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COMPTES RENDUS

GRIGORE ANTIPA, 1921 – Dunărea şi problemele ei ştiinţifice, economice şi politice (The Danube and its scientifical, economical and political problems). Studii şi Cercetări VI, Edit. Academia Română, ed. Dan Munteanu. Reimprimat în 2005, S. C. Roprint S. R. L., Cluj-Napoca: 1-191.

The Danube, the second river in length from Europe (after Volga), of 2,840 km long and with a hydrographical surface of 817,000 km^2 lays between two "black" points: Black Forest Mountains, from Germany, and the Back Sea. Flowing through 10 countries (Germany, Austria, Slovakia, Hungary, Croatia, Serbia, Romania, Bulgaria, Republic of Moldova and Ukraine) it is obvious that it is implied in political problems beside the hydrobiological and economical ones. The Danube is included in a competition of its own evaluation as a navigable way, with the possibility of creating a bound between the Black Sea and the North Sea, by Ludvig Canal (the Danube – Rhine basin, by the Main River).

Following these premises (the bound between western and eastern Europe, the interest of the river-side countries to have access to the Danube mouth as well to the navigation on it), Dr. Grigore Antipa approached the problem of the Danube in all its complexity.

The first chapter is dedicated to the world importance of the Danube. Taking into consideration the figures representing the length of the river, the surface of the whole basin, the maximum flow (35,000 m^3/sec. in 1897) and the medium ones (7,253 m^3/sec.), the author makes a comparison between the Danube and the Volga, the longest European river.

But because of its geographical position and the fact that it crosses Europe, the Danube has a higher international importance, it being „...calea naturală cea mai dreaptă care leagă ţările industriale din centrul şi apusul Europei cu ţările agricole şi bogate în materii prime din estul Europei şi sud-vestul Asiei şi chiar cu ţările îndepărtate din sudul şi estul Asiei" („… the most straight natural way which bounds the industrial countries from central and western Europe with the agricultural countries, rich in raw materials, from eastern Europe and South-western Asia and even with the remote countries from South and East Asia").

Dr. Grigore Antipa underlined the world importance of the Danube, citing the first king of Romania. When the latter was adviced "… not to accept the crown of a country without future", Carol I, showing on a map, said that "pe aici trecând linia cea mai dreaptă între Europa şi Indii, acestei ţări îi este rezervat încă un mare rol în comerţul mondial" ("because through this country the most straight line between Europe and India passes, this country will have an important role in the world trade").

The second chapter is dedicated to the knowledge of the Danube Basin, with its relief and drainage slopes, precipitation and evaporation regime, structure and permeability of the ground, fauna, vegetation, etc. Complex knowledge of the Danube basin leads to a better understanding of its present flowing, its relation with the other river basins, and further, even to the explanation of the people migration and their settlements in the past, as well as to the perspective of the economical and political relations.

Therefore, in the fragment dedicated to the genesis of the Danube basin, it is explained the state of the European continent 20-30 million years ago, when western and eastern mountain depressions were covered by the Sarmatian-Tethys Sea, giving to the southern Europe the aspect of a mixture of islands and straights. From that sea, the Caspian Sea and the Black Sea resulted, and in the rest of the depression, the Danube basin formed. Its bed was the result of a long evolution and erosion activity, transporting and depositing of the hard material of the earth crust of that region. Northwards, the limit of the Danube basin coincided with what Antipa called "*the continental ridge*" which divided the continent (excepting the rivers of the peninsulas) in two slopes: North-western region, narrow with a drainage channel towards the Atlantic Ocean and the North and Baltic Seas; South-eastern region, wider, with the drainage channels towards the Mediterranean and Caspian Seas. By the opening to the Rhine basin, the Danube was linked by the western countries of Europe, and to the Regensburg it passes through the Passau, Linz and Viena ravines and forms the upper flow of the river.

The middle part of the Danube basin is at the Czech Moravia mouth till the Iron Gates. From the Iron Gates the lower part of the Danube begin, with an important opening to the Black Sea, which permit the prolongation of the navigable way in the waters of the Black Sea, towards the countries of the Tigris and Euphrates, to Georgia and the basin of the Caspian Sea, linking it the large trade way towards India, and through Bosphorus, with the Mediterranean countries, and through Suez and Gibraltar, to the world navigation and trade large ways.

Antipa considered that we own the harmony of nature and the facilitation of the traffic on the European continent to the Danube basin, since the antiquity allowing the movement of many people, who finally settled and formed the present populations. Also Antipa gave an example for underlining the importance of this river: the transport of Romanian cereals "...care, pentru ca să ajungă la consumatorul lor din Germania, fac un drum pe mare, de 3 ori mai lung decât l-ar face în susul Dunării...." ("…which reach Germany following a road three times longer if they were transported along the upper flow of the Danube…").

Chapter III deals with the formation of the Danube flow, which crosses the mountains through 8 passages. The upper flow is supplied by the tributaries which run from the Alps. The middle flow crosses all mountain chains which link the Alps by the Carpathians.

Chapter IV deals with the lower flow, with the activity of the Danube which is very much impressive. At the confluence with Ialomița river, it divides into two

branches, forming an arch which includes Brăila island, and then penetrates deeply Măcin Mountains.

The characteristic of the lower flow of the Danube is the increasing of the water quantity and decreasing of the flowing slope, which leads to the reducing of the flowing velocity as well to a fluctuation of the discharge (maximum 35,000 m^3/sec, minimum 2,000 m^3/sec). This presumes the existence of a large floodplain. Antipa considered that floodplain a „supapă de siguranță a fluviului în timpul creșterilor" ("…safety valve of the river during the increasing of its discharge").

Thus, in the paper it is approached the difference between the minor river bed, where the water flows in a normal state, and the major river bed, with flooded lands. The period and the duration of the discharges generate a production directly proportional to the flooded surface.

Chapter V deals with the scientifical and practical problems of the Romanian Danube. The first part refers to the previous chapters on the evolution of the river and the regime of its waters, crating subjects for geologists', geographers', hydrologists', zoologists', botanists' work, and even for the historians', archaeologists', prehistorians', anthropologists', all being excursions in the field of the "pure sciences". The second part refers to the applications of the scientifical researches for solving some economical and technical problems in which the Danube is implied, in order to use this natural richness where technicians, agronomists, zootechnicians, hydrobiologists, pisciculturists, forest rangers, hydrotechnicians, chemists, etc carry on their activity.

Giving example the improvements made at the Razelm Lake, for the maintenance of the regular discharge channels and for the fish migrations, Antipa pleaded for the increasing of the fish production of the Danube waters. He proved that there are enough funds for such kind of works „...căci ele se plătesc singure, în scurt timp, din propria lor producție, ci numai mai multă seriozitate și bunăvoință și mai puțină birocrație și politicianism..." ("because they pay themselves, shortly, from their own production, but it is necessary more seriousness and goodwill, and less bureaucracy and politics"). Only a serious exploitation regime of fishing, prohibition during reproduction and sparing the young fish are necessary.

Regarding the evaluation of the large surfaces of the Danube floodplain, Dr. Grigore Antipa was against the damming of the Danube which could lead to the increasing of the water level and the crashing of the dams, villages and towns from the left bank of the river might be devastated. The Danube mouth could get stuck and „...terenurile apărate ar pierde cu timpul valoarea lor" ("the protected lands might lose from their value"). Separating the marshes from the river, the first ones could become unproductive. „Îndiguirile trebuiesc doar restrânse la acele terenuri mai înalte care se potrivesc pentru a fi exploatate, iar acestea trebuiesc amenajate pentru a fi exploatate prin cultură alternantă de agricultură cu pisciculturǎ: adică fiecare teren să fie împărțit cu diguri în mai multe bazine și fiecare bazin va servi câțiva ani la culturi agricole și apoi să fie inundat pentru a servi la cultura intensivă a crapului ș. a. m. d." ("The dams has to be made only on the higher lands, which are proper for being exploited, and they have to be prepared for an alternative cultures,

agricultural and fish breeding: i. e. each land to be divided by dams in several basins and each of these basins to be exploited with different cultures, for several years, and then to be flooded for an intensive carp breeding, and so on").

Besides the lawns and hayfields from the flooplain, Antipa considered necessary a better evaluation of the reed (which cover a surface of 270,000 ha in the Danube Delta), club rush, horse chestnuts, medicinal hubs as well of the marsh forests of willows, poplars, etc.

Considering the soil fertility of the Romanian Plain and the low summer precipitations, Antipa raised the irrigation problem, by which „...suprafețele udate vor deveni tot mai mari și culturile mai bogate..." ("... the wet surfaces would become larger and larger and the cultures, richer and richer ..."). On the other hand, the 30 m level difference along the Danube flow, from Turnu Severin to Moldova (a shortcoming for navigation), can be used as an advantage for the electric power production, this idea being fulfilled later, by the Iron Gates I and II electric power plants.

Chapter VI is dedicated to the navigation on the Danube, which is linked by the basins of other rivers, either for reaching other seas or „... pentru a aduna mărfurile din toate părțile și a le aduce spre Marea Neagră. Barele de nisip de la gurile Dunării, bancurile mișcătoare de pe traseu și stâncile din albia de la Porțile de Fier sunt între obstacolele naturale ale navigației. Politica separată a fiecărui stat riveran la Dunăre este în defavoarea interesului comun, de a-și juca rolul ei mondial iar regulamentele de navigație și textele impuse de unele țări sunt obstacole de natură politică" ("... for gathering wares from all directions and to transport them to the Black Sea. Sand barriers from the Danube mouth, moving islets along the river flow and the rock from the Iron Gates are natural obstacles of navigation. The separate politics of each riverside country from the Danube is against the common interest, because they play their part in world politics and the navigation rules and the compulsory fees are political obstacles").

Antipa underlined the above-mentioned idea considering that the navigation on the river is more expansive than on the sea, and along the Danube there aren't enough ports. The Danube mouth assure 2/3 of the Romanian export on water (80% from the total export), while Constanța – only 1/3. The European Council, funded in 1856, supported Romania only for two years in front of the idea of closing the Danube mouth in order to protect the traffic in the Odessa seaport and of a probable dominance upon Moldavia and Wallachia.

Chaptyer VII is entitled „Regimul Dunării în urma tratatelor de la Paris" ("The Danube regime after the Paris convention") by which the navigation regime on the Danube was established.

Antipa considered that the main problems of the Danube are: „ punerea și menținerea în cea mai bună stare de navigabilitate a întregului fluviu și gurile sale, astfel ca să poată circula pe el vase de un tonaj cât mai mare; legarea Dunării prin canale cu basinele celorlalte fluvii; asigurarea libertății navigațiunii pentru vasele de comerț ale tuturor națiunilor, cu respectarea deplină a drepturilor de suveranitate ale riveranilor și cu excluderea oricăror interese lăturalnice și tendințe de acaparare și

monopolizare sau de amestec în afacerile care decurg din acest drept de suveranitate" ("the arrangement and maintenance of the whole river and its mouth for a good navigable state, so that high weight ships to transport the wares; to bound the Danube by the other river basins by canals; the assurance of the free passing of all trade ships, no matter the country they belong to, with the full respecting of the riverside countries and the rejecting of all inside interests and tendencies of monopolizing and interfere in the business affairs of the sovereign countries"). These requirements presume the organization of the riverside countries towards a common work.

Chapter VIII presents the interest, importance and obligations of Romania on shipping on the Danube: the maintenance of the waters in a good state using the improvements brought by the modern science and techniques; to attract the river and sea trade and permitting the circulation and trade for everybody.

Chapter IX presents the statute project of the Danube, established during the Paris International Conference. Antipa shows his disapproval and take up attitude against the menace to the fundamental rights and interests of Romania, his protest to the attitude to some proposals made by Romania. Antipa was convinced that such an important problem and so topical as the Romania's rights to the Danube can be solved by a clear situation, which can generate a real and durable friendship between countries, on the base of the mutual respect of their own rights and interests.

Chapter X, „Chestiunea Stari-Stambul" ("Stari-Stambul Problem"), presents the Romania's fight for resisting at the mouth of the Chilia Branch, within the conditions in which the problem of a new border of the territorial waters was raised. Only the changing of the relations between countries led to a convention to spare the fishing, approved also by the governments of Russia, Serbia, Bulgaria and Hungary.

As regards this problem, Antipa submitted a statement, in 1896, on the border of the marine waters at Stari-Stambul mouth, which underlined not only the problem of losing or gaining a sea surface but also the problem of the Danube. Clarifying the ideas of geophysics, mouth, estuary, barrier and thalweg, and that of international rights, on the one hand, and knowing that the Black Sea do not have tide, and the Danube mouths are enlarged like an estuary, the sea water can stretches the coast line which forms the line between land and sea. Taking into consideration the characteristics of the Stari-Stambul mouth, Antipa showed the correct limiting line of the territorial sea, established on the basis of the perpendicular principle on the general direction of the coasts. According to this line the Snakes Island (Insula Șerpilor) was recognized as belonging to the Danube Delta.

Dr. Grigore Antipa's way of thinking, basing on his deep knowledge in biology, in general, in hydrobiology but also his economical and political spirit gave us an everlasting work, which kept its actuality in its fundamental aspects, now at the beginning of the 21st century.

Just by this actuality of the themes approached by Dr. Grigore Antipa, the book „Dunărea și problemele ei științifice, economice și politice" ("The Danube and its scientifical, economical and political problems") exceeds the specialists interest, addressing to all Romanian people and the citizens of the riverside countries.

These are the reasons why I congratulate the editor Dan Munteanu, president of Council of Nature Protection within Romanian Academy, for the idea of republish the book and I advice everybody to be curious in finding out the problems raised by Dr. Grigore Antipa, over 80 years ago. Will be no regret!

DUMITRU MURARIU

NEGREA ȘT., NEGREA A., ARDELEAN A., 2004 – Biodiversitatea în mediile subterane din România. Inițiere în biologia, ecologia, conservarea și protecția mediilor subterane terestre și acvatice. Mic dicționar de termeni. (Biodiversity in the subterranean environments from Romania. Initiation in the biology, ecology, conservation and protection of the subterranean, terrestrial and aquatic environments. Little dictionary of terms). „Vasile Goldiș" University Press, Arad: 1-248.

The senior author and his distinguished wife, Dr. Alexandrina Negrea, both from „Emil Racoviță" Institute of Speleology keep a permanent collaboration with „Grigore Antipa" National Museum of Natural History from Bucharest. Collaborating with Prof. Aurel Ardelean, they succeeded to write this book on the biodiversity of the subterranean environment and not only about it. The subjects were previously approached, partially, either in the chapters of some syntheses or in the courses of the Summer School for the amateur speleologists, initiated and organized by Dr. Ștefan Negrea.

Correlating the personal information with those of some other Romanian and foreign speleologists, they structured this work in 8 chapters (besides the selective bibliography with 220 titles), to which the first author added a dictionary of 190 terms and phrases used in the ecology of the terrestrial, aquatic and subterranean environments and their fauna. Excepting the glossaries which end some syntheses published abroad, this dictionary is the first one of this kind, published in Romanian. With it, the author tries to make uniform the nomenclature in this field.

Chapter 1, dedicated to the Romanian biospeleology, for which the authors point out three periods in the knowledge evolution of the creatures from the subterranean environments: up to 1907; 1907-1947, also named Emil Racoviță period; from 1947 till today, named the modern or present period.

The discovering of an insect outline engraved in a *Bison* bone, in the „Trois Frères" Cave from the Pyrenees, permitted to the biologists to fix the first biospeleological event 20,000 years ago. For the Romanian space, the zoologists' contributions from the ex Austro-Hungarian Empire were mentioned. Since the second half of the 19th century they reported different invertebrate and vertebrate species also from the caves of the Western Carpathians.

The second period coincides with the beginning of the 20th century, when the term of "speleology" was clarified, and Emil Racoviță discovered the isopod *Typhlocirolana moraguesi*, in Cueva del Drach from Mallorca, on 15th of July 1904. On this occasion, Racoviță explained the influences of the subterranean environment on the evolution of the creatures. By „Essai sur les problemes

biospéologiques" (Essay on the biospeleologic al problems) (15th of May 1907), he laid the foundations of biospeleology, „știința formelor de viață a mediului subteran" (the science of the life forms from the subterranean environment), therefore being considered the founder of this science.

The results of the expeditions made in caves by Emil Racoviță and his collaborators, René Jeannel and Pierre Chappuis, were published in the 8 volumes of the series „Enumération des grottes visitée" and the 81 issues of the series „Biospeologica", during 1907 – 1958.

Leaving France in 1920, the savant Emil Racoviță founded the first Institute of Speleology of the world in Cluj, thus becoming the world research centre on the subterranean fauna. Exploration of over 800 caves from Europe and North Africa, and the collecting of over 20,000 samples were the base of the researches, which later were published in „Biospeologica". Contributions made by René Jeannel, Valer Puşcariu and by some naturalists in exploring the caves of the Carpathians and the Dinaric Alps, the using of „Karaman-Chappuis" method by Pierre Chappuis, Prof. C. Motaș and their collaborators for collecting the hyporheic fauna, as well the contributions of some Romanian and foreign zoologists in the identification of the collected materials creat a very good image of Emil Racoviță's period.

The third period, marked by Emil Racoviță's death, characterized by the activity decreasing within the Institute of Speleology from Cluj and by the appearance of a new team of specialists from the Faculty of Biology from the University of Bucharest, who carried on a study on the chiropterans and the invertebrate fauna from guano deposits. Thus, on the 1st of June 1956, the Institute of Speleology was refounded, with the headquarters in a Bucharest and a branch in Cluj. The new director, Prof. Constantin Motaş, continued Racoviță's ideas and wishes, extending the study of the subterranean fauna, continuing the study on the populations, and starting the study on the postembryonic development in different cave species, at the Speleological Station from Cloșani, founded in this respect.

The extension of the biospeleological explorations in all karstic areas of Romania and the organization of expeditions abroad generated the necessity of an evaluation of the research results in foreign languages. Therefore the journal „Lucrările Institutului de Speologie" (Papers of the Institut of Speleology) published by Racoviță in Cluj (1926 – 1939) was taken over with the title „Travaux de l'Institut de Spéologie Émile Racovitza" (Papers of "Emil Racoviță" Institute of Speleology).

Chapter 2 deals with the subterranean flora and fauna from Romania. It is mentioned that underground the flora diversity is slightly remarked in the subterranean environment although there the bacteria, fungi, algae and moss occur. It has to be mentioned that in the glacier from Scărișoara it was discovered pollen of about 3,000 years old.

Terrestrial fauna is much better represented by about 250 subterranean species. From the invertebrates, the oligochaete worms, gastropod molluscs, isopod crustaceans, arachnids, myriapods, and not the least, the insects, represented by Collembola, Thysanura, Psocoptera, Hymenoptera, Trichoptera, Lepidoptera,

Diptera, Coleoptera and Siphonaptera are presented. From the vertebrates, only the salamander (from the amphibians), some reptiles from the vestibular area of the caves, the foxes, badgers, some rodents, insectivores and bats, from the mammals, are mentioned.

The presentation of the terrestrial fauna ends with an identification key which includes all groups mentioned above.

Aquatic subterranean fauna is represented by about 200 stigobionts and stigophilous species, most of them being endemic species or have a very limited range. An identification key of the groups of the aquatic subterranean fauna ends the second chapter.

In chapter 3 we learn about the collecting and preserving methods of the subterranean fauna, indicating where and when the creatures has to be caught, how they can be fixed and preserved, how the biospeleological record cards are made and completed. Referring to the small populations of the subterranean animals, the authors underline the interdiction of the quantitative collectings.

Chapter 4 presents the karstic and biospeleological map of Romania, mentioning that the carbonic rocks cover a surface of only 4400 km^2, because the field and depression areas are covered by the Piocene and Quaternary deposits. Therefore, the main karstic areas occur in the Southern Carpathians, Western Carpathians, Dobrogea, Eastern Carpathians and only small surfaces from Moldova and Transylvania tablelands. According to the characteristic endemic troglobiontic species (which belong mainly to coleopterans, diplopods, chilopods, isopods, spiders and pseudoscorpions) Romanian karst is divided into five biospeleological regions: Eastern and Southern Carpathians till the Olt valley, Southern Carpathians between the Old and Timiş-Cerna valley, Western Carpathians or Banat Mountains, Western Carpathians or Apuseni Mountains, north to Mureş valley, Dobrogea.

Chapter 5 presents the subterranean, terrestrial and aquatic ecosystems of Romania, mentioning that besides cave we have to take into consideration the cleft nets, inaccessible to man, artificial cavities and the superficial subterranean environment.

Thus, terrestrial hypogeic environments can be deep (speleic, cleitric, phodinic) or superficial, in contact with lower horizon of the soil.

Edaphic environments (with similar fauna with that from caves) include euedaphic environment (mineral soil), pholeic environment (burrows, nests, galleries of animals) and hemiedaphic environment (humus), as a receiver of species for populating subterranean environments.

Lapidic environment (fixed stones in soil); tanatostromic environment (dead leafs and other decaying vegetal remains); saproxilic environment (e.g. rotten wood, a refugee for saprotrophic animals) and mossy environment (vegetal moss) are direct annexes of the soil.

Among the characteristics of the subterranean environments, for the terrestrial subterranean section there are: obscurity, temperature, relative humidity, ventilation, air composition and trophic factor, responsible for the distribution and abundance of the terrestrial subterranean fauna.

For the aquatic subterranean section, the obscurity and temperature are common elements with the first section. But the flow, current and water level generate the variation of the aquatic section surface. The chemistry of the karstic waters is responsible for the digging of the caves, for their silting, and the trophic resources are essentially or even exclusively allochthonous.

Characterizing the ecology of the subterranean aquatic microorgasnisms we have to take into consideration the oligotrophic of the underground waters, the value of the abiotic factors (hydrostatic pressure, pH, salt concentration, the size of the interstitial spaces), and then the number of the microorganisms correlated with the trophic state of the area and with the water depth.

In chapter 6 it is underlined the necessity of the conservation of the subterranean habitats from Romania and their fauna. The rich biodiversity of the subterranean environments from Romania and of the world (with the about 7,800 troglobiontic and stigobiontic species) is threatened and presumes efficient protection measures.

Among the causes of the deterioration of the terrestrial subterranean environments the authors mention the destroying of the habitats by: clearing of the karstic areas, lime exploitation as well of the other limy rocks, modification of the hydrographical net within karstic areas, the cutting of the slopes for road and railway constructions, guano exploitation from caves, preparation of some areas for mushroom cultures, wine deposits, etc.

Other causes are the excessive visiting of the caves, unprepared for tourism, excessive touristy exploitation of the caves, vandalism.

Pollution with chemical products and bacteria are some of the causes of the aquatic environment deterioration, and the interstitial environments are destroyed by the exploitation of the gravel and sand from the river, lake and sea beaches, as well by the chemical and accidental pollution.

As a protection and preservation methods of the environments and subterranean environments, it is mentioned the Romanian biospeleologists' main objective: the inventory and classification of the caves and species which need protection and the editing of the "Red List" of Romania, before the caves destroy and the troglobiontic or stigobiontic species disappear.

Chapter 7 deals with the influence of the speleic environment on man, beginning with the primitive men and continuing till the modern men's explorations in order to use the mineral resources, drinking water, mushroom cultures, etc., as well as the man's experimental attempt in understanding better the physiological and psychological mechanisms within cave conditions. Speo-therapy carried on in several Romanian caves diminish the sicknesses of the respiratory apparatus, and the sportsmen's trainings in salt mines are 6 times more efficient than at the surface.

Chapter 8 analyses the biodiversity of the subterranean environment according to the modern evolutionary theories, many of them originating in the experiments and the study on the cave, terrestrial and aquatic animals. For colonizing the speleic environment it was necessary to adapt some epigeic species to the poor trophic resources, to the interruption of the genetic drift with the surface

populations, to the evolutive lack of balance. The ways by which the species evolved within the speleic environment are carried on by convergence, parallelism and divergence, by intermittent equillibria, by the behaviour and form changing and by the "regressive" evolution, a path towards biological progress, according to Acad. Nicolae Botnariuc.

The authors of „Biodiversitatea în mediile subterane din România" made a very good exercise of a synthesis of the biospeleological knowledges, from the origin up to now, with a rich documentation from the global biospeleology and underlining the originality of the Romanian one. Specific aspects from the subterranean, terrestrial and aquatic environments from Romania are substantiated and compared with those from France, U.S.A., Switzerland, Netherlands, Spain, Austria, Italy, England, ex-Yugoslavia, Poland, etc. or are pointed out as global reference marks.

Such a local approach (from Romania) to the world biospeleology give the book a wide scientifical horizon, useful for the specialists of this field, or for the amateurs who want to familiarize with the mysterious underground world, where the savant Emil Racoviță distinguished by defining and laying the bases of biospeleology.

From this perspective, I congratulate the authors for the logical plan of this synthesis and I recommend it to be printed in a wide circulation language.

DUMITRU MURARIU

GEACU SORIN, 2002 – Colinele Covurluiului – Potențial ecologic. Comunități biologice. Modificarea antropică a peisajului geografic (Covurlui Hills. Biological communities. Anthropic changing of the geographical landscape). Editura Univers Enciclopedic, București: 1-338.

The ex-county Covurlui, with the capital Galați, together with the southern part of Vaslui County, belong to the southern areas of Depression of Moldova, a region influenced by the continental climate of the Ukrainian steppe, with lawns with xerophilous or subxerophilous species, with oak forests spread according to the hilly relief. Even the first name of the studied area was "hilly massif of Covurlui County".

The geo-ecological study made by the author deals with the geographical landscape, on the one hand, and on the other one, with the impact of man's intervention on the landscapes of the area.

From Prof. Cristina Muică's foreword I kept the specific aspects of the Covurlui Hills, regarding their natural potential with the plant and animal world, and with the anthropic influences on this geographical unit.

Even the author divided this book in three parts: one general, with the social relations and the research history, the second being an analysis of the components of the geographical landscape, the third referring to the anthropic modifications of the

geographical landscape, mainly the natural reservations, protected plant and animal species.

The first part deals with the limits of Covurlui Hills, which have a surface of over 1,360 km^2, between 45°45' – 46°12' lat. N and 27°33' – 28°07' long. E. Northern limit is marked by the valleys Jeravăț and Horincei, with hights up to 200 m and only punctiform – up to 300 m. Westwards there is the floodplain of Bârlad River. Eastwards there is the right bank floodplain of Prut River, but the author also mentions that the relief has the same features (Tigheci Depression of Republic of Moldova). Southern limit is marked by the Covurlui Plain (marked in fig. 1), from Tecuci Plain till the Prut Flooplain. So, Covurlui Hills are in the Depression of Moldova, at 250 km far from Rădăuți-Prut and at 40 km far from Galați.

As regards the name, it is presented the evolution of this region name, from "the hilly massif of Covurlui County" to "the Hills of the southern Moldavia", "Slope of southern Moldavia", "Bereşti Platform, Depression, Hills" or „Covurlui Hills". Also, it is presented the research history, where the author underlines the contribution of the geomorphology school of Iași. The author himself had some contributions on the structure, distribution, spatial dynamics of the quercinee forests or on the alarming diminishing rhythm of these forests under the influence of the anthropic factor.

The second part of the book, of 210 pages, i.e. 2/3 of the whole, is a nalysis of the components of the geographical landscape, relief, climatic potential.

Quatitative and qualitative aspects of the relief regard only the maximum altitudes of only 306 m, almost half of the territory having 100-200 m altitude.

Deep level of the valleys or the maximum energy of the relief is of 151-165 m deep, especially in North of Covurlui Hills. The smallest values (26-50 m) occur in western side of the hills, and under 25 m, at the limit with the Covurlui and Tecuci plains.

The appearance and the dynamics of the geo-morphological processes, which generates different shapes in covurlui Hills, are determined by the inclination of the sides, with values between 1°-45°.

The evolution of the hydrographical net according to the monoclinal structures and deluvial processes generates the appearance of the sides of slopes, which cut the end of the strata and are conversely directed in comparison with the inclination of the strata. Westwards slopes has a moderate or a pronounced inclination (50-260), and the northwards ones with slopes of 14°-45°, considered very and extremely inclined. The author points out that the most hard rocks from Covului Hills are clays and marls.

Knowing that the insolation degree is determined by the pedological and atmospheric humidity, the displaying of most of the west- and eastwards slopes divides the first in semi-sunny and semi-warm, respectively in semi-shadowed and semi-cold. Northwards slopes are shadowed and cold, and the southwards ones, sunny and warm. This insolation influences the photosynthesis process of the vegetation from Covurlui Hills.

The temperate-continental climate of the Covurlui Hills is generated by the global solar radiation, atmosphere dynamics and the characteristics of the active subjacent surfaces (relief, slope, displaying of the slopes, etc.).

The underground waters depend on the hydric potential and on the hydrographic net from the Prut and Siret basins. The 24 identified lakes (natural, anthropic and ponds) have different surfaces, and some of them dry when drought.

Chapeter 3 presents the biological communities with their distribution and vegetation types, and the fauna at the level of the oak forests, xerothermal forests, forest-steppe areas and of the floodplains. The author identified the Crimea beech in the area for the first time. A special paragraph is dedicated to the species of hunting interest, with their distribution and estimation of their populations in different years, of some bird and mammal species, as well as to the problems raised by the protection of the game and hunting equipment.

Natural phenomena (snowfalls, storms, invasions of some animal species as the locusts in 1939, 1946, 1952, 1954 etc., then caterpillars and rats with population explosions between 1947-1948) have a negative impact on most of the game.

Chapter 4 deals with the analysis of the soil. The distribution and estimation of the clayey soils (podzolite), molisoils (chernozems), hidromorphs and of the unevolved or oppened ones (regosoils, psamosoils, alluvials, coluvisoils, clearsoils and erodisoils), each with the thickness of its horizon and physical and chemical characteristics, mark their destination for different cultures and forests.

This chapter ends with the characterization of the pedological fund, indicating the percentages of each soil class.

The 3rd part of the book approaches the anthropic modification of the geographical landscape, protection of nature and landscape division of the Covurlui Hills. The author considers that the geographical landscape of the region is the result of man's intervention along the time. In this respect he make an excursion in the populating evolution of the Covurlui Hills, just from paleolithic, today reaching 76 localities with a density of 56 inhabitants/km^2.

Using of the terrains and the forest cuttings led to the decreasing of the afforested areas from 70% during Dacian's period, to 60% in the second half of the 18th century, to 25% in 1853, and to only 13,378 ha, today. Now the cultivated lands, lawns, hayfields, vineyards and orchards are prevalent.

As it was expected, after cutting the degradation singes appeared. Also the need of wood led to the diminishing of the surfaces covered by quercinee, therefore locust, oak, pine, lime, walnut, mulberry, ash trees were planted. The author considers that the anthropic pressure oscillated along the time, with cutting till in 50's, then with afforestations till 1989, and a new cutting period after 1990.

Chapter 6 is dedicated to the conservation of the biodiversity and habitats, the more so as the landscape is strongly anthropic even after some eco-protecting measures taken in 1972 and the first natural reservations are in Covurlui Hills since 60's. Besides the forest reservations (Tihuleşti, Pogăneşti, Breana and Fundeanu) and the paleontological ones (Bereşti), there are some plant species having the stature of Nature Monuments (*Paeonia, Galanthus, Scorzonela, Gagea, Centaurea,*

Silene and *Fraxinus*) and some protected animals: *Egretta alba* and *E. garzetta, Ciconia ciconia, Corvus corax, Ardea purpurea, Plegodis falcinellus* etc., a series of insectivores, rodents and carnivores.

Chapter 7 presents the idea of geographical landscape, as a result of the intervention of the physical-, economical-geographical factors, with spatial, physical, biological elements or aspects of the human life. For the studied area 3 landscape types are mentioned: forests with important surfaces at the level of oak, lawns, cultivated lands and spread settlements on high hills; almost the same elements on north-north-west-/south-south-east- and north-southwards hills; cultivated lands, rare afforested surfaces and compact localities, on low hills.

Chapter 8 consists of 7 pages of general conclusions on the Covurlui Hills within the context of the durable development. This concept implemented to the Covurlui Hills regards an agriculture which has to protect the soil and water resources, maintaining the best habitats, necessary to the wild flora and fauna.

As regards the forests, the durable development presumes the gratification of the ecological, economical, social, cultural and spiritual requirements of the present and future generations. Also the lawns need a durable management by specific agrotechnical works.

Similar to these conclusions, an abstract in English allow the foreign readers to inform on this complex analysis made by Dr. Sorin Geacu.

If papers dealing with the geomorphology and hydrology of this region were already published, the chapters regarding the climate, vegetation and fauna are the first analyses published on this geographical unit. That is why I consider that it is one from a few papers written by a geographer where a detailed analysis of the biogeography is made.

The book is not read easily. It has to be studied very attentively. It is very concise in multidisciplinary information. It is very important for the teachers, students, geographers, geologists, rangers, agronomists, botanists, zoologists, and not the least, for scientists and professors. In fact, it is a monograph paper of the Covurlui Hills put at our disposal by Dr. Sorin Geacu.

DUMITRU MURARIU

CONSTANTIN DRUGESCU, 2003 – Compendiu de zoogeografie generală. (Compendium of general zoogeography). Editura Granada, Bucureşti: 1-184.

After the bases of bio-geography were laid by Sclater (1858), Huxley (1868), Wallace (1876), at worldwide level, or by Racoviţă (1926), Borza (1931), Călinescu (1931), Boşcaiu (1971), Bănărescu (1960, 1966, 1970), etc., for Romania, Dr. Drugescu published the second paper, “Compendium of general zoo-geography”, after the “Zoo-geography of Romania” (1994).

This book deals with the data on the distribution of Romanian terrestrial animals, with examples of faunal elements from different bio-geographical regions, according to variation of the ranges and of the environmental factors.

Dr. Constantin Drugescu's book is structured in 8 chapters, with 77 maps, most of them with the previous and present distribution of some animal species, according to the paleogeography of different geological periods. A number of 15 global zoogeographical schetches are added to the 77 figures.

Chapter I is dedicated to the concept of "biosphere". After the mentioning of the physical-chemical characteristics, the qualitative and quantitative, structural and distributional ones (vertically and horizontally) (Fig. 4) he underlined the six ideas which support the importance of the biosphere: the assurance of the matter and energy circulation, decaying elements, formation of the soil, formation of organogenic, sedimentary and caustobiolitic rocks (peat, coal, oil, amber, bitumen), formation of the relief by clogging and coraligenous rocks, water filtration by the physiology of some aquatic organisms.

Chapter II underlines the study of zoogeography, as a branch of biogeography and comparable with phytogeography. The branches (ranges, ecology, history, genetics) mark the distribution of different species, their living conditions, fauna evolution, origin place (as centres of evolution and of repopulation) and the global division (in regions, subregions, provinces, districts), according to the resemblances and differences of the respective regional unities. The author mentions also the man's place, detached by biosphere when the first primitive groups were formed and when the first rational mental processes appeared, which allowed him the control on direction, speed and on the biochemical and biological processes from nature.

Chapter III deals with the working principles in zoogeography, in order to point out the geographical and biological methods of biogeography, in general, and mainly those of zoogeography.

The using of some spread coefficients, the mapping of the observations made in the field and their geographical conveying allow the knowledge of the special distribution of the species, the graphical expression of the observations and the underlining of the zoogeographical groups to which the analyzed species belong as well as of the environmental factors which determine their range.

Chapter IV enumerates the theories and hypotheses on the origin of life on Earth, evolutive succession of plants and animals from the archaic protobionts and acariote to the eucariote of the lower proterozoic, to the cormofite psilopside with trilobites, gigantostraceans, corals, brachiopods. Among the formation mechanisms of fauna there are: adaptive autochthonous radiation, repeated or continuous colonization from a unique source or from several sources, the fusion of two faunas and the adaptation to a specialized habitat.

Chapter V mentions the internal factors (the reproduction and dissemination power, living hope, ecological amplitude and adaptive plasticity) and the external ones (cosmic, telluric, ecological and paleogeographical) which are reponsable for the distribution of the creatures all around the world. The correlation between this

distribution and the climate is reflected by the presence of the biogeographical areas, and the biological groups represent azonal or interzonal biogeographical formations.

From the intercontinental passing bridges of the animals, which allowed the formation of the faunal transition areas, two of them vanished (Sicilian with the Gibraltar bridges and the Bering bridge), and other two (Panamanian and Indonesian) are considered active, permitting the migration of the animals between continents or between the great rifts of the earth crust.

Chapter VI presents the currents (regionalist, historical, genetical and ecological) of biogeography and the theories of the respective currents: of the zoogeographical regions; the palaeogeographical ones (the permanence of the continents and oceans, of the continental bridges or of the intermediary continents, of the swinging and moving of continents); northern theory; theory of the restricted relicts and of the adaptive radiation; theory of vicariousness; phyletical theory; theory of hologenesis; theory of the biogeographical insularity or of the biogeographical equilibrium.

Chapter VII represents almost 1/3 of the entire book and it is dedicated to the complex spatial unities, in antitheses with the dry land and acvatorium. Such kind of unities (e.g. ranges) are determined by pelaeogeographical, geomorphological, ecological and biological factors, the last ones requiring a special attention because the reproduction, growing, developing and distribution of animals depend on them. The components of the ranges have different values (height, surface, thickness), according to environmental conditions and the requirements of the species which populate them. They have a continuous or discontinuous shape and are in a continuous movement.

The zoogeographical division is rather complicated than the phytogeographical one because of the large mobility, especially of the birds and mammals. After the divisions made by Sclater (1858) and Wallace (1876) in 6 zoogeographical regions, by Bobrinski (1953) in 8 regions, or by Bănărescu (1970) in 9 regions, Boşcaiu and Bănărescu's (1973) division is cited more often, i.e.: Holarctic, Indo-Malayan or Oriental, Ethiopian, Malagasy, Neotropical, Australian, New Zealander and Polynesian.

Chapter VIII deals with the voluntary and involuntary modifications of the fauna generated by human activites, which influence the spreading or, on the contrary, the restriction of the ranges of different species. Hunting, fishing, taming and colonization are some of the voluntary modifications. Among the involuntary modifications there is the introduction of the domestic animals in different regions. It is classic now the introduction of the domestic dog in Australia, positive in the beginning, and negative later, when Dingo started to decimate the marsupial wolf *Thylacinus cynocephalus*.

Although this is a zoogeographical compendium, in the book there are comparisons and references to biogeography and phytogeography.

Reading the book, I consider necessary to make two suggestions:

- at page 53 it is better to mention that the Tarsiidae are intermediary between lemurians and simians. Maybe, the confusion is due to the using of an older

classification, where the 3rd suborder is Anthropoidea. Anthropoids deal only with the gibbons, orangutans, chimpanzees and gorillas;

- at page 115, where the range types are presented, it was better to refer to the cosmopolitan, endemic, relic-like species (and not to ranges).

Otherwise, the book is a real synthesis of general zoogeography, with the basic definitions presented more didactic that in other publications in Romanian. It clarifies the meanings of the terms used in zoogeography, to present the main hypotheses and theories, especially in biogeographical division. Therefore, I appreciate Dr. Constantin Drugescu's huge efforts to provide a useful book for students, professors, specialists and scientists who work in the field of geography, geology, biology, silviculture, zootechny and agriculture.

Today, just in the moment when I'm writing these lines Dr. Constantin Drugescu passed away unexpectedly. We regret and consider that a great loss for biogeography.

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