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15. Ancient Uses of Geothermal Waters in the Precarpathian Area of Romania and the Pannonian Basin of Hungary

by
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Abstract: The first uses of geothermal waters in the Precarpathian area, Romania, and in the Pannonian Basin, Hungary, are lost in the darkness of prehistory. However, many Neolithic peoples settled near thermal springs. Heat from natural manifestations became the first therapeutic relief for the early inhabitants who came to consider the thermal waters as gifts from the gods.

In historic times, the use of these waters and thermo-mineral muds became more frequent and systematic. During the Late Middle Ages, these natural sanatoria were visited by local people. During the Late Middle Renaissance, the thermal localities were rediscovered, growing especially famous by the second half of the 19th century.

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INTRODUCTION

IN THE AREA OF THE LARGE INTER-CARPATHIAN AND Pannonian Basins of Romania and Hungary, thermal springs constitute the only manifestation of geothermal heat. Archaeological finds, dating from the Neolithic period, indicate that mankind settled in these friendly areas very early on. From prehistoric times to the present, the human community has continued to live near and develop a variety of geothermal areas: Budapest and Héviz in Hungary; Baden in Austria; Felix, Herculane, Geoagiu, and Călan spas in Romania.

Since prehistoric times, hot springs have been thought of as founts of life and health, divine and sacred gifts. Before the Roman conquest, the practice of balneotherapy had been an indigenous custom among the Celtic and Dacian peoples with autonomous and developed civilizations. Celts dominated much of Western and Central Europe in the 1st century B.C. The word "Celt" is derived from *Keltoi*, the name given to these

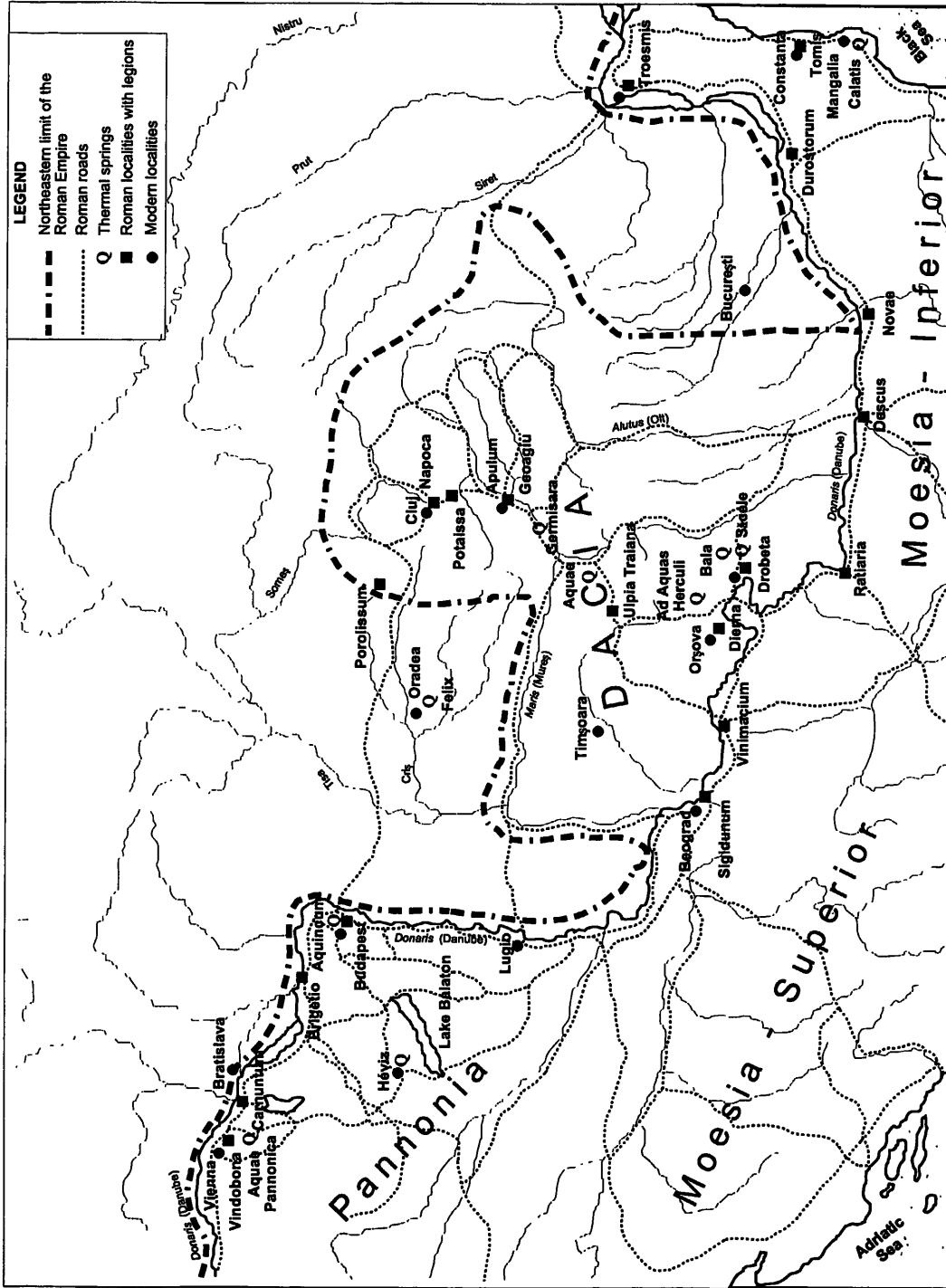
people by Herodotus and other Greek writers. To the Romans, the European Celts were “Gauls” and those in Britain were “Britanni.” Dacia was an ancient kingdom of Eastern Europe inhabited by Thracian descendants and roughly equivalent to modern Romania. Unfortunately, these people, whose main occupations were agriculture, hunting, and sheep breeding and whose principal building material was wood, did not survive for more than 2,000 years. They left no writings describing their traditions of thermal bathing.

However, the oral tradition recounts a legend from the southwestern part of Romania about Ioan Iorgovan. He was a local Hercules who, using hot water redolent with hydrogen sulfide fumes, killed a seven-headed dragon from a cave near the present Herculane spa. This legend is comparable to similar legends from the Mediterranean area, for instance, the victories of Hercules against the giant Laestrygonians at the Santa Cesarea spa (Southern Apulia, Italy) and of Hercules over Typhoeus at the Phlegraean Fields (Campania, Italy).

USE OF THERMAL SPRINGS DURING THE ROMAN PERIOD

THE TRUE IMPORTANCE OF LOCALITIES WITH THERMAL SPRINGS IN THE PRECARPATHIAN AREA AND the Pannonian Basin is demonstrated by the fact that the springs were all included in the network of baths developed by the Roman Empire during the conquest and Romanization of provinces in Pannonia in the 1st century and in Dacia at the beginning of the 2nd century A.D. (The map illustrates this region.) For more than three centuries, the northern limit of the Roman Empire generally followed the Danube River and included the middle Danube (the provinces of Pannonia Superior, Pannonia Inferior, and Moesia Superior) and the lower Danube (the province of Moesia Inferior) up to Pontus Euxinus (the Black Sea).

Roman behavior towards thermal bathing was influenced significantly by interactions with several peoples in the Mediterranean area, such as the Etruscans and Greeks, from the 5th through the 1st centuries B.C. (Cataldi and Chiellini, 1995). In the 1st century B.C., when the Roman Republic was consolidated, and after 29 B.C., when the Empire was formed, the increasingly vast conquered territories expanded their commercial dealings and exchanges with each other. This, combined with benefits derived from knowing the lifestyles and technologies of other peoples and readily available state funds, left the Romans with time to care for their bodies—for balneotherapy (Cataldi, 1993).



Map with locations of thermal sites in the Precarpathian area and the Pannonian Basin in the 3rd century.

The Roman Emperor Trajan conquered rich and powerful Dacia at the beginning of the 2nd century A.D., and the Romans ruled Dacia for almost two centuries. During this period, they constructed spa complexes in all localities with thermal manifestations in order to use the natural heat and the therapeutic properties of the salts and muds; moreover, some of the localities became commercially and strategically important (Cataldi, 1993). In fact, the Romans apparently chose several Celtic and Dacian centers (Vindobona, Carnuntum, Brigetio, Aquincum, Apulum, Dierna, and Ad Mediam) for their military encampments precisely because of their proximity to hot springs.

The importance of thermal bathing in Central Europe during this period can further be deduced from a famous atlas, the *Tabula Peutingeriana* (the official map of the Roman Empire in the 4th century A.D.). In the fifth of eight segments, this document shows the principal thermal spas of Pannonia and Dacia and indicates that the spas held great balneological and military importance. The Romans built and fortified Vindobona (Vienna) near Baden (Austria), the capital of Pannonia Superior and the main site of a Roman legion, and Aquincum (Budapest), the capital of Pannonia Inferior. The latter site had a thermal complex near the left bank of the Danube River.

Dacia, with its capital of Ulpia Traiana Sarmizegetusa, had many thermal springs within its borders. Two large ones northeast of the capital were Aquae (Călan, Hunedoara) and Germisara (Băile Geoagiu). The center of the 13th Roman legion Gemina at Apulum (today Alba Iulia) was located near the thermal complex of Germisara. The fortress of Drobeta was built near Ad Aquas Herculi, the most important bath in this part of the Roman Empire. Moreover, Dierna (on the left bank of the Danube), Ad Mediam, and Tibisum were located along the imperial route to a sector of Dacia. This arrangement suggests that the layout of the main Roman routes was purposely established to connect, as much possible, the different thermal localities with each other, additional evidence of their importance.

During the 2nd and 3rd centuries A.D., within the territory of Pannonia and Dacia under Roman rule, thermal bathing became a way of life so rooted at all levels of society that each spa became not only a place for cures (sanatorium, or *valetudinarium*) but for meeting and, therefore, a reference point for every aspect of civic life. The elevated civic importance of thermal bathing occurred in all thermal localities in the Roman Empire (Cataldi, 1993).

Thermal balneology, however, was a local tradition long before the arrival of the Romans. Very early, many cults formed with protective divinities for thermal waters. It was from the Dacians,

whose religion was monotheistic, that the Romans adopted their cult of local divinities. They dedicated numerous votive offerings in honor of the hot springs themselves (*fontes calidae*), in honor of the sites where they were found (*genus loci*), and in honor of the divinities of water (*numines aquarum* or *nimphae salutiferae*). However, they dedicated the greatest number of statues, inscribed pillars, altars, and temples in honor of the health-giving divinities: Hercules, Asclepius, and Hygieia (Macrea, 1969).

Another proof of the symbiosis of Roman and Dacic cultures was the merging of the Roman divinity Dis Pater (the underground god Pluto) with the Dacic divinity Terra Mater, as can be seen on a bronze plate found at Ad Mediam and on an altar table found at Germisara.

HERCULANE SPA

AFTER THE 106 A.D. CONQUEST OF DACIA, THE ROMANS STARTED TO FREQUENT THE CURATIVE thermal springs in the narrow canyon of the Cerna River (Southwestern Romania, near the Danube), which they named Ad Aquas Herculi Sacras (also called Ad Mediam, among other names). It is certain, however, that these springs were used by Dacians long before the Romans arrived. The archaeological discovery of a settlement in Outlaws Cave, inside the spa area, indicates that people lived there throughout the Neolithic period. In the area of these baths, Roman coins from 93-92 B.C. prove the existence of an active population dealing in handicrafts and trade, exchanging goods with peoples from the South-Danubian territory of Moesia, which was under Roman occupation (Macrea, 1969).

The proximity of Roman roads coming from the Danube, as well as the mild climate, fresh air, and picturesque natural surroundings, facilitated Roman development of thermal springs. Buildings were constructed for cures, pools, and aqueducts. The Hercules thermae was famous for a very long period of time. After the Emperor Aurelianus left Dacia in 273, interest in the spa dropped as pressures grew from



Bronze statue of Hercules at the Herculane spa. This is a copy made in 1852 of a marble statue dating from the 3rd century. *I. Cohut, Romania Geothermal Association*

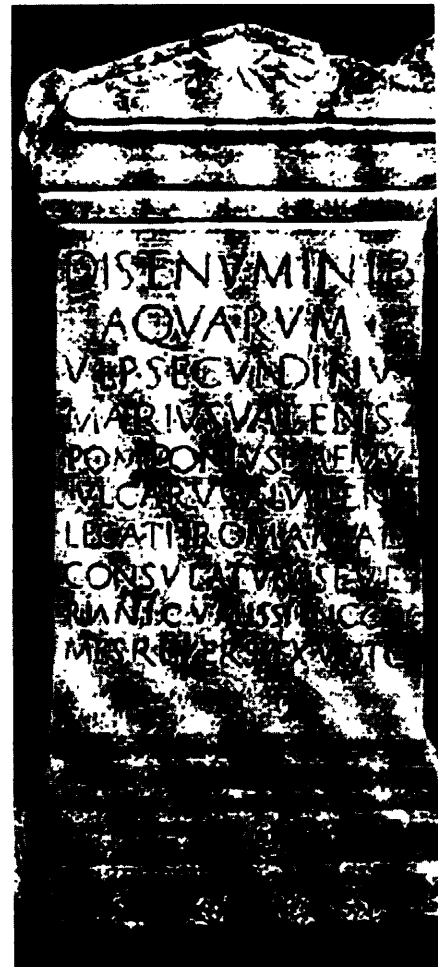
incursions of “barbaric” peoples. Eventually, the complex fell into decay. The thermal springs, however, continued to be used by the local population and by the occasional traveler.

In 535, the Emperor Justinianus of Constantinople set up the bishopric Ad Aquas of Dacia Ripensis (Gogâltan, 1980) at the Herculane spa. Between the 6th and 15th centuries, despite many stormy invasions by a number of peoples, the Herculane spa remained active. Spa attendance was noticeably affected by many wars, especially those related to the conflict between the Ottoman and Austrian Empires in the 16th and 17th centuries. (During two centuries of Ottoman occupation, the Turks partly rebuilt the old Roman spas.) After armies under the command of Prince Eugene of Savoy ousted the Turks from the area, the Herculane spa was rediscovered.

Many Roman artifacts are found at the spa whenever the baths are modernized: statues, sarcophagi, altars, and votive tablets (*tabulae*). The most frequently represented votive offerings are to Hercules Salutiferous (“the healer”); there are also numerous votive offerings dedicated to Hygieia and Asclepius. Unfortunately, most of the statues and other priceless objects were either lost (a ship carrying archaeological treasures sank in 1755 in front of the city of Pest) or sent to the Court of Vienna to decorate halls in the imperial library (Cristescu, 1978). The 18th and 19th centuries brought the spa international fame after Austrian modernization.

GERMISARA SPA

THE GERMISARA SPA (GEOAGIU SPA, ALBA COUNTY) WAS ALMOST CONTINUOUSLY ACTIVE FOR more than 20 centuries, enjoying great fame and growth in the 2nd and 3rd centuries A.D. The ruins of this spa, which date back to the Roman period, include remnants of imposing stone and



Votive *tabula* at GERMISARA SPA dedicated to the “Gods of Waters” in 153 A.D., perhaps placed in honor of Marius Valens, an envoy sent on consultation to Rome who returned unharmed in the reign of Severus. *Translation by Peggy Lodeesen*

brick buildings, water tanks and pools dug in massive rock, and a complex network of pipelines for both hot and cold water. All this attests to intensive balneological activity in antiquity.

In addition to these structures, numerous remnants have been found of monuments, statues, bas-reliefs, sanctuaries, inscribed pillars, oracular altars, and craters. They contain dedications to gods, demigods, and *nymphae*, such as Sulis Minerva, Diana Augusta, Fortuna, Hercules Invictus, Asclepius, Hygieia, and *nimphae sanctissimae et salutiferae*. The dedications are signed by persons of the ruling class, wealthy people, veterans of the Roman army, and also by people of modest circumstances, confirming that balneology was practiced widely by people of all social levels.

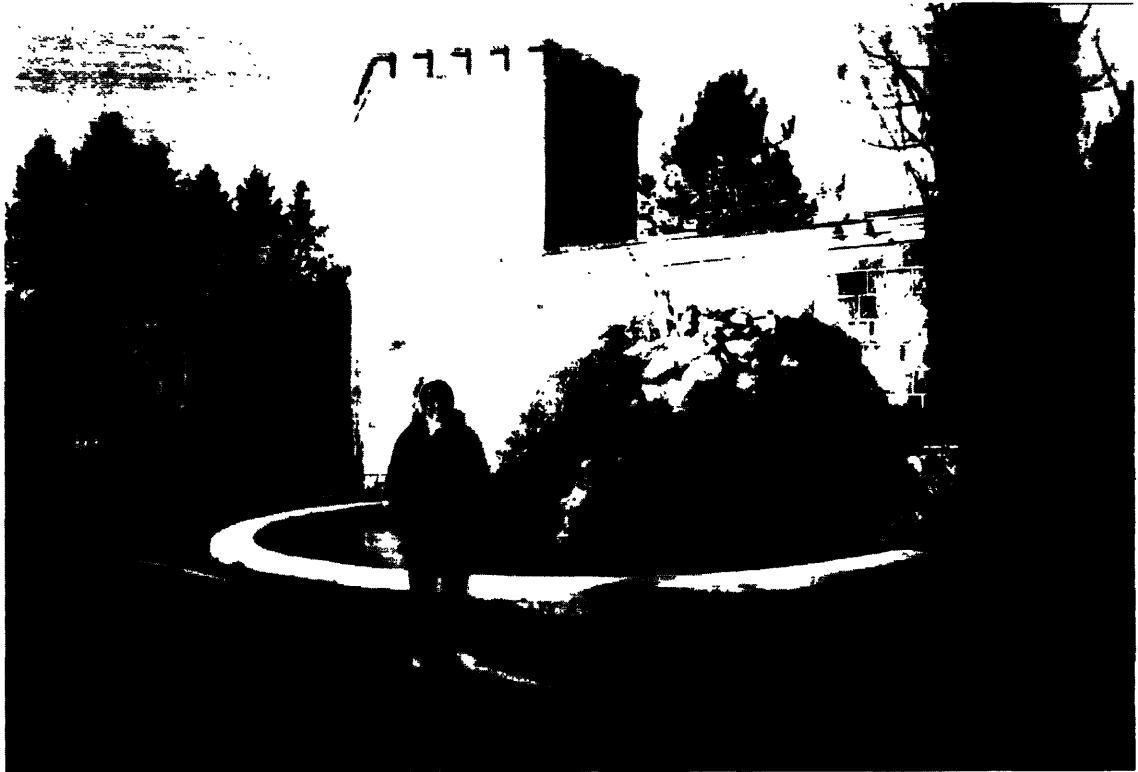
AQUAE

AQUAE, AT CĂLAN, HUNEDOARA COUNTY, IS MENTIONED IN PTOLEMY'S *GEOGRAPHIA* (2ND century B.C.) under its Greek name of *Hydata* ("thermal springs") and is shown in the *Tabula Peutingeriana* as Ad Aquae. The springs are in the vicinity of the political, administrative, and religious metropolis of the Dacic capital, Colonia Ulpia Traiana Sarmizegetusa. During the Roman period, this thermal locality was famous for a travertine quarry.

The ruins of two other Roman *thermae* were discovered in southern Dacia at Săcele (the remnants of health bathing facilities and a sanctuary dedicated to Hygieia and Asclepius) and at Bala de Jos near Drobeta. At both localities, oak tubs for bathing (*alvae*) and offerings of Roman coins from the 2nd and 3rd centuries have been found (Tudor, 1958).

FELIX SPA

BALNEOLOGICAL PRACTICE AT THE FELIX SPA, NEAR ORADEA, AND IN THE THERMAL STREAM of Peța, which is fed by copious hot springs under the lake bed, is documented only from the 12th century, after Transylvania became a province of the Hungarian Kingdom. However, some archaeological finds in the Salca-Oradea area prove that on the banks of a 12 km segment of the Peța stream from Felix spa to Oradea, human settlements were established in the lower Neolithic period and developed mostly in the Bronze and Iron Ages. Existence of the Dacic civilization is documented by abundant archaeological evidence from the Hallstadt and La Tene cultures. Traces of Roman domination are absent, however, as the Oradea area was beyond the limits of the Roman Empire.



Mary Rowley stands by the Felix spa, 1996. The original spring is in the center of the spa. *J. Lund*

In the 11th century, the Bishopric of Oradea was established. The bishopric took possession of the hot springs near Felix and founded the Bishop's spa, which operated for over nine centuries. Paleontological evidence attests to the existence of the thermal springs in this area, at least since the end of the Tertiary period. In the warm waters of the Peța stream, two fossils of that age have been preserved: the aquatic plant *nimphae lotus thermalis* and the gastropod *melanopsis parreisi*.

The Felix spa resort began to be known and visited after 1720; however, its true development started in 1885 when the first geothermal well in Romania was drilled at this site. The well was 51 m deep, with a flow rate of 195 liters per second and a wellhead temperature of 49° C.

AQUINCUM

THE AQUINCUM, A ROMAN SPA COMPLEX INITIALLY KNOWN AS AQUAE CALIDAE SUPERIORES ET Inferiores, is located on the right bank of the Danube River in the urban area of present-day Budapest. The copious thermal springs feeding the spa have been in constant use for balneotherapeutic purposes since the time of the Emperor Claudius (260-268). It was during

Roman rule that the *thermae* were given the Illyric name of *Aquincum*, which means “hot spring with high flow rate.” *Aquincum* became very famous in this part of the Roman Empire.

After the fall of the Roman Empire in the 5th century, this spa lost international importance. However, it continued to be visited by the local people until 890, when *Aquincum* started to assume a new strategic importance, especially after the Hungarian leader of that time, *Árpád*, constructed a fortified encampment near the thermal springs. Once again, these thermal waters became known internationally.



Turkish baths at *Aquincum* in Budapest, Hungary. *M. Árpási, Hungarian Geothermal Association*

In the 13th century, thermal waters from the springs were transported from *Aquincum* to the Fortress of Buda through a wooden pipe 10 km long (Fekete, 1974). The water temperature along the pipe fell only about 10° C.

In the following period, during Turkish rule, the thermal station was expanded by constructing numerous *ilidse* (“Turkish baths”), which enabled thousands of people to enjoy hygienic and therapeutic treatment each day. Among the most important *ilidse* were those built by Mustapha Sokoli-Pasha in 1566 and those built by Vei Bey in the 17th century. The importance of the latter *ilidse* is stressed in the work of the Turkish illuminist Evlia Tcelebi.

After driving out the Turks in 1686, the Austrians modernized and expanded the whole thermal complex of Aquincum, which by the 18th century again enjoyed international recognition and attendance (Grove, 1977). In the 19th century, the need for more thermal water at the complex led to drilling two wells, in 1867 and 1878. The additional water supplied many indoor and outdoor thermal pools. By the late 19th century, the Aquincum was one of the largest therapeutic and recreational centers in Europe.

HÉVIZ SPA

AT HÉVIZ SPA, NEAR LAKE BALATON, COPIOUS UNDER-LAKE SPRINGS (36° C) HAVE FLOWED continuously since the end of the Tertiary period, as evidenced by the travertine and mud deposits. They have created the largest thermal lake in Europe. Local people have used the thermal waters and mud since prehistoric times, and archaeological sites date back to the Bronze Age. After the Roman conquest, a major balneological center (*valetudinarium*) was developed near the geothermal lake at Héviz. Many bas-reliefs and inscribed pillars have been found with dedications to the gods, such as Zeus and Sulis Minerva, and to the *nimphae salutiferae*.



View of the geothermal lake at Héviz, the largest thermal lake in Europe. *M. Árpási, Hungarian Geothermal Association*

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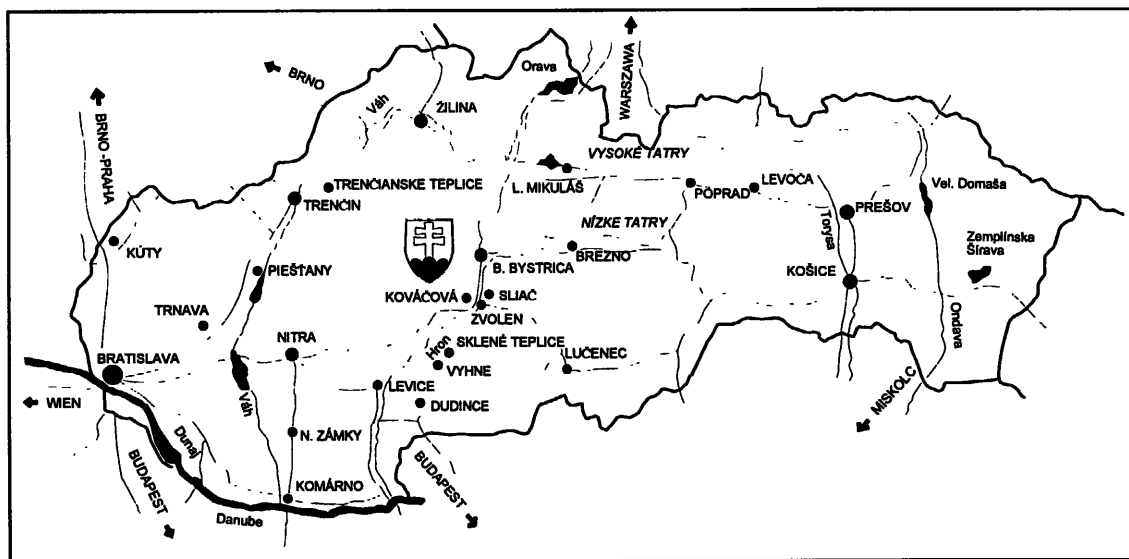
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Surge et Ambula ("rise and walk").
 The man breaking his crutch is the symbol
 of Slovakia's most famous spa, Piešťany.



Western Carpathian localities, including spas.
