

**TO THE QUESTION OF FAMOUS SCIENTISTS, ENGINEERS,
INVENTORS, SPECIALISTS OF THE POLTAVA REGION IN HISTORY
OF ROCKET AND SPACE TECHNOLOGY**

I. O. Pistolenko,

*Head of Research Sector Research and Education of the Poltava
Air and Space Museum, Ph.D., Senior Research Fellow,
e-mail: list_28@ukr.net*

N. K. Kocherga,

*PhD, Associate Professor
of the Ukrainian culture and dokumentation Department
Poltava National Technical University named after Yuri Kondratyuk,
e-mail: Nadiya.Kocherga@ukr.net*

Professional activity and the facts of biographies of the greatest scientists, engineers, inventors Yu. Kondratyuk, O. Zasyadko, V. Chelomey, pilot-cosmonaut G. Beregovy as Poltava region representatives, their contribution to the development of rocket and space science and technology has been analyzed in the article.

Keywords: *battlefield powder missile, conquest of interplanetary space, elevator complexes, wind aggregate and farm, theory of vibrations, dynamical stability of elastic systems.*

Poltava, an ancient Ukrainian city, is one of the precious pearls of Ukraine. There are many historical and architectural monuments in Poltava, including memorable places related to aerospace history of our city [1, c. 3, 5, 7].

There are many museums in Poltava too. And Poltava Air and Space Museum is one of the known among other because many important events in the fields of aircraft and astronautics are related to our edge. The Poltava land gave to mankind the whole pleiad of prominent figures in aviation and space fields.

And Yuri V. Kondratyuk by right belongs to a group of these outstanding persons. 2017 a year is the year of 120 year from the day of birth of this scientist. Government of Ukraine in 1997 Name Yuri Kondratyuk the occasion of 100th anniversary of birth of theoretical astronautics, distinguished engineer and inventor, was awarded Innovator Poltava National Technical University.

In the history of national science it is difficult to find more dramatic fortune than the life and career of the outstanding self-taught scholar from Poltava. He started writing his manuscripts, devoted to the theory of interplanetary flights, when

he was 16 (in 1913), and by the age of nineteen (in 1917) he was the author of numerous discoveries and theories on that subject.

One of the cosmism pioneers and space era forerunners, Olexander Ignatovych Shargey, lived and worked for many years under another name Yuriy Vasyliovych Kondratyuk. During the Civil War in Russian Empire he had to take someone's name though he did not commit any crime against people or the country, and he had never taken his real name back, as it was the period of Stalin's repressions.

Making a close study of Yu.V. Kondratyuk's activity, the outstanding scientists, academicians M.S. Burov, B.M. Vorobyov, V.P. Glushko, Y.O. Pobedonostsev, I.A. Merkulov, B.V. Raushenbah, V.M. Sokolsky carefully analyzed his ideas of a composite rocket, his creative contribution to the theory of space flights and formation of interplanetary communications theory.

The first Yu.V. Kondratyuk's biographers, A.V. Datsenko, B.I. Romanenko, O.G. Rappoport, and V.I. Grab thoroughly examined his "fortune trajectory". Yu.V. Kondratyuk's (O.G. Shargey's) bibliography numbers over 920 works.

Stars, space, interplanetary flights were vitally decisive factors in his life. We will try to answer the question, what inspired the self-taught scholar for new discoveries and, being his cosmic destiny, finally brought him immortality.

The name of Yuriy Kondratyuk had only gained the worldwide recognition in the period of American Moon exploration. On March, 31, 1969, American magazine "Life" published the article about the NASA research center employee, John Hubolt, and the long period of ignoring the very possibility "to have a date with the moon". He said, "When I was watching the "Apollo 11" launch which was my "child" LEM and the first manned flight to the Moon, I recalled the engineer, whose dream had been broken by people's skepticism." Hubolt read about the Russian (for Americans USSR meant Russia, and Russians were identified with Ukrainians) self-taught engineer Yuriy Kondratyuk, who had calculated the LOR scheme 50 years before and it became the best one for reaching the Moon's surface. – "My God, my way of thinking and that of his were the same!" – Hubolt said. - Thinking about it, I cannot help being excited when I am watching "Apollo -11" launching"

Yuri Kondratyuk (born Olexander Shargey) was an engineer of genius, one of the pioneers of missilery and the theory of space flights, theorist of the use of wind to produce power.

He was born in Poltava, where, in 1916, he graduated from the Second Boys' Gymnasium. Later, he entered the mechanical faculty of the Petrograd Polytechnic Institute. O. Shargey was called up for military service in 1916.

Thenceforth, he was forced to serve in the White Army in 1919, escaped from it and was on the run. These events made Olexander Shargey to change his name.

The beginning of his scientific research in the field of interplanetary travel falls on 1914-1915. In 1917, Yuri Kondratyuk finished working on the Petrograd

Manuscript, where he suggested the way of reaching surfaces of big celestial bodies of the Solar System and described construction of the jet engine and spaceship. In the book “For Those Who Will Read to Build”, the scientist gave an original method of deducing the basic equation of missile movement, scheme and description of 4-stage missiles based on oxygen and hydrogen fuel and other. The book “Conquest of Interplanetary Space” of 1929 also included many original ideas, calculations, suggestions, which approaching the solution of complex matters of missile building and space exploration in a new way.

Designed by Yu. Kondratyuk, the scheme of landing people on the surface of the Moon by separating the landing module from the base ship was successfully utilized for the flight of the American “Apollo 11” half a century later.

From 1919 to 1938 Yuri Kondratyuk successfully was engaged also in design and construction of elevator complexes, wind aggregates, units and wind farms.

In July of 1941, Yu. Kondratyuk volunteered to the front line. The last piece of information on him was dated January and February of 1942 [2, c. 254, 255].

The International Academe of Astronautics recommended that the name of Yu. Kondratyuk be added to 78 world scientists presented in the International Space Hall of Fame in the city Alamogordo (New Mexico, United States). A positive decision was taken in 2014. The solemn ceremony took place on October 18. The Gallery of International Space Glory is the only authoritative organization among the cosmonauts that celebrates the contribution of individual people to the exploration of outer space. According to the participants of the conference, the introduction of Kondratyuk in this gallery is a fact of international recognition of the scientist's creative merits in the theory of world cosmonautics. Also in the information distributed by the organizers, it was openly stated that when preparing the Apollo expedition to the Moon, the Americans used Kondratyuk's idea of landing on another heavenly body [3].

In his honor the small planet-asteroid and a crater on a reverse side of the Moon were called after Kondratyuk.

According to the academician Baryakhtar the pioneer of space exploration Yu.V. Kondratyuk is a treasure of world science, national asset of the Ukrainian people [4, c. 102-103].

“From battlefield to interplanetary missiles... Time will come, people will settle in other worlds. I can see this time”, – so inventor, designer battlefield missile, military figure **Olexander D. Zasyadko** dreamed once.

O. Zasyadko was a scientist in the field of artillery, designer of the salvo missile, inventor of the incendiary and explosive missiles. He was born into a well-to-do Cossaks family in Lutenka, Gadiach povit (now in the Poltava region), graduated from Artillery and Engineering Noble Military schools. During the military service, he was an active companion of O. Suvorov, M. Kutuzov,

participating in many military campaigns. He becomes famous for exclusive bravery and ingenuity, for what he was awarded 8 orders and gold sword with inscription for Courage. In 1815, O. Zasyadko began working on the designing of battlefield powder missiles, having sold for this purpose his family manor. O. Zasyadko designed battlefield missiles of three calibers, developed the technology of their manufacture and also the salvo missile launcher and missile targeting device. He produced a manual on selection of the optimal parameters of missiles, determination of distance of their flight and dispersion depending of launching angle, considered methods of the transportation and use of battlefield missiles. The achievements and inventions were in depth described by him in his work "About Incendiary and Explosive Missiles". Besides, the designer organized production of missiles in a special "missile facility" in Sankt-Petersburg.

In 1820, O. Zasyadko headed up newly established Sn. Petersburg Artillery School and, in 1827, was appointed chief of staff of general-feldseikhmeister. On his initiative, the first in the army battlefield missile unit was formed. It successfully proved itself during the storm of Brailov and Varna in the Russian-Turkish War. For the successful operation of artillery during the war, O. Zasyadko was promoted to the rank of general-lieutenant. After his retirement, he moved to Harkiv, where he was engaged in development works until his death.

The designing activity of O. Zasyadko became an important stage in the development of missilery and space exploration [4, c. 78-79; 2, c. 208-209].

Volodimir M. Chelomey was a designer and director of the development of rocket and spacecraft. His works were devoted to the problems of design and dynamics of machinery, vibration theory, dynamical stability of elastic systems, and the theory of servomechanisms. His ideas as a designer were implemented in aircraft, rockets and spacecraft.

The scientist of genius was born in Seidlets, but, some months later, his family moved to Poltava, where he graduated from Seven Years School 10. V.M. Chelomey recollected that period with warmth and through all his life retained a love to Poltava, calling it his native land. In 1926, he moved to Kyiv.

After his graduation from the Kyiv Aviation Institute, he began teaching in it and, at the same time, worked for the Institute of Applied Mathematics and Mechanics of the Academy of Sciences of the Ukraine. In 1936, he published his first book "Vector Calculus".

When V. Chelomey moved to Moscow in 1941, he began working in the Central Institute of Aviation Engines, where he designed the first in the USSR pulsating aerojet engine. V. Chelomey was a chief designer from 1944, shortly afterwards, general designer of space-missile engineering. The advanced samples of space-missile engineering, designed by him, had then no analogues in the world.

The operation of Design Bureau under V. Chelomey served to share up national defense. He suggested the idea of transportation of a missile with a folding wing in a container and launching it from it. These strategic missiles were taken to arm. One of the notable achievements of that time became the satellite «Cosmos 1870», developed by the designer of genius. It was the first in the world satellite, which enabled, at any time of the day and in any weather conditions, to receive the image of any object on the Earth.

The scientific, engineering and designing schools farmed by him brought up a whole galaxy of scientists, designers, development engineers of aerospace machinery and played an extremely important role in cosmonautics.

For notable achievements, V. Chelomey received many state and scientific awards. An academician Ye. Fedosov wrote that V.M. Chelomey belonged to the pioneers of missilery. He designed a whole generation of missile systems having no analogues in world practice [4, c. 194-195; 2, c. 572-573].

The names of such outstanding pilot-cosmonauts as O.A. Leonov, P.I. Klimuk, A.S. Levchenko, V.O. Aksenov are connected with the region. O.A. Leonov graduated from the school of primary flight training in Kremenchug. P.I. Klimuk, A.S. Levchenko, V.O. Aksenov started to study at this school, and then they continued their studies in Chernigov.

George T. Beregovy was one of the first and most outstanding pilot-cosmonauts. He was born into an office worker family in Fedorovka (now in the Karlovka district of the Poltava region). He dreamed of becoming a pilot from the very childhood.

Before being called up for military service, G. Beregovy worked at the Yenakievo Metallurgical Plant and studied at Air School at the same time. He completely devoted himself to aviation there, and when he reached only 16, he drove a plane for the first time. He managed to enroll in the Voroshilov School of Military Pilots of 17.

During the Second World War, he served in the 5th Air Corps as a pilot bomber. For heroism and courage, shown in the struggle with German fascist aggressors, Captain G. Beregovy was named Hero of the Soviet Union in 1944. His military career finished in Czechoslovakia, where Squadron Commander G. Beregovy fields his last 185th mission.

After the war, he studied at Higher Officers' School. In 1956, he graduated from the Red Banner Air Force Academy. In a space of 16 years of excellent work, G. Beregovy "tamed" hundreds of new planes, for what he was awarded the honorary title Honored Pilot –Tester of the USSR in 1961.

In 1964, G. Beregovy joined the squad of cosmonauts. On October 26, 1968, he made a space flight. On board "Soyuz 3" spaceship, he performed 64 orbits around the Earth. In the course of the flight, the spaceship "Soyuz 3" made many

maneuvers and 2 rendezvous with the unmanned spacecraft “Soyuz 2”. G. Beregovy received his second title Hero of the USSR for his successful space flight. He implemented a lot of important scientific and engineering experiments and collected a useful piece of information, which allowed resolving a number of practical missions [4, с. 18-19; 5, p.1, 3-48; 6, p. 1, 2, 5-8].

A heroic, full of continuous struggle life of the famous Poltava fellow was devoted to the service of science and people. The epoch of considerable achievements in the history of the exploration of outer space is connected with his name.

This article is composed on the materials of:

1. Данилюк Л.В. Полтава та її видатні люди. – Полтава, 1999. – 24 с.
2. Видатні діячі України минулих століть: мемор. альм. = Outstanding Ukrainian Personalities of the Past : Memorial anthology / Упоряд.: Компанія «Євроімідж»; Ін-т історії України; Т-во «Україна-Світ»; Ін-т біогр. дослідж; Ред. Рада: В. Смолій (Голова), Ю. Богуцький, І. Дзюба та ін.; Голов. ред. О. Онопрієнко. — К.: Євроімідж, 2001. – 623 с.
3. Музей Новосибирска. Новосибирский ученый Юрий Кондратюк вошел в Галерею международной космической славы. 19.11.2014 [Електронний ресурс]. – Режим доступу: <http://mnsk.ru/novosibirskiy-uchenyiy-yuriy-kondratyuk-voshel-v-galereyu-mezhdunarodnoy-kosmicheskoy-slavyi>
4. Альманах пошани й визнання Полтавщини: 100 видатних особистостей Полтавщини минулих століть. – Полтава-Київ: АТ «Книга», 2003. –208 с.
5. Glushko V.P. Development of Rocketry and Space Technology in the USSR. – Moscow: USSR Academy of Sciences, Novosty Press Publishing House, 1973. – 68 p.
6. Glushko V.P. Rocket Engines “GDL-OKB” – Moscow: USSR Academy of Sciences, Novosty Press Publishing House, 1973. – 71 p.

У статті розглядаються діяльність і факти біографії видатних учених, інженерів, винахідників Ю. Кондратюка, О. Засядка, В. Челомея, льотчика-космонавта Г. Берегового як представників Полтавщини, їх внесок у розвиток ракетно-космічної науки і техніки.

Ключові слова: *завоювання міжпланетних просторів, елеватори, вітроагрегат, вітроелектростанція, бойова порохова ракета, теорія вібрацій, динамічна стійкість пружних систем.*

В статье рассматриваются деятельность и факты биографий выдающихся ученых, инженеров, изобретателей Ю.Кондратюка, А. Засядко, В. Челомея, лётчика-космонавта Г. Берегового как представителей Полтавщины, их вклад в развитие ракетно-космической науки и техники.