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THE MILITARY FUNCTION OF THE RELIEF FROM CRIŞ BASIN

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Abstract: In this article I try to present a different side of geography, the military geography. Military geography role is to study the characteristics of land in military terms and relief the importance of knowledge elements in organizing the fight. Knowledge of the field strengths can make the difference between victory and defeat, and applying appropriate tactics can change the tide of battle.

Key words: defense war, patriotic war

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INTRODUCTION

The notion of gate[1] is defined in dictionaries as:

- a loop in a wall, fence which allows the entrance from the inside to the outside an vice versa;
- the access point in a fortress, city, which together with the mobile panels and other accessories form an ensemble;

Geographically, the notion of ‚*gate*'[2] designates an alley between two rows of mountains.

From a geographic and military point of view, the gate can be defined as an ensemble of geographic and planimetry details, crossed by a relative long valley which forms an opening towards the inside of the territory, situated especially on an (strategic, operational) entry path which from a military perspective is an strategy of non-entry/attack which enables the action of military force and means.

Bearing in mind the statement made by a great politician and military man who said that ‚no war can be carried outside the means of communication', the military practice focuses on the battle in the mountains and in this setting the battle for passes is of utmost importance. For always the action carried in the mountains had in view the battle around passes, the battle for their opening or defense being the major purpose, the essence itself of the military confrontations in the mountain areas.

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[1] Dictionary of Comtemporary Romanian Language, The Scientific and Enciclopedic Publishing House, Bucharest, 2000, page 618

[2] Idem, page 618

THE HISTORY OF THE SUBJECT IN FOCUS

The military phenomenon in the study area started with the first human settlements which evolved with the modification of climate, socio-economic, sometimes political factors, but always favoured by the proper conditions that the Carpathian-Danubian-Pontic space offered and will always do.

In Antiquity, the system of fortifications was spread across all the Carpathian-Danubian-Pontic space, highly present in the study area. Almost all the settlements in this area were fortified with defensive ditches and large ramparts. As for example the ones in Andrid, Carei, Pir (Satu Mare county), Girişu de Criş, Otomani, Văşad (Bihor county), Gilău (Cluj county) and so on.

From the military point of view, the fortified settlements were a component of the military defense system of the Geto–Dacian territories, representing the local base of an effort to defend the whole population, being points of support of the military power of the Geto-Dacian state.

After the conquest of Dacia by the Romans, these established the north west boundary of the empire on the north and west limit of the Apuseni Mountains, with a predominant focus on fortifying the borders. Thus, there appeared a large fortified line in the western part of the Apuseni Mountains, as shown in figure 1.

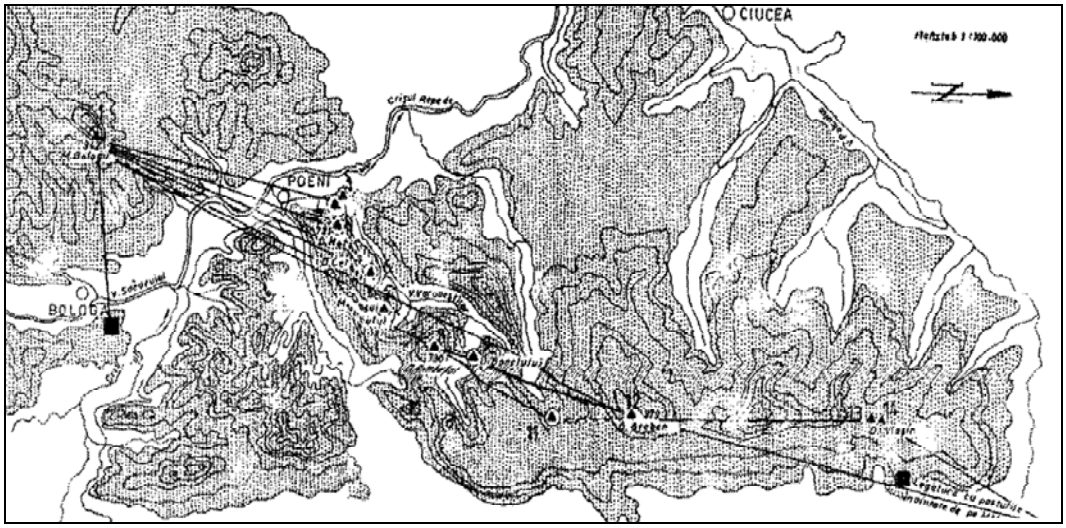

Figure 1. The line advanced by towers. District 1: The Roman camp from Bologa and its area of observation towers and signaling
(source: Gudea, N., (1997), *The Limes from the Meses Mountains*, pag. 102).

In all this military effort, the resistance that the Romanian principalities opposed to the Hungarian tribes in the first decades after their arrival in the Pannonian Plain and then, after founding the medieval Hungarian state stood promptly to its trends of eastern expansion. The direct result of this firm and long opposition was the uninterrupted ensuring of existence and preservation of the Romanian character of the political structures from the entire Carpathian – Danubian – Pontic area.

The attack on the Carpathian arch marked a new phase of the aggression of the Hungarian war tribes. It started under the leadership of Tuhutum, who tried to enter the Transylvanian basin.

The demographic concentrations and the ascending evolution of the organization of the Romanian states, created new superior resources for developing the fortification works, whose execution involves hiring significant workforce, a certain specialization and a capable leadership to exercise its authority over a larger territory. One could identify an increasing number of fortifications, of which, the most important from the area of study is Biharea fortress.

Without completely replacing the earthen and wooden fortresses, gradually a series of small fortifications appeared, intended for small groups of feudal lords or being residences for the leaders of some social and political structures. In some situations, such fortifications were surveillance and resistance points at boarder or in certain areas of special military importance (fords to big streams of water, communication nodes, mountain passes, etc.)

The value of fortification was seen on the occasion of heroic defense fights fought by the principalities of Menumorut, Gelu, Glad, Ahtum, Jula, when fortresses such as Biharea, Satu Mare, Dăbîca, Arad – Vladimirescu, Morisena (Cenad) held out for a long time against heavy sieges.

The main form of warfare practiced by the natives was defense where they used, according to circumstances, harassment, evacuation of people and goods out of the main directions of the enemy, attacks made by surprise, ambushes, especially at passing points, combined with the resistance of fortresses or natural barriers. Under the pressure of necessity to execute military operations, the Romanians also executed offensive actions with decisive character.

At the beginning of the Hungarian invasion (in the Xth century) on the East of Tisa, the area of study presented as a genuine political, economic and military power, being led by prince Menumorut.

He developed the strategic defense on an appreciable depth, on passages, using the benefits of the field, fortifications and rise to fight of the whole population. The defense actions took place on directions, with the effort directed against the southern group to diminish its forces and to ban its advance towards Biharea fortress. Putting up resistance to obstacles with formations of relatively low value, combined with violent offensive retaliation, the army of the Romanian prince managed to thwart the attempts of the Hungarians to open the way to the strategic objective pursued by the southern group. Finally, the intervention of the main forces deployed along the alignment of The Crişul Repede, restrain the invasion towards the vital center of the principality, rejecting the southern group.

The Hungarian attack against Menumorut's territories started again in the years 906-907. Powerful invading Hungarian forces joined by an important draft of troops of Seklers entered the principality. Facing this new and dangerous invasion, Menumorut decided that part of his forces to protect Bihor fortress, while the other, under the personal leadership of the prince, to regroup in the mountains area between Crişul Repede and Barcău, favorable to a lengthy defense to which the whole population able to bear arms could participate. The soldiers from Bihor have put up resistance for the first time to the invaders on Iozăşel river, and then they tenaciously defended themselves inside Biharea fortress. The heroic resistance of the Romanian soldiers under siege lasted 13 days, during which they produced heavy losses to the invaders. They could not get a decisive success in the siege.

Several conclusions can be drown from these wars: the first conclusion refers to the nature of predatory expeditions which the actions of the Hungarian

warlike tribes had from the beginning; another conclusion is that those expeditions had not had serious, immediate or perspective consequences, upon the natives and their social and political organizations. Finally, we can talk about the bravery of the local population as well as the most important feature, that, he who seeks external factors (weather and terrain) wins.

In the second half of the XVIth century, were built the fortresses from Carei, Săcuieni and Oradea, the last one being of irregular form, slightly oval, located in a flooded marsh area, fed by the waters of Crişul Repede and those of Petea brook (brook with war water), to which the experts of that time changed the course through underground galleries, so that the water around the fortress to not freeze, reducing its vulnerability; these fortresses were considered "pond fortresses", aimed mainly to stop the attacks of the western enemy.

Until the XXth century, in the region of Criş Basin, no other spectacular event took place, so that to deserve a special attention to be studied. The events from 1784, the peasant rebellion led by Horea, Cloşca and Crişan cannot be omitted, this was a nationwide event, started outside the study area but propagated in the entire territory of Transilvania and the revolution from 1848, of which we could say it was a propagation of the French Revolution, which echoed and caused movements throughout Europe.

During World War I, although the officers of staff have developed an action hypothesis, the "Z" hypothesis with a brave conception on the preparations and execution of the strategic, operational military actions, due to the underestimation of the enemy's forces, in the study area nothing spectacular to draw attention took place.

Figure 2. The battles fought by the Romanian Army
in the Second World War in Crişurile Basin
(source: *Romanian Army in the Anti-Hitlerism War*, page 82)

In the Second World War, however, the study area was the scene of extremely bloody confrontations, where the spirit of sacrifice, bravery and heroism of the Romanian soldiers wrote in the book of honor of our nation a

glorious history page. Thus, September 1944 found the Romanian army in offensive in the area of study, to free the country from the hortist-fascist occupation. After a strong offensive until the exit from the passes of Crişurile Basin, the Romanian army hat to pass to such a manner of defense on alignments, favorable to the, with the aim to prohibit the opponent to restore a favorable alignment located on the alignment of the Apuseni Mountains to the Iron Gates.

On account of the bravery of the Romanian soldiers, the hortist- fascist troops have been thwarted these plans, causing them huge losses of personnel and combat technique, which has enabled their own troops to go on to offensive for the liberation of the whole surface of the national territory.

As it can be seen, since antiquity the principle to secure the strong points of the territory, developed so that to protect the population, respectively own troops against an aggressive and more numerous and better equipped aggressor from the point of view of the technique of combat. Some elements of the military strategy were maintained from antiquity even today, some were changed and renewed, so the place and role of the bystanders incumbent to the system of the military actions fought in the mountains make from these one of the main elements of the geographic-military, tactical-operative analysis, which takes place at the level of military commands, both in peace and war time.

Knowing in detail their characteristics, the commendation with realistic spirit of the consequences and implications they have in preparing and executing the actions up in the mountains are likely to focus on commanders to adopt fair judgment and to establish appropriate measures for their fulfillment.

THE AREA OF STUDY

The Gurahonţ – Vaşcău Corridor begins from Gurahonț and ends at Criştioru de Jos. It has 40 km, and spreads on the area of the counties of Arad (the vast majority of the land) and Bihor and enters the valley of the Crişul Alb (the White Criş), then about 3 km East of the city Plescuta, on the Tăcăşele valley, passing through Vîrfurile, then climbs the valley from Lazuri to Criştior passage (located on the borderline between the counties of Arad and Bihor) and continues up to Criştioru de Jos. It links Zarand depression and the southers limit of Beiuş depression, separating Zarandului and Bihor Mountains from Codru-Moma mountains.

Crişul Alb[3] river passes through a defile, on a distance of about 8 km, the pass between Gurahonț and immediately southwest of the place Gura Văii. Wading the river is not recommended, and forcing this sector is not advised. The bottom of the river consists of mountain blocks, in some places rocks. Crişul Alb (the White Criş) passes the communication even at the eastern edge of the place Gurahonț, where there is a reinforced concrete bridge with a length of 26 m and a width of 6 m. Over the stream of the river one can only lay small bridges specific to mountain hunters.

At the exit from the western part of the place Gurahonț there is a flooded area of 443 ha. The danger of flooding is higher in April-May and September, especially when it rains frequently.

[3] The average width is of about 38 m, depth of 0,50 m and a flow rate of 10 m^3/ second. The banks of the rivers are steep, sometimes abrupt, with great heights of 6 – 10 m from the river.

Tăcăşele brook and Valea de la Lazuri brook pose particular problems only in the conditions of heavy rain or when the snow melts, when the flow of the brooks can be three time higher.

The fog persists longer between Gura Văii und Vidra. In the seasons of heavy rainfall, Tăcăşele brook can bring high floods which cover road sections or damage the communication. From Avram Iancu to Criştioru de Jos the pass is crossed by the national road 76. Along this communication, all asphalted, one can travel in both directions. The bridges can withstand the maximum loading mass, being made of reinforced concrete. The radius of curves and the declivity pose no problems regarding travelling.

Possibilities of variants: If the sector between Gurahonț and Criştior pass is closed, the pass can be passed using the variant: Gurahonț – Zimbru – Avram Iancu – Criştioru de Jos, road in good conditions almost all year round, with two lanes, with a distance of about 38 km.

If the place Virfurile is blocked, one can make a detour on the direction: the western edge of the place Vidra–Magulicea – 2,5 km NE from Vîrfurile. The detour route is of about 5 km and is mainly made of a gravel road, generally in good condition, with two-lanes.

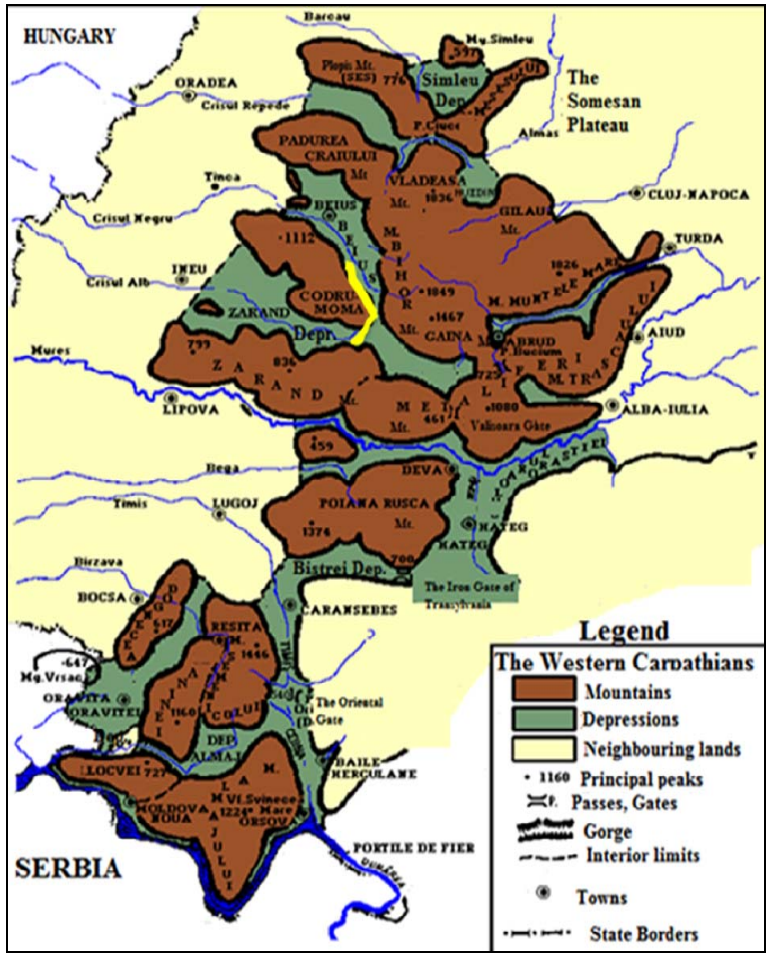

Figure 3. The Gurahonț-Vaşcău Corridor

The pass Moldoveneşti (Arieşeni) – Cîmpeni – Nucet (on the valley of the river Arieş), begins at 2 km North of the place Moldoveneşti and ends North-West of Nucet. The pass follows the Arieş Valley, up to the locality Botesti (confluence between Arieşul Mare (Big Arieş) and Arieşul Mic (Small Arieş)), then enters the Valley of Arieşul Mare up to Vîrtop pass (1160 m), located on the borderline between the counties of Alba and Bihor, then it continues on the Valley of Crişul Băiţa, passes through the pass located at an altitude of 1296 m, which is 7 km NE of Nucet and reaches the Northeastern entrance of Nucet locality.

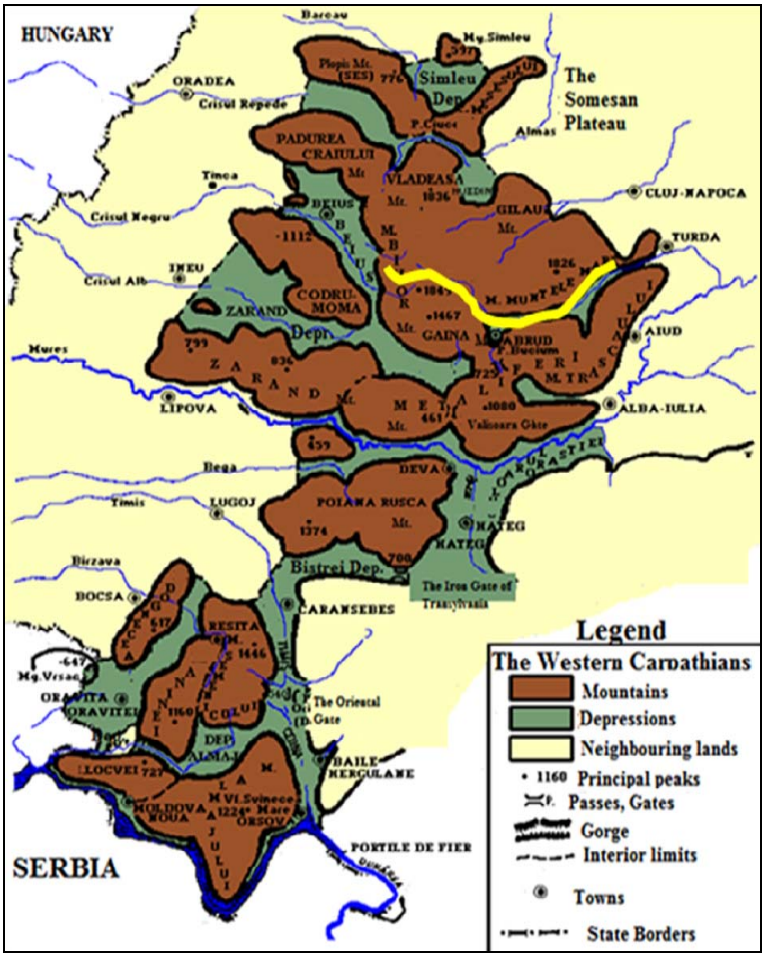

Figure 4. The pass Moldoveneşti (Arieşeni) – Cimpeni – Nucet

It is the longest pass in the country, measuring 141 km, crossing the counties of Cluj, Alba and Bihor, separating the Big Mountain and Pades Plateau from the Trascau and Bihor Mountains. It also connects the Transilvania Plateau and Beiuş depression, crossing the Apuseni Mountains.

The Arieş river has a length of 133 km in the pass, its route passes almost entirely through this valley, it spring from the Bihor Mountains and follows the southern slopes of the Big Mountain and the northern ones of the Metaliferi and Trascaului Mountains.

The pass is crossed, along its entire route, by the national road 75, asphalted and modernized, with two lanes, which does not raise any problems regarding the travelling of any category of technique, the curves have a minimum radius of 25 meters, the slope is between 7 and 9%, which allows the travelling of all types of machinery at an average speed of about 30 km/h.

Between Moldoveneşti and Cîmpeni (on a distance of 72 km) there is the narrow section of railway which links Turda and Abrud, but the transport possibilities are almost insignificant.

There are no detour possibilities of the pass with auto columns in the vicinity of its axis, the only possibilities being the hypo columns with samarizated materials and by walking, but the routs are very long and impose long marches to make a detour of some short sectors of the pass.

Bucea – Budureasa pass, with a length of 51 km, which places itself in the area of Bihor county, separates the Vlădeasa Mountains from Pădurea Craiului Mountains and links Vadului depression to Beiuşului depression, it starts on the south of Bulz, takes the Iadului valley to Stâna de Vale and ends at the eastern edge of Budureasa locality.

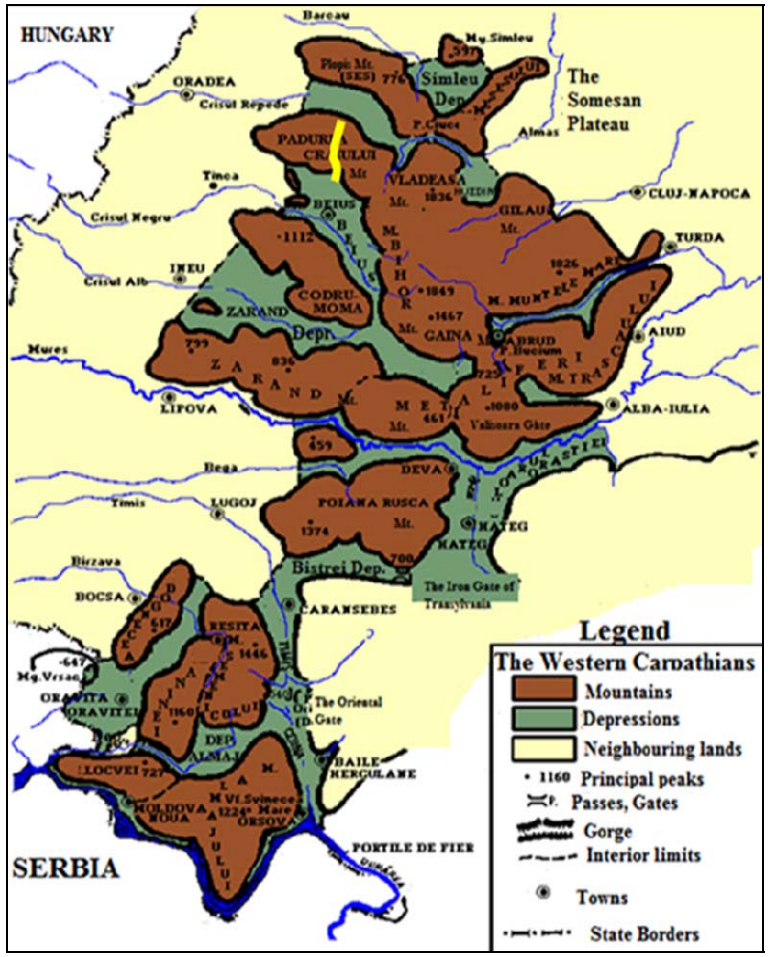

Figure 5. Bucea – Budureasa pass

The pass is crossed by Iad river, whose springs start from the south-west of Piatra Craiului Peak (1463 m). On its upper flow, several waterfalls form, the most important is Iadolina, located at about 7 km upstream from Leşu lake[4].

The Iad River, under normal circumstances, in terms of rainfall, does not raise problems regarding displacement along the pass, but in spring and autumn, on rainy weather, the floods, brought especially by its tribute Arieş, can cause significant disturbance to travelling, moving columns, and destroying roads. Obstructions with snow are possible on some sections of roads located about 5 km East from Budureasa locality, up to Stâna de Vale resort, and along the entire route between Iadolina waterfall and Bulz locality.

Crossing Iadolina river is possible on the whole route, with small facilities, except for the waterfall sectors, and Lesu accumulation area, where, understandably, this can not be done. The route which forms along the valley of the Iad river, paved road, crosses once the stream near Iadolina waterfall.

The roads along the pass are as follows: between Bulz and Remeti, asphalted road, with two lanes; between Budureasa and Stâna de Vale, for 12 km, also asphalted road, with two lanes; between Stâna de Vale and Remeți, with a length of 28 km, paved forest road, with the width of 2,75 – 3 m, which provides one lane. The minimum radius of the curves is of 15 m, with maximum declivities of 9%.

Taking into consideration its characteristics, the road allows the movement of the columns of vehicles at an average speed of 20 km/h.

The communication road along the pass: after leaving Budureasa until Stîna de Vale, this leads directly towards East, then suddently changes the direction to North until it reaches the Crişul Repede valley. Between Budureasa and Stîna de Vale the communication is made on the ridge and in the lowland Stîna de Vale it becomes valley road, following the course of the river Iad.

In case the pass or part of it is closed/blocked, there are several options such as:

a). *in case the sector between Bulz and Remeți* is closed the alternative through the Eastern part of the pass is along Ciucea, Valea Drăganului, Lunca Vişagului, Remeți, 44 km long. The road is completely paved with asphalt and the existing curves allow the circulation of any type of technical convoys pertaining to all kind of units , with a single exception in the sector Dealul Caprei, at 1232 m, especially during winter, where the maximum steepness of 11% requires special precautions related to powerful traction vehicles and strong road grip.

b). *in case the area of the Leşu Lake dam* does not offer the possibility to cross the pass, the entire itinerary between Bucea and Budureasa can be redirected towards Borod – Bratca – Damiş, then on the Sohodol valley until Roşia, reaching Beiuş hollow. This mean of communication is 35 km long, 10 of which are paved with asfalt, the rest being gravel road with only one lane, allowing the access through the pass but at a low speed, resulting in few vehicles in a long time span.

The pass allows debusing from Crişul Negru valley in Crişul Repede valley and vice versa, area where are found 11 caves which can be used in need for military purposes.

[4] Through the dam built about 5 km south-west from Remeti locality, Lesu lake developed, with an approximate surface of 1,5 km^2 and a volume of 28.300.00 cubic meters of water, at a normal level of retention. If the Lesu dam would tear apart, the flood wave would propagate to the Valley of Crisul Negru, with devastating effects along the entire route

From the point of view of military actions, the Bucea – Budureasa pass offers a lot of manoeuver possibilities inside its own aparatus or of the enemy, in case it enters the national territory. At the same time, this pass connects the two main operational directions: Oradea –

Ciucea – Huedin – Cluj-Napoca and Salonta – Beiuş – Vîrfurile, enabling to take action over the enemy who launches its defensive in Pădurea Craiului and Vlădeasa Mountains.

Huedin – Albac Pass starts South of Călățele (15 km South of Huedin) and ends at Albac. It follows the valley of Călata river and one of its tributary until Dealul Negru Pass (1099 m) in Gilău Mountains, turning round through the Eastern part of Fîntînele Lake, then winds up on the valley of Beliş river until Poiana Horea, from which it continues on Apa Caldă valley, until the pass at 1294 m (Biharia Massif) and down, on the valley of Albac river, until the locality with the same name. The entrance in the pass from North-East can be also made on the direction: Gilău, Someşul Rece, the Eastern bank of Fîntînele Lake. On this direction, the course takes the Southern bank of Gilău Lake, then on Someşul Cald valley, until the Western border of Tarnița Lake, it continues approximately 7 km on the Southern bank of the lake, it reaches Mărişel, then enters the main course of the pass.

The pass crosses over Gilău Mountains and separates Vlădeasa Mountains of Muntele Mare, then crosses over Biharia Massif. Between Călățele and Albac it measures 60 km, and between the localities Gilău and Albac, 89 km.

Along the pass, on the direction Huedin – Beliş run Călata river, having its stream near Dealul Negru Pass, and its tributary, crossing several times through the pass for 13 km. The average width of the river is between 15 and 30 m, in good weather conditions, its depth not exceeding 60 cm, during summer, in normal rainy conditions, and the speed of the water course is of 1,5 – 1,6 m/s, on the bottom of the river being only rocks. The annual average river flow is of approximately 1 mc/s. Along the pass there is only one ford which enables river crossing near the locality Călățele, where the river has a width of 25 m, a depth of 30 cm, steep banks and its bottom is made of rocks. In the same area of Călățele, Călata river has a regular course for a distance of almost 1,5 km, through a mud and stone dam, 3 m high.

Entering the pass from Gilău, the itinerary goes on along the Someşul Mic valley, for 3 km, until the dam of Gilău Lake. On this distance, the river is 45 meters wide, the average depth (in normal weather conditions) is of approximately 1 m and the annual average flow is of 19,3 m^3/s, the speed of the water being of 1,2 m/s. In this section there are no fords to cross over. It continues with Someşul Cald river which on a distance of almost 12 km connects the lakes Gilău and Fîntînele. The depth of Someşul Cald river is of almost 30 cm, with a width of approximately 40 m.

Also in the pass, starting from the South-Western part of Fîntînele Lake, runs the Beliş river with an average width of 15 m, a depth of 60 cm, a flow of 2,3 m/s and a water speed of approximately 1,5 m/s, having on its bottom only rocks. Crossing over this river is possible in certain sectors.

The locality Poiana Horea represents the junction area of the rivers Ticău, Apa Caldă and Beliş. From this sector, the course of the pass is crossed by Apa Caldă river for a distance of approximately 7 km, not representing though any military importance.

The Albac river runs from the Southern gorge of the pass near the refuge, in the area which practically separates Alba and Cluj counties, at approximately 3 km North of Mătişeşti, until Albac, where it flows into Arieşul Mare river. On this distance, the width of the river is between 7 and 15 m, the average width is of approximately 30 cm, and the speed of the current is between 1,3 – 1,5 m/s.

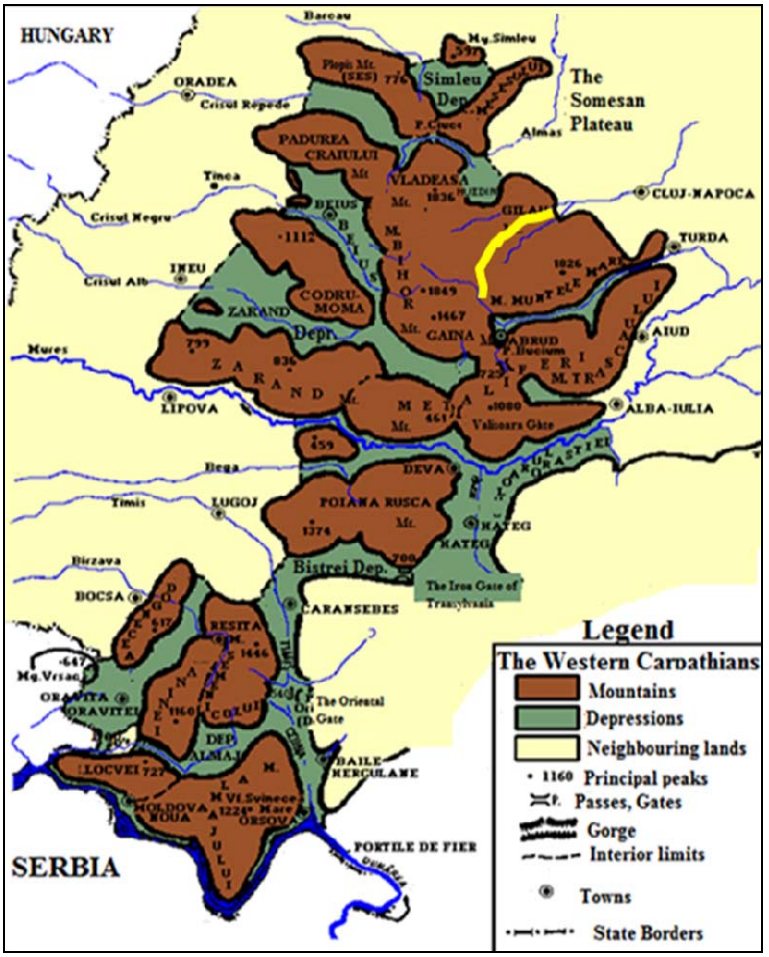

Figure 6. Huedin – Albac pass

There are several of natural and artificial lakes along the pass and the most important are:

- Gilău Lake, by blocking the watercourse of Someşul Cald, South of Gilău, approximately 1,8 km long, between 50 and 1100 m wide, runs on a surface of approximately 90 hectars, with an average depth of 4,5 m and an accumulation of water of approximately 4.000.000 m^3, the dam being 11 m high was made of reinforced concrete and generally used to supply with water the city of Cluj-Napoca;

- Tarnița Lake, by blocking the same watercourse, upstream of its junction with Rişca river. The lake is almost 7 km long, with a maximum width of almost 350 m, over a surface of more than 320 hectars, 33 m deep and a water accumulation of more than 74.000.000 m^3, the height of the dam being of 92

meters and and 236 m long, is made of reinforced concrete and it is mainly used in the production of energy.

- Fîntînele Lake, is the biggest accumulation lake in the area, being built in the South-Western part of Beliş, by blocking Someşul Cald and Beliş rivers. This lake splits into two accumulations: one along Someşul Cald valley, East to Smida (approximately 15 km), and the other one along Beliş river (approximately 95, km), the maximum width of the lake being a little bit over 4 km. The total surface of this lake is of approximately 815 hectars, having the depth of approximately 27 meters, accumulating almost 220.000.000 m^3 of water. The dam is 410 m long and 92 m wide. It is made of rockfill and reinforced concrete, being mainly a defense against floods and used in the production of energy.

The three big, natural lakes can be used especially in campaigns in order to decontaminate the personnel, ammunition, battle techniques and materials.

The pass is crossed, between Călățele and Albac, by the county road 108, long of 80 km, of which approximately 60 de km are paved with asphalt, the rest being gravel road in a good state. The steepness and angle of the curves allow the circulation of mixed convoys. Problems may appear while crossing the pass at the border between Alba and Cluj counties, where the slopes have a minimum radius under 20 m and the maximum steepness is 10 % on the entire sector of the pass. The communication sector is crossed by the county road 107 P, between Gilău and the Eastern bank of Fîntînele Lake, where it merges with the country road 108, being paved with asphalt on its entire length (approximately 50 km), having curves with minimum radius of 20 m. The bridges are built of reinforced concrete and can support the maximum weight of 60 tons.

The most frequent snow-bounds are produced on the road sectors between Someşul Rece and Fîntînele Lake, also on the sectors Poiana Horea and Mătişeşti. Due to its characteristics along the pass, it is useful for convoys from the existing military equipment.

Along the pass the road ensures only one lane on the unpaved sectors, which allow the circulation at an average speed of approximately 20 km/h, on the sector Călățele, Beliş, Poiana Horea, Albac, and on the sector Someşul Rece – Fîntînele Lake, at an average speed of 30 km/h .

The travel itinerary along the pass can be varied as follows:

a) *in case the road sector between Călățele and Dealul Negru Pass* (1099 m) is closed by blocking Dealul Negru Pass or the communications near Fîntînele Lake, an alternative to be considered is Călata, Buteni, Mărgău, Scrind-Frăsinet, Răchițele, Muncelul Mare Pass (1542 m), along Firei stream, the valley of Someşul Cald river, Poiana Horea. This section measures 60 km, using in this purpose the county road 108 C, paved with asphalt on a distance of approximately 20 km, the rest being gravel road. The rest of the itinerary until Poiana Horea is crossed by a single roadway. On this section can pass convoys with maximum weight of 10 tons.

b) *in case the road sector between Someşul Cald and Mărişel* is closed, it can be varied on the direction: Someşul Rece locality, Valea Someşului Rece, Mărişel, along the county road 107 N, then on the communal road 110 A, until Mărişel. This itinerary allows the circulation of convoys with an average speed of 15-25 km/h, but it poses difficulties on the sector Măguri, Răcătău, Mărişel, where the curves have the minimum radius under 20 m, and the steepness exceeds 11%.

Ciucea Pass[5] between the localities Poieni and Borod (approximately 30 km) runs along the valley of Crişul Repede until Bucea, then through Piatra Craiului pass at the height of 512 m and reaches the locality Borod.

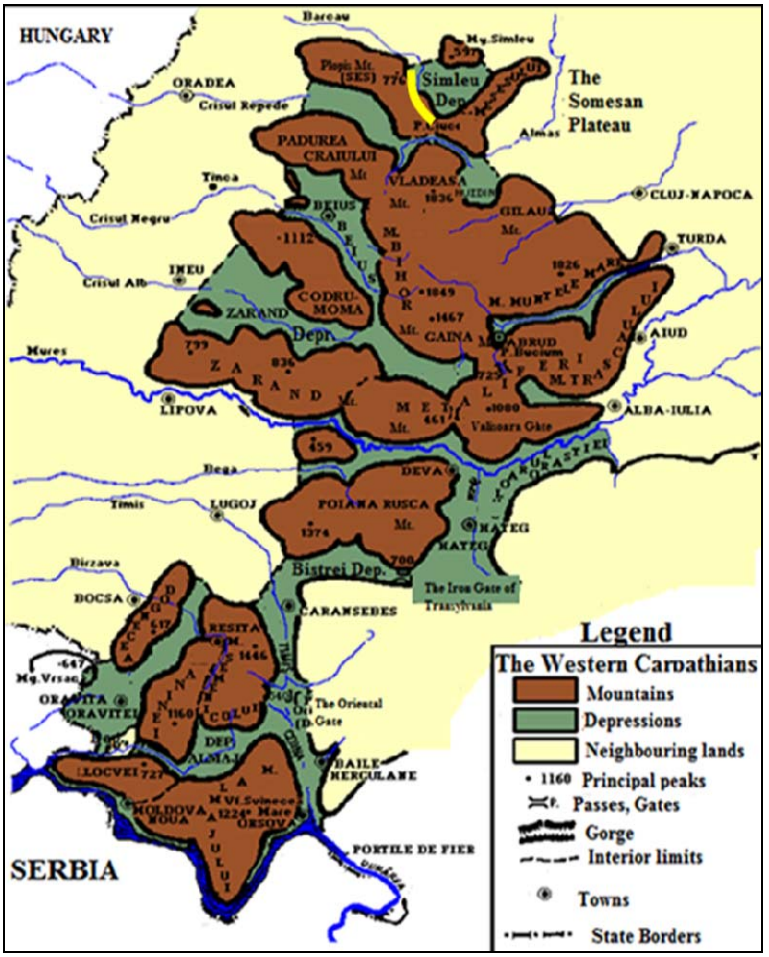

Figure 7. Ciucea pass

The pass crosses over Cluj and Bihor counties, separating Şes Mountain and Meseş Mountains from Pădurea Craiului and Vlădeasa Mountains by making the connection between Huedin and Vadului hollow.

In the pass, Crişul Repede river has an average width of 65 m, a depth until 1 meter and a flow of 12,5 m^3/s. The main fords are at Bologa (70 m wide, 0,40 m deep, the bottom is of ballast, the speed of the current is of 1,2 m/s and the bank is smooth, without beaches) and Negreni (50 m wide, 0,50 m deep, the bottom of the ford is of rocks, the speed of the current is of 1,1 m/s and the banks are smooth). On the above mentioned fords can pass, after some small adjustments are made, the entire military technique on wheels and caterpillars.

[5] Specialists consider to be more appropriate this denomination instead of Borod – Brăişoru, because Brăişoru locality is not positioned on the trajectory of the pass, but adjacent to it, and the pass doe not practically start from that point.

The Borod river crosses over the pass for a length of only 6 km and does not present difficulties for military convoys.

The itinerary along the pass favoures the movement of troops in secret and the defensive against air assaults from the enemy is made especially through the spreading of the subunits and usage of the natural shelters existing in the area.

The pass is crossed by the national road 1 which is modernized, paved with asphalt, with the width of the roadway of 7 m and 2 lanes along it. In the pass are 5 bridges with a total length of 120 m, 3 of which are made of reinforced concrete and the other of stone, all supporting the total weight established for vehicles within units and bigger tactical units.

Along the road are 21 curves with the radius of 35-50 m, all being between Ciucea and Borod. The maximum steepness is of 7% and it can be found at 56 + 440 and 57 + 200 kilometers. Snow-bounds frequently produce between km 56 and km 57.

On this route can pass the technique of the unities and bigger tactical and operational units, in every weather conditions.

Due to its characteristics, the communication in the pass allows an average speed of 25 km per hour and a capacity of 185 vehicles per hour (4440 vehicles in 24 hours).

The pass is crossed by a simple railway with a normal gauge, which between Poieni and Bucea runs parallel with the national road1. From Bucea point, the railway enters Crişul Repede strait, crossing it until Vadu Crişului, where is runs closer to the road. Between the two localities, the railway measures 38 km and runs through 2 tunnels, the first long of 270 m, and the second one of 185 m.

The possible routes of the pass or some of its sectors:

a) *in case the sector between Ciucea and Cornițel* (21 km long) is closed (blocked), this can be redirected 3 km South-West of Ciucea, Valea Drăganului, Remeți, Bulz. Bratca, 1 km West of Cornițel. The route measures 60 km, 55 km of which are paved with asphalt. On the entire itinerary, the circulation can be simultaneously made on 2 lanes, with an average speed of 20 km per hour, enabling a capacity of almost 175 vehicles per hour (4200 vehicles in 24 hours).

b) *in case the sector 2 km North-West of Bucea and Cornițel* (6 km long) is closed due to the blockage of Piatra Craiului Pass (512 m), it can be redirected towards Valea Crişului, Delureni, 2 km North-Est of Borod, on a distance of 12 km, 7 km of which are unpaved.

The characteristics of the terrain, the width and depth of the pass, the viability status of communication along the pass and the access possibilities outside communications, determine that this pass ensures the battle actions of a big tactical unity.

The Ciucea Pass is on one of the main directions of enemy penetration in the Somes Gate, well individualized, the peakes of Şes Mountains in the North and Pădurea Craiului in the South, channeling, mandatory, the action from West through this pass. It can be, thus, traced a new direction starting West from Oradea, through this pass and reaching Cluj, where it has multiple possibilities to spread in Transilvania Plateau.

The common elements for all the passes are the industrial and drinking water sources, because along the passes are several wells of small depth and we can also find construction materials in abundance such as rock, ballast, sand and wood, necessary especially for construction campaigns.

The defense of the passes, as in the case of the other passes, is made at the entrance, on the third most important alignment from the border which crosses on the Meseş and Vlădeasa Mountains, being a strong line, on solid terrain, allowing the enemy few manoeuvre possibilities, especially due to the Şes and Pădurea Craiului Mountains.

In case the enemy manages to enter in the pass, our own troops can fight back along it until the exit in Huedin hollow, where they have defensive possibilities from the adjacent heights.

Attacking the enemy penetrating the Ciucea pass can be made on the direction Cluj-Napoca, Huedin, Oradea, Borş, strongly connected to the other directions from the Someş Gate.

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