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## 140 YEARS SINCE GRIGORE ANTIPA'S BIRTH

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Abstract. Romanian scientist Grigore Antipa's main ideas are pointed out again on the occasion of the 140<sup>th</sup> Anniversary since his birth. Topicality of Antipa's scientific papers as well as the evolution of his important institutions are also mentioned.

Résumé. Les principales idées de l'entière activité du savant roumain Grigore Antipa sont mentionnés de nouveau à l'occasion de la 140<sup>ème</sup> anniversaire depuis sa naissance. On mentionne aussi l'actualité de ces travaux scientifiques, de même que l'évolution des importants institutions fondés par lui.

Key words: scientific papers, perennality, institutions, international relations.

On 25<sup>th</sup> of November 1867 (7<sup>th</sup> of December in Gregorian calendar) was the happiest day of the family Vasile Antipa and Zoița Antipa (ex Nicolau), because their son Grigore, one of the future Romanian savants, was born.

Numerous articles and books were written on Dr. Grigore Antipa's life and work: Motaș (1961), Băcescu (1967), Negrea (1990) etc. The last author correctly remarked that when we refer to Grigore Antipa we remind first the National Museum of Natural History which bears his name and which was the dearest achievement of his entire life.

Today, Dr. Grigore Antipa's name is given to many high-schools of Romania (Brașov, Botoșani, Tulcea), to some streets of different localities, and lately, to some prizes of the Ministry of Culture for special contributions to the development, research and revaluation of the National Cultural Patrimony. Within the first years after the December 1989 Revolution even a banknote had Dr. Grigore Antipa's face. Finally, the ex-*Bio-Oceanographical Institute* of Constanța, founded by Dr. Grigore Antipa in 1932, and which, in 1972, it became the *Romanian Institute of Marine Research*, after 1990 it was named "*Grigore Antipa*" *National Institute of Marine Development Research*. It was 1967 when Dr. Mihai Băcescu – Dr. Grigore Antipa's successor in leading the Museum of Bucharest and the oceanological school – proposed when writing about Antipa's projects in the knowledge of the biological mechanisms of the biomass production in the Black Sea: „*Aussi jugeon-nous très heureuse l'initiative du dit département de donner à la Station de Recherches Maritimes de Constanza le nom du grand savant roumain à l'occasion de la commémoration du centenaire de sa naissance, en signe d'hommage pour en avoir jeté les fondements et pour sa contribution à l'étude des problèmes pratiques concernant la mer Noire*”.

On the occasion of 140 years since Grigore Antipa's birth I consider that an homage will be that the "*Danube Delta*" *National Institute of Developing*, which evolved from the *Fish-Breeding Research Station for the Danube Delta* of Tulcea, founded by the savant in 1924, bear his name. In the same respect, for recognizing

Dr. Grigore Antipa's efforts in founding the *Fish-Breeding Farm of Nucet* (now the *Institute of Fish-Breeding Research*), this institution might bear his name.

These proposals are supported by Dr. Grigore Antipa's studies on the Black Sea, began in 1893. After that, he published several papers on its wide features, basing on the Pontic basin of the Sarmatian Sea, together with the Caspian Sea and Aral Lake. According to Antipa, the water of the Black Sea was a mixture of brackish water from the old Tertiary basins, with the salt water of the Mediterranean and the freshwater of the Danube, Nistru, Nipru and Don. Antipa studied physical-chemical factors (temperature, salinity, oxygen content) which are replaced by the hydrogen sulphide over 180 m deep.

He considered, as regards the animal populations of the Black Sea, that there are a few old forms (of the ex-seas – Sarmatian and Pontic) and a number of Mediterranean immigrants: only 30 alga species from a total of 400 Mediterranean species; only 74 fish species from a total of 350 Mediterranean ones – that means only those which could stand the reduced salinity. How valuable remained Antipa's papers on the ecology of the Black Sea! He studied the distribution of the fauna in areas, biotopes and special biocenosis, introducing the term of "*biosociology*" of the Black Sea. Knowing the studies of the Russian scientists and basing on his own results, Antipa established that the fish production of the Black Sea was of 2.4 kg/ha, but in its North-western areas, where feeding conditions were favourable, this production increased up to 50 kg fish/ha. The research programme on the Black Sea proposed by Antipa remained valuable also today.

On the other hand, by his papers, „*Regiunea inundabilă a Dunării*” (“Flooding region of the Danube”) (1910), „*Probleme științifice și economice ale Deltei Dunării*” (“Scientific and economical problems of the Danube Delta”) (1915), „*Dunărea și problemele ei economice, științifice și politice*” (The Danube and its economical, scientific and political problems”) (1921), „*Punerea în cultură a regiunii băltoase a României*” (“Cultivating the marshy area of Romania”) (1927), „*Țelurile politice de stat pentru dezvoltarea, organizarea și punerea în valoare a Pescăriilor României*” (“State political goals for the development, organization and evaluation of Romanian fish-breeding farms”) (1937) and others, Grigore Antipa created the foundation of limnological studies in Romania. The programmes proposed by him in his paper „*Cercetările hidrobiologice și aplicațiile lor practice în România*” (“Hydrobiological studies and their practical applications in Romania”) (1937) permitted later the complex reevaluation of the Delta and of the flooding region of the Danube. He supported the idea that the fish production in the Danube basin is according to the level and duration of the annual floodings. The more the water level is higher during flooding and it lasts longer, the fish production is greater. Grigore Antipa was strongly against irrational damming, wrongly accepted and applied, in order to gain land for agriculture. What can confirm better the savant's idea than the destroying flooding from 1970, 1975, 2005, 2006? Gifted in understanding the natural phenomena, the essence of the complexity of these phenomena, in 1927 he asserted that „... omul poate stăpâni natura cât timp ține seama de legile ei” (“...man can rule nature as long as he minds its laws”).

If there are a few people who understood and appreciated correctly the value of Dr. Grigore Antipa's papers on the floodplains of the Danube Delta, less are those who know the fame of his work all around the world. He was very happy finding that the rotative system proposed by him, i.e. temporary damming and flooding of

the wide rivers, was adopted by the Faculty of Agronomy of Urbana (U.S.A.), for the lower flow of the Illinois River. Then, the great fish farms on Volga, Cura and from the Caspian Sea adopted "Fishing Law", created by Antipa, with prohibition periods for fishing in order to protect the reproducing fish.

Also, not many people know that the organization from the Danube Delta was proposed and supervised by Dr. Grigore Antipa. Since 1907, the canals started to be dug (e.g. the link between Razelm Lake and the Danube, following the old river bed of Dunavăț), for refreshing the stagnant waters, of the pools full of mud which were favourable to the organic substances decaying process and to the poisoning of waters. Digging those canals, fresh water was brought, which allowed the increasing of the fish production (only in Razelm Lake), from less than 400,000 kg/year to over 3,500,000 kg/year. Significant increasing new also the fish production of the lakes Dranov and Babadag.

Aren't those facts sufficient for the *National Institute of Developing for the Danube Delta* to bear the name of the pioneer of the Romanian limnology and hydrobiology? The same name has to be given to the *Fish Breeding Station* from Nucet.

But besides the methodical study of the water regime of the lower Danube, starting from the origin and formation of the river, from the dynamics of the biological elements and the relation between this dynamics and the seasonal rhythm of waters, and, finally, from the abundance or diminishing of fish production, often Antipa was characterized as a good economist. His economical way of thinking was underlined in his conclusion of practical level to his biological studies. Also, the patriotic feeling was proved by his wish to implement all theoretical knowledge on the economy of his country and people.

As regards fish production, Antipa remarked the presence of some very rich resources of aquatic flora and fauna germs in the floodplains of the Danube. These resources are in the soil, in a latent state, surviving to severe cold or tropical heat of the dry summers. In spring, when flooding, these germs multiply and develop. This observation led to the link between fish production of the Danube and its flooding areas.

Floodplains do not have the same level. In some areas, deep depressions form, under the level of the Danube flow and which remain filled with water a longer period of time, fish having good life conditions for developing. If those depths are superficial, common reed will grow in the pool. After the waters withdraw, a rich grassy vegetation will appear, good for grazing. Finally the sand banks, lands at a higher level, never flooded, can be used very well in agriculture, in spring and autumn. In the years when flooding is not too strong and some rivers are lack of water, they can be used as agricultural lands, with a large production of cereals.

Therefore, Dr. Grigore Antipa's scientific discovering got a huge value by its practical applications, by drawing attention to the floodplains, by the alternation of agriculture with fish-breeding and by a series of measures, also proposed by Antipa, for a durable exploitation in fish-breeding. Probably, Dr. Grigore Antipa's most important work, where we can discover the real value of his economical thinking was „*Regiunea inundabilă a Dunării. Starea ei actuală și mijloacele de a o pune în valoare*” (“The Danube floodplain. Its present state and evaluation”).

Here it is what Antipa wrote, on the 11<sup>th</sup> of July 1909, in the foreword of this paper: „*Prin publicațiunea de față se urmărește în primul rând lămurirea unei*

*chestiuni economice: Punerea în valoare a zonei inundabile a Dunării; datele științifice pe care mă bazez nu am putut deci să le expun decât numai în liniile lor generale, întru cât au o legătură mai directă cu această chestiune, lăsând orice detalii la o parte. Cu regret a trebuit dar, din aceste motive, să amintesc numai în treacăt sau să las cu totul la o parte o serie de studii și observațiuni originale, cari ar fi putut contribui la lămurirea unor chestiuni științifice importante sau la cunoașterea mai de aproape a acestor regiuni atât de interesante. Mai cu seamă regret că nu m-am putut întinde mai mult la descrierea bălților noastre atât de interesante, la descrierea faunei, vegetațiunii și condițiunilor biologice generale ale acestor regiuni, la descrierea mai amănunțită a evoluțiunii Deltei Dunării, împreună cu lacurile ei litorale și a fenomenelor extrem de interesante ce o însoțesc*. (“First of all, by this paper I want to make clear an economical problem: The evaluation of the Danube floodplain; I could make only a general presentation of scientific data which I count on, leaving apart any detail. Regretfully, I had to leave apart a series of studies and original observations which could contribute to the explanation of some important scientific problems or to a closer knowledge of so interesting region. Especially, I regret that I couldn’t describe more our interesting pools, fauna, vegetation and general biological conditions of this region, the evolution of the Danube Delta together with its littoral lakes and the extremely interesting phenomena which accompany it.”).

The organization of the fish farms and fish-breeding exploitation presumed intense studies on the topographical, hydrological conditions of lakes, pools and flooding lands, of the Danube Delta and Floodplain, from the Iron Gates to the Black Sea, including those of the Danube tributaries. Purchasing from these studies, the economical and technical plans of systematization, improvement and complex utilization of those areas were made. Such a programme started in 1894, it was taken over in 1912, then in 1927 and 1935, when it reached the most vast, complex and valuable stage practically and economically. That programme aimed at the rational increasing of the efficiency of the national resources, in a civilized manner, according to the modern scientific, technical, social and cultural means, within an area of more than 2 million ha. In 1927, within this programme, Antipa published „*Punerea în cultură a regiunii băltoase a Dunării*” (“Cultivation of the marshy region of the Danube”), and in 1935 – „*Măsurile și lucrările necesare pentru intensificarea producției pescăriilor pentru valorificarea produselor lor*” (“Necessary measures and works for the production intensification of the fish farms in order to evaluate their products”).

Antipa pleaded for using each land patch of a certain region, for reaching a maximum production, according to its natural predestination. This was Antipa’s main ideas which represented the central conception of the paper „*Dunărea și problemele ei științifice, economice și politice*” (“The Danube and its scientific, economical and political problems”), published in 1921 and reprinted in 2005 under the guidance of Dr. Dan Munteanu, corresponding member of the Romanian Academy. Being recognized by all treatises (e.g. the Treatise from Paris, signed on the 6<sup>th</sup> of January 1857, Treatise from Berlin), the Snake Island, part of the Danube Delta, was considered to belong to Romania for good and therefore „*De aici urmează deci că nici frontiera între noi și Rusia nu poate trece nici într-un caz mai jos de Insula Șerpilor*” (“In this respect, for any reason, the border between Romania and Russia cannot pass lower than the Snake Island”) (Antipa, 1921).

In sociology, Antipa got a rich experience in knowing people, often thinking of the vitality sources of the Romanian people, of the numerous difficulties which it had to pass along its historical evolution. So that, in 1919 he published „*Problemele evoluției poporului român*” (“Problems of the Romanian people evolution”), in a very important historical moment, after the World War I ended, when the Romanian State traced its ethnic borders. Grigore Antipa’s book completed the insufficient civic education in schools, the implication of the political people in immediate interests, insufficient initiative of the philosophers, artists, men of culture towards this aspect.

In the first part, he dealt generally the human evolution and the factors in which this evolution depended. In the second part, he analyzed the evolution of the Romanian people, formation of its character, its natural features and inclinations, its culture and the problems of the cultural activities, its environment and geographical bases.

Antipa asserted that in the human society, culture replaces natural selection and brutal fight for living. Culture became the purpose of society and assured the psychological specific features of every society. Culture is influenced by the environment where it develops and that is why it can be only national. Demonstrating that the politics is a barrier in front of the culture development, he asserted that it cannot develop without material sacrifices from the State. „*Nu este vorba firește de persoane, ci de consecințele dezastruoase ale unui sistem defectuos de guvernare, care în mod fatal scoate la iveală asemenea elemente acaparante și le permite să pună stăpânire – ca un mare Trust – pe întreaga noastră viață politică, socială și economică, spre a o exploata în folosul propriu. Dacă am putut aprecia de multe ori bunele intenții și patriotismul cald al unor oameni politici, nu am putut însă să nu mă conving și mai mult că chiar pe aceștia <<Goana după partizani>> îi împinge în mod fatal spre politicianism – adică spre acapararea pentru partizani a instituțiilor statului – și aceasta duce direct la completa dezorganizare și slăbire a puterii statului, adică la o stare anarhică, cu totul nefavorabilă pentru dezvoltarea și înflorirea culturii și deci pentru mersul evoluției poporului*” (“Of course, it is not about persons, but the disastrous consequences of a wrong government, which inevitably bring to light such monopolizing elements and allow them to rule, as a corporation, all our political, social and economical life, for exploiting it in their own purpose. If we could appreciate, several times, the good intentions and the high patriotism of some political people, we could observed that also they are pushed inevitably to politics, i.e. monopolization of the state institutions for the partisans of the state institutions, and this leads to a disorganization and weakening of the state power, that is an anarchical state, totally unfavourable for the development of culture hence for the evolution of the people.”)

Starting from the State obligations of guaranteeing territorial security, the individual rights, based on liberty, equality in front of laws, and the property respect within the limits of their social position, as well as the State rights of coercion, for the general interest of the society, Grigore Antipa considered that the State had to keep the entire people as an unitary organism, not as a mixture of classes, nationalities, religions, etc., each of them grouped according to their own interests, which could lead to the formation of castes and privileges. After the regulation of the relations between country men and owners, between capital and work, between

office workers and state, Antipa also dealt with the problem of nationalities, and noted: „Viitorul nostru Stat trebuie să fie astfel organizat ca fiecare naționalitate să-și găsească în el patria sa și nu dușmanul său” (“Our future State has to organize itself so that each nationality to recognize in it its own country not its enemy”). He urged for a well thought politics, with harmony between all classes and categories of the population, a politics without exploitation and mistakes which many others had made with our people.

Among the aims of the economical politics, Antipa considered that it was necessary the organization of the entire national “household”, beginning with production, distribution and consumption, with the evaluation of the Romanian land richness, using the working power, intelligence and skill of the people, improving the means of transport and trade.

But besides army and culture, the State needed a great financial power, determined by the national richness and economical activity. „Cu cât un stat produce mai mult și în condițiuni mai bune, și cu cât își schimbă pe piața universală mărfurile sale cu mai mult profit, cu atât dispune mai bine și de elementele necesare pentru a-și crea o mare putere financiară” (“The more a State produces, in better conditions, and the more it changes the goods in the international market for a greater profit, the more it gets the necessary elements for creating a financial power”) wrote Antipa, in 1919.

Referring to the foreign politics of Romania, Antipa pleaded for achieving our own goals only by our own force, used directly or joining to other people, taking into account the common material and spiritual interests. The institutions implied in the foreign interests of Romania (consulates, military and economical missions, etc.) have to follow and study the evolution of the Romanian interests, and the Foreign Ministry has to be ruled by specialists in all branches of foreign politics.

Dr. Grigore Antipa’s scientific zoological and biological work strongly influenced the people he worked with. The deep study of natural phenomena imposed him as a savant who had an original perspective on life and society which materialized in papers of synthesis. His papers of ichthyology, hydrobiological and ecological studies on the environment in which the aquatic fauna of the Danube and of the Black Sea develops are still contemporary now, in the age of informatics. Studies on aquatic environment led him to the problems of hydrobiology, hydraulic and land improvements, a field where he opened new perspectives of fundamental and applicative research.

Underlining the anniversary of 140 years since Dr. Grigore Antipa’s birth, we consider that never is too much to evaluate the ideas of our forefathers. By his studies at the University of Jena, at the school of the well-known morphologist, ecologist and evolutionist Ernst Haeckel, Antipa got the base of his later studies, from Romania, in hydrobiology, in the reorganization of the State fish-breeding farms, in the organization of the National Museum of Natural History of Bucharest. His hydrobiological, hydrographical, biological, fishing studies, the improving of the Danube Delta and its floodplains, the coordination of the applied zoology for the Black Sea and for the fish production (especially of the sturgeons) by the introducing of the prohibition periods, the development of the oceanography in Romania by the foundation of institutions entitled to study this field, the improvement of museology and his papers on economy and sociology are only some

of the features of the savant Grigore Antipa, which we point them out *in memoriam*, after 140 years since his birth.

#### 140 DE ANI DE LA NAȘTEREA DR. GRIGORE ANTIPA

##### REZUMAT

Se trec în revistă principalele idei ale operei savantului Grigore Antipa, insistând asupra perenității acelor idei și a evoluției instituțiilor pe care le-a creat. Pe baza importanței operei lăsată de Dr. Grigore Antipa cu aproape un secol în urmă în privința amenajărilor din Delta și Lunca Dunării pe de o parte și evoluția instituțiilor pe care le-a creat, devenind astăzi de importanță națională și cu relații internaționale se sugerează extinderea atribuirii numelui savantului și la cele care încă nu l-au adoptat. Se dau exemplele precedentelor existente la Muzeul Național de Istorie Naturală din București, și mai târziu, la Institutul Național de Cercetare-Dezvoltare Marină – Constanța.

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