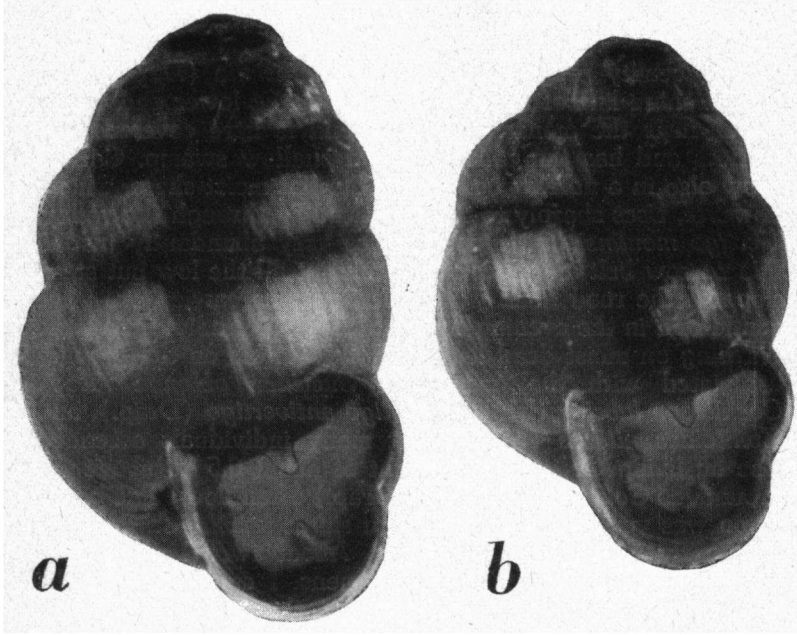

Fig. 1. *Vertigo moulinsiana* (Dupuy), Teplica valley near Jasov. a) 2,5 : 1,65 mm, b) 2,3 : 1,55 mm.

At present Jasov is the only verified recent locality of the species *Vertigo moulinsiana* (Dupuy) in Czechoslovakia. The find at Jasov links up with the occurrences in the Carpathian basin, whence this species is known for certain from Budapest, from the swamps Töreki láp near the town of Siófok, and from Bátorliget in the Alföld, where it has been discovered recently by J. VÁGVÖLGYI (1953). In the collection of J. HAZAY in the Hungarian National Museum in Budapest there is a series of specimens without any locality; they were probably derived from the locality Nádaska on the margin of the South Slovakian Karst, whence HAZAY records this species (cp.

Soós, 1943). This place lies near the Czechoslovak frontier fairly near Jasov; it may possibly be identical with the locality Turňa (Torna) mentioned by CLESSIN (1887) (cp. Soós, 1943). Provided that CLESSIN's report does not refer to the locality Nádaska, Turňa would be the first find of the species *V. moulinsiana* (Dupuy) in Czechoslovakia. An occurrence at Turňa cannot be excluded, as there are here fairly extensive suitable swamps bordering the course of the Bodva, into which the Teplica flows at Jasov. The report on the occurrence of *Vertigo moulinsiana* (Dupuy) in the valley of the stream Večný jarok at Bardejov in north-eastern Slovakia (ROTARIDES & WEIS, 1950) is of recent date. The two occurrences named last, at Turňa and Bardejov, require of course revision.

In the Quaternary *Vertigo moulinsiana* (Dupuy) was far more widely distributed in Czechoslovakia than it is today; this agrees with the observations in other countries of Central Europe. In the Pleistocene it occurs principally in interglacial layers, especially in freshwater marls and travertines (cp. LOŽEK, 1955). These are in Bohemia the localities Koněprusy (Zlatý Kůň, main dome of the caves) and Únětice not far from Prague, which both fall apparently into the older Pleistocene; in Moravia the three localities in the vicinity of Přerov (Předmostí, Tučin, Želativice); in the Pleistocéne of Slovakia this species has not yet been found. A greater number of finds derives from the older Holocene, especially from the freshwater limestones and bogs; here belong in the Elbe basin the localities Mělnická Vrutice Malý Újezd and Byšice near Mělník, Milovice near Lysá and Labem, and Nové Jesenčany near Pardubice; also the recently discovered locality at Měňany in the Bohemian Karst (near Beroun). Further finds derive from Old Holocene travertines: Skořenice near Choceň (eastern Bohemia), Rozhraní near Letovice (Moravia), and the only Slovak fossil locality Biely potok near Ružomberok.

With the exception of the locality at Koněprusy, where *V. moulinsiana* (Dupuy) was collected from the filling of a karst chimney, all fossil localities have the character of strongly calcareous swamps. Most of these places are today completely filled-in and transformed, and especially in the western part of Czechoslovakia there are today very few similar recent localities. This probably accounts for the disappearance of *V. moulinsiana* (Dupuy), which is obviously closely bound to such biotopes. Only the calcareous swamps

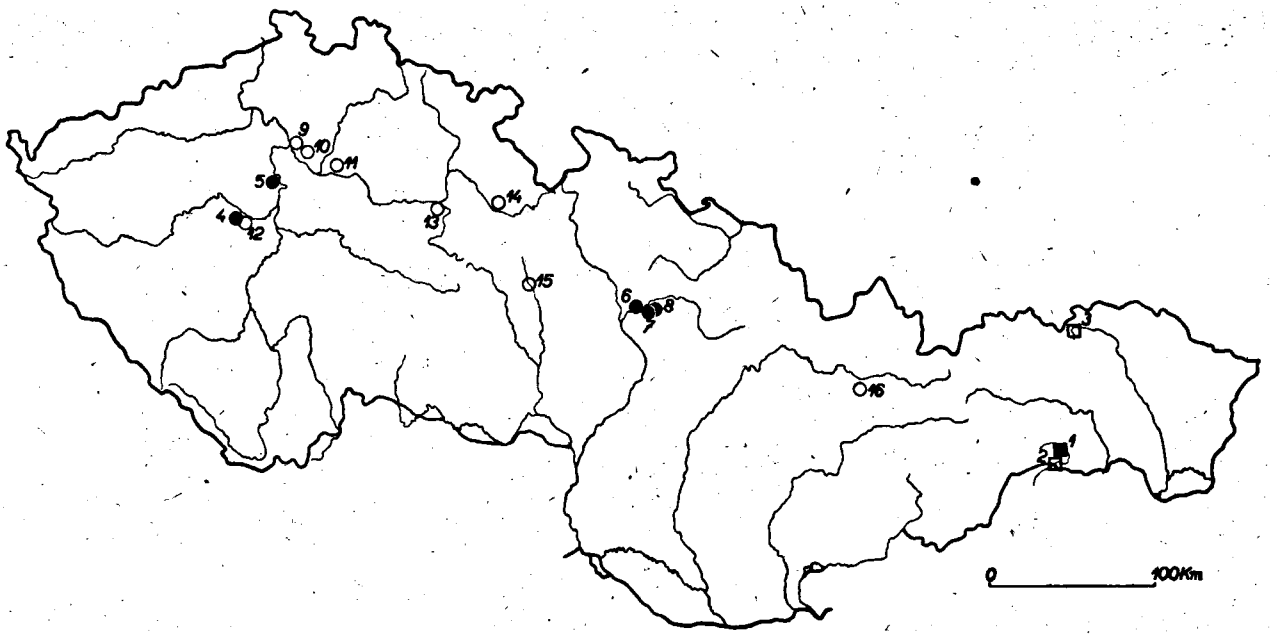

Fig. 2. Recent and fossil distribution of *Vertigo moulinsiana* (Dupuy) in Czechoslovakia. 1) Teplica near Jasov (Recent). 2) Turňa (Recent, non-verified). 3) Večný jarok near Bardejov (Recent, non-verified). 4) Koněprusy (Pleistocene). 5) Únětice (Pleistocene). 6) Předmostí near Přerov (Pleistocene). 7) Želatovice (Pleistocene). 8) Tučin (Pleistocene). 9) Mělnická Vrutice-Maly Újezd (Holocene). 10) Byšice (Holocene). 11) Milovice (Holocene). 12) Měnany (Holocene). 13) Nové Jesenčany (Holocene). 14) Skořenice (Holocene). 15) Rozhraní (Holocene). 16) Biely potok (Holocene).

at the karst springs of the South Slovakian Karst (and perhaps of other limestone regions) still represent a suitable environment for the existence of this species, and this applies also to the localities listed from Hungary. The difference in the size of the shell between the Old Holocene and the recent finds may be accounted for by the different climatic conditions in the older Holocene, when at the beginning there still prevailed a rather inclement and dry climate (preboreal to boreal), of a more continental character than at present. The recent localities of *V. moulinsiana* (Dupuy) in the region of the Carpathian basin obviously represent relicts from the older Holocene, which maintained themselves under locally favourable conditions and should be strictly protected from human interference (the localities mentioned have mostly a very peculiar flora and fauna, e.g. *Pisidium tenuilineatum* Stelfox (det. J. G. J. KUIPER) in the pond of Jasov). The locality of Jasov is important because it lies deep within the West Carpathians and harbours relatively very rich populations; the protection of its natural character is today secured by the establishment of a State Nature Reserve in the valley of the Teplica stream.

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