VLADIMIR CHERNIAVSKY – A PIONEER OF MARINE BIOLOGY AND UNDERWATER ARCHEOLOGY OF THE BLACK SEA, THE FIRST SCIENTIST OF ABKHAZIA

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Abstract
Vladimir Ivanovich Cherniavsky (1846?-1915) was an outstanding zoologist, archeologist, ethnographer and local historian, the first great scientist of Sukhum. There is the scarcity of information about him. This essay gives brief preliminary overview of his contribution in marine biology and underwater archeology of the Black Sea, study of nature and people of Abkhazia in 19 century. He described a lot of new species in different taxa of marine animals. Cherniavsky can rightly be considered the forerunner of the development of underwater archeology in the Black Sea. He was an outstanding versatile scientist, and his name and works should be known to all researchers of the Black Sea and its shores. The information, contained in his works, can help to better understand the changes taking place now in the Black Sea and its coast.

Keywords: marine biology, underwater archeology, Black Sea, history of science, Abkhazia.

Introduction

We still little know about the history of marine research in the Black Sea and the pioneers of these studies. One example of this is the scarcity of information about Vladimir Ivanovich Cherniavsky (1846?-1915) (Figure 1), who was an outstanding zoologist, archeologist, ethnographer and local historian, the first great scientist of Sukhum. Previously only brief essays were written about him [21, 22], here represented by the development of the theme.

By origin, Vladimir Cherniavsky was a nobleman from a quite affluent family. In 1865, he graduated from the Kharkov 3rd gymnasium, and on September 7, 1865 was admitted into the students of Kharkiv Imperial University, Faculty of Mathematics and Physics, Department of Natural History, which was led by then known zoologist A.V. Chernai (Figure 2), and until 1869 he was a student. Already a student, he has proven himself as a thoughtful researcher of the Black crustaceans. In 1866 summer, he organized his

first research trip on the Black Sea, and in June 1867 – the second. In the first trip, he met with a well-known scientists N.Y. Danilevsky, which is likely had some influence on the formation of the personality of the future scientist [7, 21]. Student V. Cherniavsky successfully reported the results of own research at the 1st Congress of Russian naturalists and physicians in 1867 [9]. "Mr. Cherniavsky – a student, and his first of work consists a lot of new facts, without it forward any zoologist, who will have to deal with the fauna of the Black Sea, will not do a study", – known biologist A.N. Beketov praised the publication of the report [8]. He completed studies of marine fauna in summer of 1867 by his first visit to Sukhum [21]. After the third course, in summer 1868 V. Cherniavsky went to study marine fauna on the Caucasian coast (Bay of Sukhumi, Poti, Lake Paleostomi), then perhaps, his idea about the biological station in Sukhumi was arose at that time.

Figure 1. Vladimir Cherniavsky (photo was found by K. Rusanov, printed with his permission)

August 23, 1869 Nicholas Miklouho-Maclay made a presentation on the need to create the Russian marine zoological stations, in particular, on the Black Sea at the 2nd Congress of Russian naturalists and physicians [24]. Sevastopol and Sukhum was called as possible places for the organization of such stations on the Black Sea. Arguments of N. Miklouho-Maclay was convincing, and the Congress decided to establish a special commission consisting of Professors A.I. Babukhin (Chairman), Acad. F.V. Ovsyanikov professors A.P. Bogdanov, N. Wagner, K.F. Kessler and zoologists V.N. Ulyanina, N.K. Zenger, V.I. Cherniavsky. At the 7th session of the Congress, August 29, 1869 on behalf of the Commission N.K. Zenger spoke:

1). The Commission sees the opportunity to establish for the first time the two stations in the Black Sea, namely the one in Sevastopol, the other in Sukhum-Kale. Only after exercise these first two stations, most needed, the question on other stations Russian seas or on the shores of western Europe, which are also highly desirable, can be raised.

2). According to the commission the presumed stations should be mainly equipped with equipment to catch animals, dishes and especially the library, consisting mainly of periodicals on zoology and comparative anatomy.

Число.	Имена и фамилiи.	Испо-вѣда-нiе.	Время вступле-нiя въ Универ-ситетъ.	Изъ ка-кого зва-нiя.	На чьемъ содер-жанiи.	Гдѣ прежде обучался.	При-мѣч.
10	Карлъ Пиперъ. . .	Лютер.	17 Авг. 1865.	Иностран.	Собственномъ.	Таганрог. Гимназiи.	
11	Леонидъ Родiоновъ . .	Православнаго.	7 Сент. 1865.	Об.-Офиц.		Въ домѣ родител.	
12	Николай Сорокинъ . .		7 Сент. 1865.	Дворянъ		Въ домѣ родител.	
13	Леонидъ Фьерфоръ . .		7 Сент. 1865.	Об.-Офиц.		Въ домѣ родител.	
14	Владимiръ Чернявскiй. .		7 Сент. 1865.	Дворянъ.		3 Харьк. Гимназiи.	
15	Евгенiй Черняевъ . .		7 Сент. 1865.	Дворянъ.		Въ домѣ родител.	
16	Александръ Ширяевъ . .		7 Сент. 1865.	Об-.Офиц.	Педагог. Стип. М. Н. Пр.	Екатерин. Гимназiи.	
	II Курса.						
1	Михаилъ Бырдинъ . .	Правос.	1 Нояб. 1860.	Дворянъ.	Собственномъ.	1 Харьк. Гимназiи.	
2	Сигизмундъ Водзиводскiй .	Рим.-К.	31 Авг. 1863.	Дворянъ.		Въ домѣ родител.	
3	Александръ Германъ. . .	Лютер.	18 Авг. 1864.	Об.-Офиц.		1 Харьк. Гимназiи.	
4	Владимiръ Заленскiй . .	Правос.	18 Авг. 1864.	Дворянъ.		2 Харьк. Гимназiи.	

Figure 2. List of students (with name of V. Cherniavsky), who got permission to listening to the lectures in the Imperial Kharkov University in the 1865 / 1866 academic year. Faculty of Physics and Mathematics, the natural sciences department, 1st year (photo was found by K. Rusanov, with his permission)

3). For the establishment of stations is necessary to open the subscription between members of Congress and ask the Naval Ministry with a request for moral assistance this venture. Funds, raised by subscription, will be need mainly for the Sevastopol station; the member of the VI Congress Cherniavsky offers take care by himself about the implementation of the same station in Sukhum-Kale.

4). The commission thinks to ask the Imperial Society of Naturalists to assume care for the implementation zoological stations, as well as a detailed discussion of means and conditions of their existence".

At the general meeting of participants of the Congress during its closing, it was decided to establish two zoological stations near the Black Sea to facilitate the operation of those naturalists who visit the Black Sea coast for special studies on the fauna. It was supposed to appeal to the Government and the Ministry of the Navy with a request for the provision of moral support to the establishment of zoological stations in Sevastopol and Sukhum-Kale. Subscription was open among the members the Congress to raise funds for the implementation of this decision… The history of Sevastopol biological station is known [24]. Have taken any action on the creation of the biological station in Sukhumi or not is unknown, but research of marine animals in the city was initiated by of Vladimir Cherniavsky.

Due to poor health (tuberculosis) and the desire to continue to explore the Black Sea fauna V. Cherniavsky moved to Sukhumi-Kale in 1870, where he lived for more than 40 years, engaged in the study of the Black Sea fauna, revealing and study of local archaeological sites, the life and culture of the Abkhazians, etc. He tried to move to St. Petersburg, but due to health he was forced to return to Sukhum. Cherniavsky himself recalled, "the former consumptive received here still a student complete and rapid healing of entire right lung" [18]. A possible cause of his temporary move to St. Petersburg was the war. During the Russian-Turkish war of 1877-1878 Turkey tried to tear away of the Russian Black Sea coast. May 2, 1877 the Turkish fleet began bombing the city and the landing of troops, the Russian garrison retreated. Military detachments of generals Babych, Alhazov and Shelkovnikov reoccupied Sukhum on August 20 of the same year [1, 2]. Sukhum was destroyed, burned, its revival was begun.

In 1871, V. Cherniavsky became the owner of a piece of land and built a villa on the Sukhum Mount (Samata), the hill dominating above the town in the east of the capital of Abkhazia. For over a hundred years, this area is called among the people the "mountain of Cherniavsky", "Chernyavka" (villa still preserved). Living and working conditions were not always comfortable and safe: "Professor Bogoslovskiy newly arrived in Sukhumi, and as if on purpose, in the 11th September 1895 night, when I was in my house in Sukhumi, was attacked by a gang of robbers for the whole hours – and we both, under the fresh impression of going robberies from Novorossiysk to Sukhum, have found that our business is risky around both Sukhumi and Sochi" [18]. Cherniavsky was a prominent figure in the city and was a friend of the young then founder of Abkhaz written literature Dmitry Gulia; G. Gulia [19]

said about this in the book about his father. Among other things, Cherniavsky has created one of the best gardens in the city, and the newspapers wrote about this [2]. The scientist carried out the phenological observations of plants in the garden and its surroundings, which were the first in Abkhazia [16]. In Sukhum, people remember one of its first scholars – zoologist, archaeologist and ethnographer, the street was named after him, on which the Research Center of balneology and Alternative Medicine named after A. Akudzhba is situated. The following briefly shall deal his contribution to science.

Marine biology

Being a widely educated zoologist, as evidenced by his works [9-15], he focused on the study of crustaceans, and in the first place, mysids, among which described many new taxa for science [15]. In particular, he described the family – Petalophthalmidae Czerniavsky, 1882; genera: *Mesopodopsis* Czerniavsky, 1882, *Acanthomysis* Czerniavsky, 1882, *Archaeomysis* Czerniavsky, 1882, *Diamysis* Czerniavsky, 1882, *Limnomysis* Czerniavsky, 1882, *Neomysis* Czerniavsky, 1882, *Onychomysis* Czerniavsky, 1882, *Paramysis* Czerniavsky, 1882; *Protomystides* Czerniavsky, 1882, species: *Limnomysis benedeni* Czerniavsky, 1882, *Acanthomysis strauchi* (Czerniavsky, 1882), *Diamysis pengoi* (Czerniavsky, 1882), *Archaeomysis grebnitzkii* Czerniavsky, 1882, *Diamysis mecznikovi* (Czerniavsky, 1882), *Limnomysis brandti* Czerniavsky, 1882, *Limnomysis schmankewiczi* Czerniavsky, 1882, *Mysis baltica* Czerniavsky, 1882, *Neomysis intermedia* (Czerniavsky, 1882), *Neomysis mirabilis* (Czerniavsky, 1882), *Onychomysis mingrelica* Czerniavsky, 1882, *Pacifacanthomysis schrencki* (Czerniavsky, 1882), *Paramysis armata* Czerniavsky, 1882, *Paramysis (Serrapalpisis) lacustris* (Czerniavsky, 1882), *Paramysis baeri* Czerniavsky, 1882, *Paramysis kroyeri* (Czerniavsky, 1882), *Paramysis ullskyi* (Czerniavsky, 1882), *Siriella jaltensis* Czerniavsky, 1868, and others. He also described new species among other groups of crustaceans; in particular, he first described the freshwater crab (*Potamon tauricum* (Czerniavsky 1884)), which lives in the small mountain rivers flowing into the Black Sea and the Aegean Sea.

Considerable attention was given by him to study the polychaetes [14], describing 3 new families (Polygordiidae Czerniavsky, 1881, Prorodrilidae Czerniavsky, 1881, Saccocirridae Czerniavsky, 1881), new genera (*Anaitides* Czerniavsky, 1882, *Protomystides* Czerniavsky, 1882, etc.), and species: *Polynoe scolopendrina* (Czerniavsky, 1882), *Eunoe mammiloba* Czerniavsky, 1882 and *Hermadion truncata* (Czerniavsky, 1882), etc.). One of the first, he began to study the Black Sea sponges [13], describing, among them new to science species – *Haliclona foraminosa* (Czerniavsky, 1880), *Haliclona cylindrigera* (Czerniavsky, 1880), others. He has made a contribution to the studies of different animal groups and other groups of animals living in the Black Sea and adjacent waters. This contribution is still waiting for its analysis and evaluation. Considering the contribution of V.I. Cherniavsky in study of biodiversity of the Black Sea, a number of new species of marine invertebrates, particularly crustaceans, were named after him: *Eurydice czerniavsky* Bacescu, 1948, *Macropodia czernjawskii* (Brandt,

1880), *Stenorrhynchus czernjawskii* Brandt 1880, and others. Collections of crustaceans, collected by Cherniavsky, are saved in Zoological Museum (St.-Petersburg) and continue to serve for science [25].

Geology

As a naturalist-generalist Cherniavsky also turned his attention to geology, hydrogeology, the formation of sea coasts, paleontology. Without considering this question more deeply, we give an self-assessment of the Cherniavsky of his achievements in this area. In particular, he wrote: "I myself have the right to speak (on the mineral springs) only as a naturalist, with a degree in zoology, but since 1867, from college I devoted himself to the study of all aspects of nature of region, which enthralled me by unusually-rich nature; but my first groping made discoveries in geology coast of Western Transcaucasia, which were evaluated by J. Reclus and German professors, and were used in some student textbooks of professor of St. Petersburg University Inostrantsev, of Professor The Saint Petersburg Mining Institute Mushketov, and of professor of Novorossiysk University Prendel, in the book "Black Sea" – of Professor Litvinov..." [18]. One of the questions that he was always interested in is an interconnection of historical geology and distribution of organisms [10]. Cherniavsky' contribution to the development of historical-geological, paleontological and historical-biogeographic conceptions has not been rated yet.

History, culture, and archeology of Abkhazia

Many of his works are devoted to archeology, history, ethnography and nature of Abkhazia. Some of his works dedicated to Abkhazia, recently were reissued [2, 3]. People lived on Mount Samata, where Cherniavsky has built his house, since the Lower Paleolithic time. Cherniavsky was the first who appreciated the archaeological significance of Mount Samata [26]. He has done so much for the identification, popularization and preservation of archaeological monuments of Abkhazia [4, 11, 26]. His contribution in development Abkhazian archeology is must be studied and rated.

He conducted not only the archaeological researches, but also ethnographic, describing the manners and customs of the people that he loved and respected: "In such a warm and humid country like Abkhazia, luxurious and secure, covered with forests, representing in part a natural fruit garden, aboriginal people have always been the native sons of nature. He has survived here from the earliest times of history, preserved primitive mores, home that resemble home of the Pacific islanders, plow from wood knot, which was invented by his wild ancestors; he retained the habit of taking some of the food from the forest fruits, its gardens are no different in appearance from the forest; gardening is almost there; he removes one potential harvest of maize instead of two and even three; beliefs remained unchanged since ancient times; he calls himself the same name of the people Apsua under which he was known in the early history; his songs, especially the funeral, have wild, primitive character. Just some of the words and the names of numerous stows purely being Latin and Italian (there are Egyptian), Greek

legends, many Greek and Italian surnames and names are reminiscent of alien influences. But the descendants of the ancient civilizers, bearing foreign names and surnames, have run wild since as forest thicket in four centuries has turned in the primitive state the places where there were the former gardens and castles of their ancestors. Turkish migrants, Russian and Polish people from our soldiers quickly turned in Abkhazians. I have seen many such swatches" [11].

He paid particular attention to the position and role of women in the then Abkhazian society: "Few where the woman is in such respect and such independence, as here. Abkhazia constantly passed from one hands in another hands; but neither cunning of Greeks nor despotism of Turks could not shake the high position of the Abkhazian women. Apart the direct fulfillment of her duties – maintaining family order she always participated in political and social life of the society. Many times she by her interference introduced peace between two warring tribes. For having, and every attempt, with some hand, destroy or limit the rights of women in Abkhazia caused severe and prolonged excitement, always ending with success and victory of woman" [17].

Using written by Cherniavsky ethnographers / cultural scientists can do an interesting overview of the changes that have taken place in the culture and customs of the Abkhazians. Among other things Cherniavsky described the original custom, which existed in Abkhazia at that time, – catching and the funeral of souls of drowned people: "If Abkhazian drowned, which often happens when there are high water mountain streams and no stone bridges, then his / her body is diligent searched, but not for long. Failing to find the body, the Abkhazians few mourn about this. Then they begin for catching souls of the drowned man, they believe that it is the most important thing" [12]. Cherniavsky described how they do this. Been preserved there any echoes of this belief and ritual of Abkhazians today?

Underwater archeology

Cherniavsky first based on a long study of the well-preserved remnants of ancient structures on the beach and in the sea suggested that the remains of the ancient Dioscuria is in the waters of the Sukhumi Bay at a depth of 3-4 sazhen along the beach for up to 5 of versts. V. Cherniavsky reported that in summer of 1876, he "with the assistance of two curious boys, perfectly able to swim and dive, AN Shang Giray and GA Metaxa, examined a number of remnants of this ancient city at the bottom of coastal waters of the Sukhumi bay to a depth of 4-6 meters… There were not only series of remains of ancient walls, outstanding location close to the surface of the sea at a distance of 30-50 sazhen from the coast, but also the jagged of the ancient castle walls, climbing even with a depth of about 6 meters so that I was able with supporting by swimming equipment to circumvent them, and in some places I was up to my neck in water. The castle has two serried compartments, one with perfectly circular shape, the other – a quadrilateral; the latter was destroyed. They lie in front of the Sukhum fortress against the end of the south-western third of the length of its facade. The walls are covered with algae, sponges and lots of oysters and mussels, which also covered all

the underwater remains of the walls of the depth of 2-6 meters, which were examined by me" [11]. It was the first attempt to conduct an underwater archaeological survey work in the Black Sea and Russia [20]. To archaeological congress in Tbilisi after the Russian-Turkish war V.I. Chernyavsky wrote: "This moment when Sukhum completely destroyed, is extremely convenient for unhindered production of the excavation. So now especially important to make a study of the residues Dioscuria-Sevastopol, which had buried in the remainder of the alluvial coast of Sukhum" [11] (the ancient name of Sukhum was Sebast or Sebastopolis). Modern scientists agree with him [23, 26]. Newspapers of that time wrote many times about the discoveries of Cherniavsky, for example, "Next to the ancient Roman-Byzantine fortress of great ancient Sevastopol the famous Russian naturalist V.I. Cherniavsky... discovered the 10th of this June …part of a stone slab with perfectly preserved Latin inscription beginning of II century by B. C., made by Roman Proconsul Flavius Arrian (scientist friend of the Roman Caesar Trajan Hadrian August) that the port and the strengthening of Sevastopol (Castellum Sebastopolius), were erected, as is known from Perppla Arrian, at the behest of Hadrian, from ruins of the great Dioscuria by Roman cohort (Cohorta Claudia aqcuitata), constituting the local garrison" [5], "The honor of the discovery of these ruins belong to the Caucasian archaeologist Cherniavsky, who succeeded to discover and the underwater part of the city..." [6]. V.I. Cherniavsky can rightly be considered the forerunner of the development of underwater archeology in the Black Sea.

Conclusion

Versatility of V. Cherniavsky and breadth of his contributions to science are simply amazing. To appreciate this, we must try to imagine the state of science at that time, the degree of scrutiny of the Caucasus and the Black Sea. Of course, not all of his opinions were correct, not all assumptions were confirmed. For example, in Lake Urmia (Iran) fauna is not marine as he expected. However, one thing is certain; he was an outstanding versatile scientist. He undeservedly is almost forgotten, but his name and works should be known to all researchers of the Black Sea and its shores. The information, contained in his works, can help to better understand the changes taking place now in the Black Sea and its coast. The description of his life and work on the historical background of the time is an interesting challenge for the historian-novelist.

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