Stop 7 – Szczawnica ("Orlica") – history of the discovery of nappes in the Carpathians (Figs 35–37)

(*Michał Krobicki*)

As a representative of the young French school of alpine tectonics, 33 years old Maurice Lugeon took part in a seven-day geological field trip to the Pieniny and Tatra Mountains (from 11 to 18 July 1903) as a part of the 9th International Geological Congress organized in Vienna. The trip was led by the famous Victor Uhlig – an Austrian professor of geology at the Vienna University, author of synthetic studies of the Tatra and Pieniny geology (Uhlig 1890a, 1890b, 1891, 1897, 1903; Sokołowski, 1954b). In these two people, different concepts of origin of tectonic structures within Tatra and PKB clashed. V. Uhlig proposed adopting the autochthonism of fold structures, both for the Tatra Mountains and for the PKB (Limanowski, 1904, 1905; Świderski, 1923; Sokołowski, 1954a, 1954b), while M. Lugeon preferred their nappe style of tectonic structure (Lugeon, 1902a, 1903), even though he had never been to Poland before the aforementioned trip! This alpine geologist, mapping complex structure of the Alps of the Swiss-French borderland, he was a staunch supporter new, nappe interpretation of their structure. Relying only on the perfect geological maps of V. Uhlig, he came to the conclusion about a similar, as the Alps, tectonic style of the Polish Carpathians, including the Tatra and the Pieniny mountains (Limanowski, 1905). Already on the first day of this field trip (August 11, 1903), passing from Nowy Targ to Czorsztyn village and seeing isolated klippen of the Pieniny Mountains in the landscape very similar to Chablais region in the French Alps that was the object his doctoral thesis in 1895. In 1902 year, he published a note in which he presented tectonic analogies between the geology of the Alps and the Carpathians (Lugeon, 1902a, 1902b), and then extended this thesis in more detail the following year (Lugeon, 1903). The most likely in the vicinity of today's PTTK hostel "Orlica" in Szczawnica, in August 12, 1903, decisive observations and discussions took place about his suppositions as to the nappe genesis also of this part of the Alpine orogen (Krobicki, 2022c).

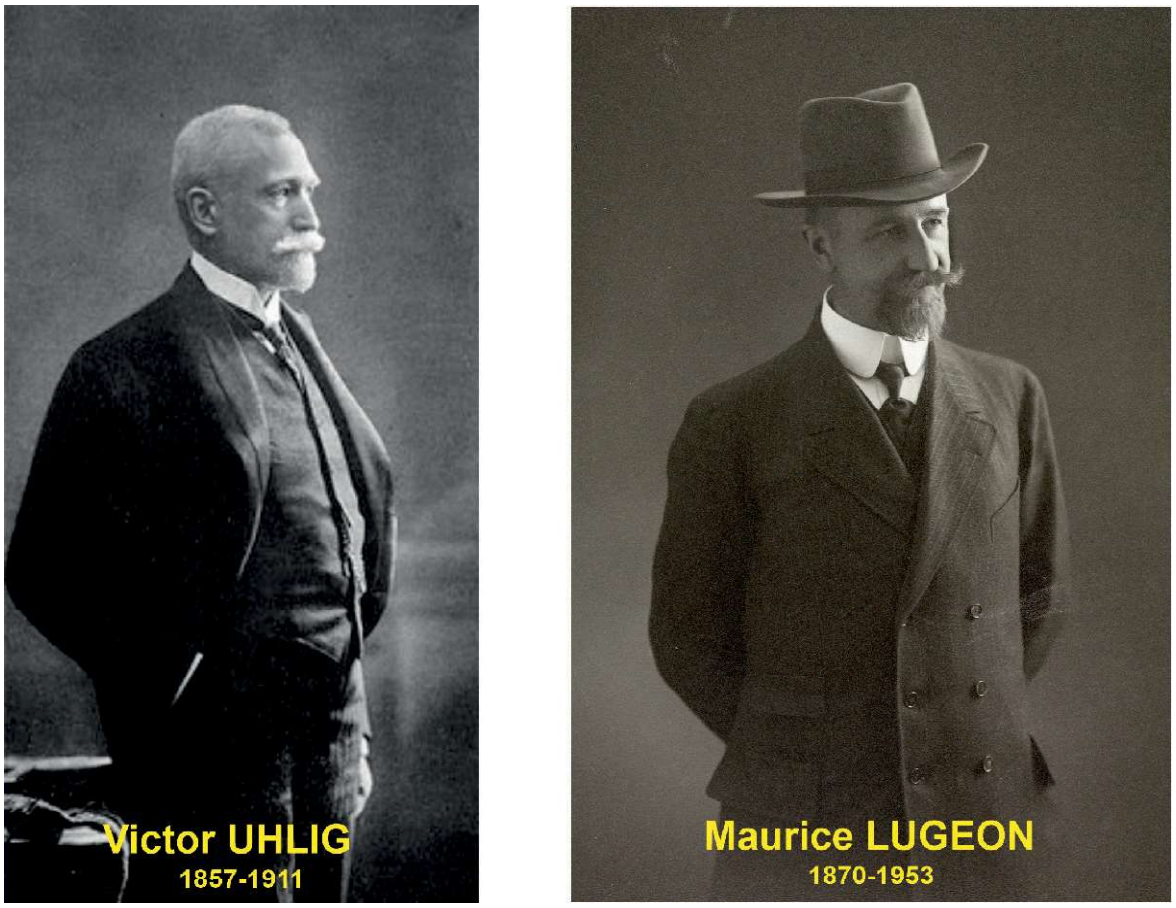

Fig. 35. Two prominent scientists – specialists of the Pieniny Klippen Belt geology

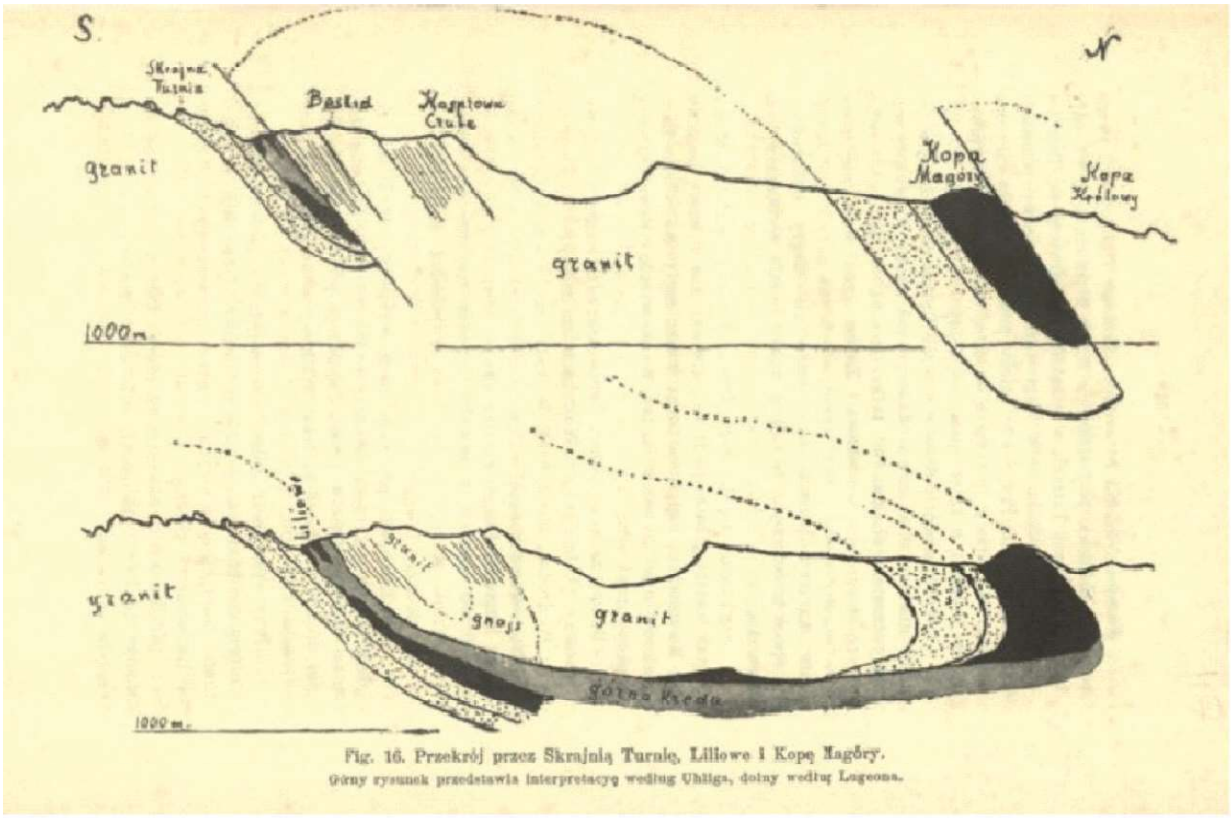

Fig. 16. Przekrój przez Skrajnią Turnię, Lilliowe i Kopę Magóry.
Górny rysunek przedstawia interpretacyę według Uhliga, dolny według Lugeona.

Fig. 36. Different interpretations of tectonic position of the Tatra Mts structures: upper cross section – Uhlig's idea and lower cross section – Lugeon's idea; lower position – circular of the 88th Polish Geological Society Meeting organised in 120 anniversary of the 9th International Geological Congress in Vienna (1903)

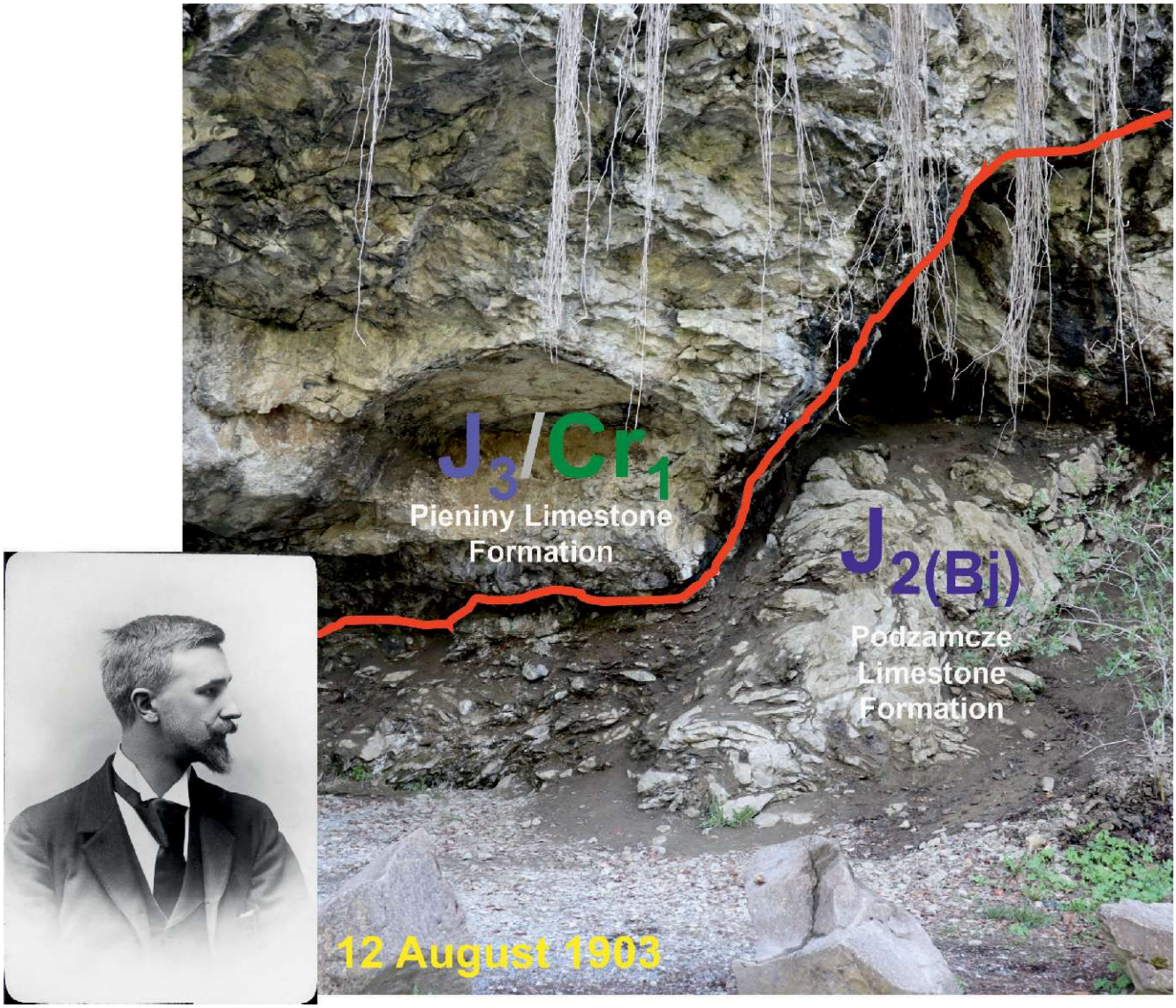

Fig. 37. Zyblikiewicz's cave in Szczawnica Niżna, along so-called "Pieniny road" along Dunajec River nearby of Orlica hostel – 120 anniversary of Maurice Lugeon visit of this place during International Geological Congress (Vienna'1903) – tectonic contact between two nappes?/thrust sheets?

Stop 8 – Flaki range (Jurassic deposits of the Branisko Succession) (Figs 38, 39)

(*Michał Krobicki, Jarosław Tyszka, Alfred Uchman*)

At road cutting through the Flaki Range we can see an outcrop of the Branisko Succession developed as: grey crinoid-cherty limestones and overlying greenisch micritic limestones and green chamosite-bearing marls (Flaki Limestone Formation), black-brown manganiferous and green radiolarites of ?Bathonian-Callovian-Oxfordian age (Sokolica Radiolarite and Czajakowa Radiolarite formations) (Birkenmajer, 1977) (Fig. 38). These rocks are surrounded by less resistant Upper Cretaceous marls and flysch siliciclastics belonging to different tectonic units of the PKB. At the road cut in the Flaki Range, the Branisko Succession crops out in tectonically overturned position. They are deep-water stratigraphic equivalent of shown earlier in the Czorsztyn Castle shallow-water facies of crinoidal and red nodular limestones of the Czorsztyn Succession (Myczyński, 1973; Birkenmajer, 1977, 1979, 1985). The Flaki Limestone Formation represents a condensed sequence of grey filament limestones, spiculites and green filament marls with ferruginous (chamositic) oncoids. The filament limestones and marls consist of pelagic bivalve *Bositra* shells.