

**A Hundred Great Latvians**

## A Hundred Great Latvians

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Cover photo: Armands Lācis, *Fotocentrs*

The index of literature is drawn by the Latvian Library  
of Medicine. Director Velta Pozņaka

Publisher:

*Nacionālais apgāds*, Ltd.

Director: Zane Kārklīņa

Editor-in Chief: Maija Šetlere

Rīga, Hospitāļu iela 55; LV-1013

*S/c Lauku Avīze*

The Head of the Board: Viesturs Serdāns

Director of the publishing house *Lauku Avīze*: Valdis Veilands

Rīga, Dzīrnavu iela 21; LV-1010

Printed by: *s/c Preses nams*

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Rīga, 2006

ISBN 9984-26-288-X



The book was published  
with the support  
of the Ministry of Defence  
of the Republic of Latvia

# A Hundred Great Latvians

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# Friedrich ZANDER

1887—1933

Engineer and inventor, one of the pioneers of rocketry

In 1921, at a conference in Moscow, he reported on a design of an interplanetary ship—aeroplane. His spacecraft was an original combination of a rocket and a plane. The idea of a re-usable spacecraft has been realised in our time.

Between 1929 and 1932 he headed work on the world's first rocket engine OR-1.

From 1931, under F. Zander, the Group for the Study of Jet Propulsion worked in Moscow at the Institute of Aviation Engines; it designed the rocket engine OR-2 and made the first rocket with a liquid-fuel rocket engine GIRD-X in 1933.

He put forward the idea of a most splendid achievement in the mechanics of space flights, the so-called gravitation manoeuvre, which was first applied by the USA automatic interplanetary station *Mariner-10*.

He founded the USSR school of rocketry, taught a number of distinguished scientists and construction engineers, among them Sergei Korolyov, later the rocket engineer and designer. Thanks to the work of Friedrich Zanders' group, the Soviet Union gained an advantage in science research.

Friedrich Zander is one of the outstanding scientists Latvia can be really proud of. He was born on 23 August 1887 in Riga, in the family of the Baltic German Artur Zander who was a scientist, Doctor of Medicine, Head of the Department of Natural Sciences at the Riga Museum of Natural History.

Friedrich Zander studied at Riga City Science Bias School (*Realschule*) and finished it in 1905 as the dux of the school. In 1907 he graduated from the Royal Higher Technical School in Danzig, but in 1914 he graduated *summa cum laude* from the Department of Mechanics of Riga Polytechnical Institute (RPI), among the teaching staff of which were such celebrities as the chemist professor Paul Walden, mathematician Piers Bohl, aviation engine engineer Theodor Kalep and other specialists of world renown.

Riga, an industrially developed city, was one of Russia's centres of aircraft, carriage and bicycle construction and mechanical engineering (the first aircraft engines and planes in Russia were manufactured in the *Motors* plant in 1909—1910 under T. Kalep). The first practical classes in aeroplane construction for Friedrich Zander were in *Motors*, but upon the graduation he worked at the rubber plant *Provodnik* which, as the front line encroached upon Riga, was evacuated to Moscow in 1915. From 1915 Friedrich Zander's research work was associated with this city.

In 1920 Friedrich Zander tried to return to Latvia, but failed. In 1921 he met the leader of the Bolshevik government V. Lenin who supported Zander's endeavours in the development of Soviet rocketry. In 1921, at the Moscow regional conference of inventors, F. Zander reported on a project of an interplanetary ship—aeroplane. In 1924 he published an article "Flights to Other Planets", in which he advocated his principal idea — combining a rocket and a plane to leave the Earth. In the 1920s F. Zander, apart from the investigation of interplanetary

communication, worked on the technical calculation of internal combustion engines.

In 1926 Friedrich Zander started working at the Central Design Office of the Aviation Trust, but in 1930 he became a teacher at the Moscow Institute of Aviation.

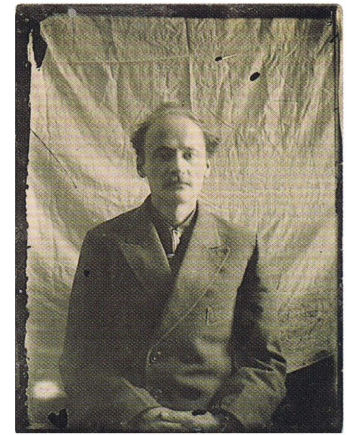
In 1928 Friedrich Zander began working on experimental rocket engines. In a couple of years he already headed a group of scientists and engineers who designed and built rocket engines and rockets. It is from this time that we know of F. Zanders' enthusiastic slogan "Towards Mars!". The liquid-fuelled rocket GIRD-X, designed by F. Zander, was successfully tested several years after his death.

All that referred to rocket building was considered highly confidential in the Soviet Union. During his life Friedrich Zander managed to publish only five works, and only three of them were dedicated to space research. After successive failures to take out a patent for his inventions and publish the fruit of his research, F. Zander took down the results of his work in shorthand, according to his own system, in Russian and in German. For a long time his research heritage of over 9000 pages lay undeciphered. The key to the manuscript code was only found in 1969, and then work on F. Zander's archives could be launched. His heritage impresses specialists by the high competence in theoretical research, as well as by the mathematical precision of analysis. Many of his ideas and proposed methods are being used nowadays.

Friedrich Zander died on 28 March 1933 in Kislovodsk and was buried in the city cemetery. A crater on the Moon bears his name. The Latvian Academy of Sciences established the biannual Friedrich Zander Award in physics and technical sciences in 1967.



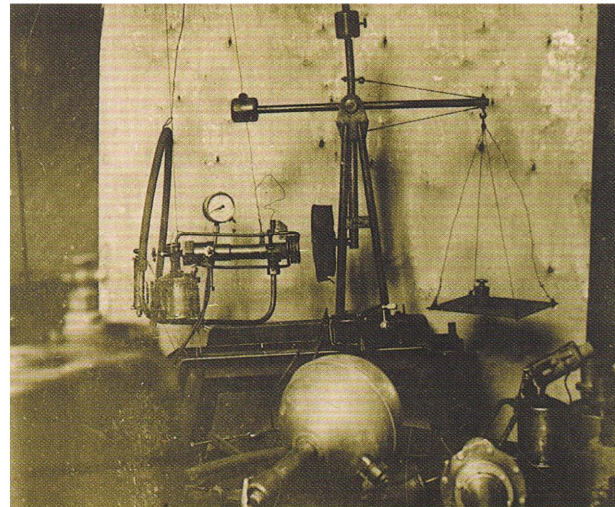
**The citizen of Riga.** Friedrich Zander wearing Riga Polytechnical Institute student's uniform in Riga (early 20th century)



**The scientist in Moscow.** Friedrich Zander worked under very poor conditions in Moscow during the 1920s



**The author of many works.** Friedrich Zander at his desk



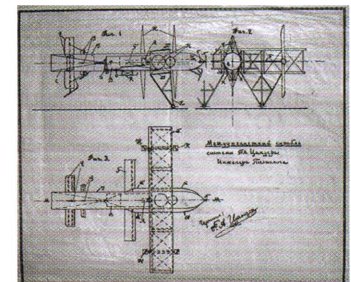
**The graduate from Riga Polytechnical Institute.** A diploma issued by Riga Polytechnical Institute on 31 July 1914



**The pioneer of aviation.** With a glider he made himself in 1909. Friedrich Zander had already constructed aircraft during his study years in Riga, and continued to construct aircraft after his graduation



**The pioneer of Rocket Science.** The Group for the Study of Jet Propulsion headed by Friedrich Zander before the start of their rocket GIRD-X on 25 November 1933



**The author of interplanetary spaceship construction.** Friedrich Zander was already drawing interplanetary spaceships and calculating technical parameters in 1924

**The head of the group constructing the OR-2 rocket.** The meeting of the group in Moscow, 1932. Sitting (from left): S. Korolyov, A. Levitsky, B. Cheranovsky, Y. Pobedonostsev, G. Zaborin. Standing (from left): N. Sumarokov, Y. Fortikov, F. Zander



**With students of Riga Polytechnical Institute in an auditorium.** Friedrich Zander is sitting in the middle of the first row



**Commemoration.** Friedrich Zander was commemorated more often during the Soviet era. The monument by sculptor Juris Bajārs stands on the grounds of the former Technological Equipment Factory in Riga, Šampētera Street 2

