

## 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

page 338

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*.