

## 15. The Breakthrough

### Rivalry in Rocket and Space Establishment

The relations within the Soviet rocket establishment were not simple and serene, however. The bitter rivalry between Sergei P. Korolev and Valentin P. Glushko continued unabated. The eternal question remained obviously unresolved: What is more important, a “horse,” that is, a rocket engine (Glushko), or a “cart,” that is, integration of a rocket system (Korolev)? Another Soviet missile prince, Mikhail K. Yangel had already established his base in Dnepropetrovsk in the Ukraine and flexed the muscles. Yangel was emerging as the main challenger to Korolev in ballistic missiles, focusing on storable noncryogenic propellants and, as a result, favored by the military brass. In addition, Vladimir N. Chelomei would soon challenge both Korolev and Yangel with his “universal rocket,” UR, resulting in a family of ICBMs and leading eventually to the today’s powerful Proton space launcher.



Fig. 15.8. Monuments to Sergei P. Korolev (left) and Mstislav V. Keldysh (right) in Moscow. In a secrecy-obsessed totalitarian society, they were known to most Soviet people as the enigmatic *Glavnyi Konstruktor* (Chief Designer) and *Glavnyi Teoretik* (Chief Theoretician), respectively, with their true identities revealed only after their deaths. Keldysh had a distinguished scientific career and served as president of the USSR Academy of Sciences in 1961–1975. Photo courtesy of Mike Gruntman.

### Veil of Secrecy

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All leading Soviet rocketeers remained covered by the veil of secrecy of the totalitarian state. The anonymous Korolev was known to the public only as the legendary *Chief Designer*. Another key participant, Mstislav V. Keldysh, who coordinated research and development in space science and technology and contributed to most major decisions shaping the Soviet program was known as the *Chief Theoretician of Cosmonautics*.

# Blazing the Trail

## The Early History of Spacecraft and Rocketry

**Mike Gruntman**

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**505 pages with 340 figures**

**Index: 2750+ entries, including 650 individuals**

This book presents the fascinating story of the events that paved the way to space. It introduces the reader to the history of early rocketry and the subsequent developments which led into the space age. People of various nations and from various lands contributed to the breakthrough to space, and the book takes the reader to far away places on five continents.

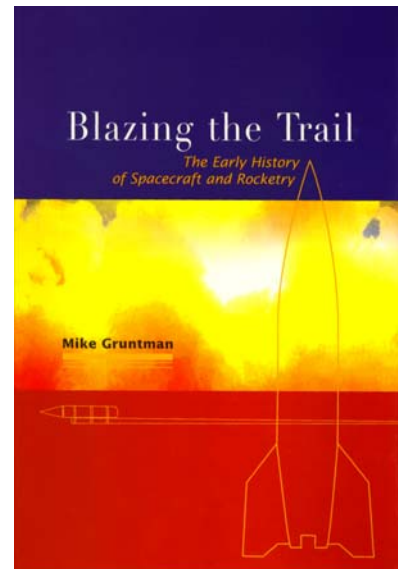
This world-encompassing view of the realization of the space age reflects the author's truly unique personal experience, a life journey from a child growing on the Tyuratam launch base in the 1950s and early 1960s, to an accomplished space physicist and engineer to the founding director of a major U.S. nationally recognized program in space engineering in the heart of the American space industry.

Most publications on the topic either target narrow aspects of rocket and spacecraft history or are popular books that scratch the surface, with minimal and sometimes inaccurate technical details.

This book bridges the gap. It is a one-stop source of numerous technical details usually unavailable in popular publications. The details are not overbearing and anyone interested in rocketry and space exploration will navigate through the book without difficulty. The book also includes many quotes to give readers a flavor of how the participants viewed the developments. There are 340 figures and photographs, many appearing for the first time.

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Book details (including **index** and **reviews**) at: <http://astronauticsnow.com/blazingthetrail/>

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