The First Soviet Cosmonaut Team

Their Lives, Legacy, and Historical Impact

Colin Burgess and Rex Hall

The First Soviet Cosmonaut Team

Their Lives, Legacy, and Historical Impact

Springer

Published in association with
Praxis Publishing
Chichester, UK

PRAXIS

Mr Colin Burgess
Spaceflight Historian
Bonnet Bay
New South Wales
Australia

Mr Rex Hall M.B.E.
Education Consultant
Council Member of the BIS
London
UK

SPRINGER–PRAXIS BOOKS IN SPACE EXPLORATION
SUBJECT *ADVISORY EDITOR*: John Mason, B.Sc., M.Sc., Ph.D.

ISBN 978-0-387-84823-5 Springer Berlin Heidelberg New York

Springer is part of Springer-Science + Business Media (springer.com)

Library of Congress Control Number: 2008935694

Printed in Germany

Cover design: Jim Wilkie
Project management: Originator Publishing Services, Gt Yarmouth, Norfolk, UK

Printed on acid-free paper

Contents

APPENDICES

Dedication

While this book relates the stories and experiences of all 20 Soviet Air Force pilots selected in the first cosmonaut detachment in 1960, sadly not all of them would realise their dreams. With profound respect, this book is therefore dedicated to the eight spaceflight candidates from that first group who are forever a part of spaceflight history, but who, for a number of reasons, were once discarded as unsuitable and condemned to anonymity. Unlike their more illustrious peers, they were never able to ride the rockets and share in the glory of viewing our blue planet from orbit.

Ivan Nikolayevich Anikeyev
Valentin Vasilyevich Bondarenko
Valentin Ignatyevich Filatyev
Anatoly Yakovlevich Kartashov
Grigori Grigoryevich Nelyubov
Mars Zakirovich Rafikov
Valentin Stepanovich Varlamov
Dmitri Alexeyevich Zaikin

Foreword/Предисбовие

В 1959 г. я был в группе летчиков, проходивших медицинский отбор для включения в секретную программу, которая в будущем создаст тип летчика, именуемого космонавтом. В марте 1960 г. вместе с другими 19-тью летчиками я был отобран в первый отряд космонавтов, которым предстояло быть командирами и управлять первыми космическими кораблями, выведенными на космическую орбиту. Подготовка к полету была трудной и сложной, так как подобной программы вообще не существовало. Не было опыта подготовки людей для такой цели. Руководил нами полковник Евгений Карпов, который, являясь первым начальником Центра подготовки, отвечал за создание первого отряда космонавтов, обучение и подготовку к полетам на новом типе летательного аппарата в жестких условиях космического пространства.

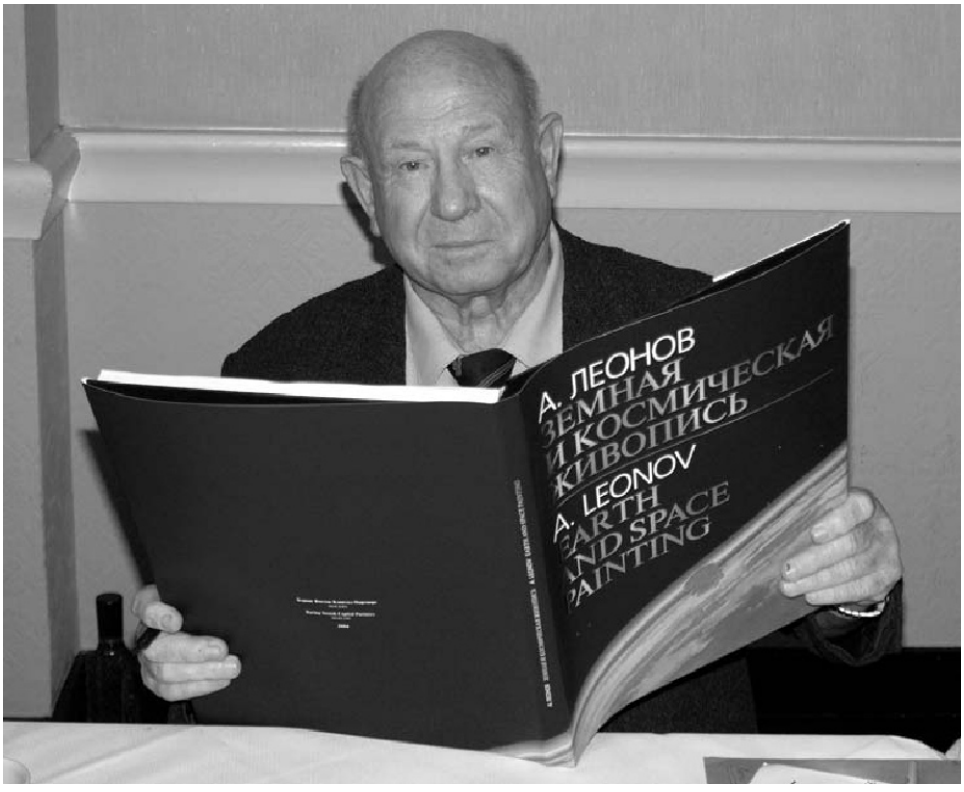
Имена некоторых космонавтов этого отряда впоследствии стали легендами, известными личностями во всем мире: Гагарин, Титов, Николаев, Попович, Быковский, Комаров, Беляев, Волынов, Хрунов, Шонин, Горбатко и Леонов. Мы совершили 21 космический полет, многие из нас во многом были первыми с целью превратить научные фантазии в действительность.

Эта книга лишь небольшая часть повествования о 8 товарищах, которые так и не слетали в космос. Они были

нашими коллегами и входят в историю космонавтики. Поэтому их имена и дело, которым они занимались, описаны в этой книге. Они заслуживают чести, чтобы о них знали и помнили. Это - Карташов, Филатьев, Варламов, Нелюбов, Аникеев, Рафиков, Бондаренко, Заикин. Особая признательность за предоставленную возможность вспомнить своих товарищей.

Генерал-майор авиации
Дважды Герой Советского Союза
Летчик-космонавт СССР
Космонавт с 1960 г. по 1975 г.
Космонавт набора 1960 г.

Алексей А. Леонов



Major-General Alexei Arkhipovich Leonov. (Photo courtesy David Meerman Scott)

In 1959 I joined a group of pilots who were being medically tested for what was a secret programme which would create a type of pilot called a cosmonaut. In March 1960, together with 19 other pilots, I was selected to join the first cosmonaut selection that would fly, command and control the first spacecraft launched into space.

Training was hard as no programme existed which would prepare people for this task. We were under the command of Colonel E.Y. Karpov who, as first commander of the training centre, was charged with creating the first cosmonaut team, teaching them the skills to fly a new type of vehicle in the harsh environment in space.

The names of some of the men who were part of this group have become legends and are known to everyone: Gagarin, Titov, Nikolayev, Popovich, Bykovsky, Komarov, Belyayev, Volynov, Khrunov, Shonin, Gorbatko and Leonov. In total we made 21 spaceflights, many creating space firsts and turning science fiction into fact.

This is only part of the story, as eight colleagues did not make that launch. They were part of us and the history of cosmonautics. Their names and the part they played are told in this book. They deserve to be honoured, and the names of Kartashov, Filatyev, Varlamov, Nelyubov, Anikiyev, Rafikov, Bondarenko and lastly Zaikin should be known. This book covers their contribution to our flights and their roles in the space programme of the 1960s.

It is an honour being asked to remember my colleagues.

Major-General of Aviation Alexei A. Leonov
Twice Hero of the Soviet Union
Pilot-Cosmonaut of the Soviet Union
Cosmonaut 1960 to 1975.
A member of the 1960 selection

Other works

Other space exploration books by Colin Burgess in this series:

With David J. Shayler:
NASA's Scientist-Astronauts (2006)
ISBN 0-387-21897-1

With Chris Dubbs:
Animals in Space: From Research Rockets to the Space Shuttle (2007)
ISBN 0-387-36053-0

Other space exploration books by Rex Hall in this series:

With David J. Shayler:
The Rocket Men: Vostok & Voskhod, The First Soviet Manned Spaceflights (2001)
ISBN 1-85233-391-X
Soyuz: A Universal Spacecraft (2003)
ISBN 1-85233-657-9

With David J. Shayler and Bert Vis:
Russia's Cosmonauts: Inside the Yuri Gagarin Training Center (2005)
ISBN 0-38721-894-7

Authors' preface

Located on the Dnieper River between Kiev and Odessa, the south-central Ukrainian city of Zaporozhe (or Zaporizhia) was once home to the Cossacks, a race of colourful and tenacious horsemen who ruled the country during the 17th and 18th centuries. A sprawling industrial city, Zaporozhe is also home to a massive hydro-electric dam which dominates the riverscape from most vantage points in the city. Once heavily polluted by the insidious residues of several motor car and aircraft engine manufacturers, Zaporozhe—like so many other former Soviet cities—has recently undergone an extensive transformation, and even though typically ugly, ubiquitous concrete tower blocks of apartments still dominate the skyline, they are now partly hidden behind tree-lined avenues. In a quiet corner of Zaporozhe is the small, mostly neglected Kapustyany graveyard where, until recently, a weather-beaten gravestone closely surrounded by ragged trees had risen above the bare dirt and weeds, marking what was said to be the final resting place of a man who came tantalizingly close to his dream of one day becoming the first person to fly into space.

Quite remarkably, the fact that Grigori Nelyubov ever bore the title of cosmonaut was nowhere to be found on the gravestone, which has now been replaced. In fact, it would actually be, with the exception of close family members, virtually nobody who knew anything at all about the significance of the life of the uniformed person whose photograph was embedded in the obelisk. Nelyubov died in virtual anonymity, and this was reflected in according him such a meagre resting place. By way of contrast, the remains of many of his one-time colleagues and friends who have passed away now occupy honoured burial places within the Kremlin Wall, or in Moscow's renowned Novodevichy cemetery, where they are clearly identified and lionized as pioneering cosmonauts.

Why the sad anomaly, one might ask? Nelyubov, a jet pilot of substantial skill, determination and courage, enjoyed the same Soviet Air Force background as his colleagues in the first cosmonaut group. Then, selected as one of an elite group of 6 from that initial cadre of 20 candidates for specialized spaceflight training, he was

Grigori Nelyubov's former grave in Zaporozhe.

firmly in line to fly an early Vostok mission, one which would have not only have immediately endeared him to the Soviet public, but immortalised him in the history books. Given the right circumstances, he could even have been selected as the first person ever to fly into space. Had one of America's famed Mercury astronauts died before flying, there is very little doubt a national outpouring of grief and commemoration would have ensued across the United States, yet Grigori Nelyubov died a lonely death and a broken, forgotten man in a once nondescript grave.

Curiously, however, the gravesite in Zaporozhe no longer contains Nelyubov's remains. Instead, a few of his belongings are buried there, as well as some earth from his final resting place located nearly 4,500 miles away. After he died, hit by a train northwest of Vladivostok in February 1966, Nelyubov's body was initially buried in that simple grave in Zaporozhe. Some time later his remains were disinterred and reburied in yet another nondescript grave in Kremovo, a village in the Mikhailovski District, near Vladivostok. Then, after being formally identified as a cosmonaut in 1986, his grave at Kremovo underwent a more befitting transformation. A high, black polished granite stone in which his helmeted image has been engraved now rises above the fenced-off grave, and the inscription below this reads:

Cosmonaut VVS [Soviet Air Force]
2nd Backup Y. A. Gagarin
Pilot First Class

Captain Nelyubov
Grigori Grigoryevich
8.4.1934–18.2.1966

The fact of his second grave on the other side of the country remains something of a mystery, as does the birth date on the Kremovo memorial, which differs from his official birth date of 31 March 1934. On 24 October 2007 the obelisk above the cleaned-up gravesite in the Kapustyany cemetery was also replaced with a more befitting stone. Nelyubov's brother Volodimir was there to place flowers by the new gravestone, as was one of the cosmonaut's school friends, Aris Pecheritsa. On this stone the birth date is given as 31 March 1934. Such are the many imponderables associated with determining the facts behind this first cosmonaut group.

On 12 April 1961, a 27-year-old Russian military pilot whose identity to that time was only known to a few of his friends, family and Air Force colleagues became the first person to fly into space. On that glorious spring day, Senior Lieutenant Yuri Gagarin (promoted to the rank of major during his mission) also became the first member of the first cosmonaut group to achieve spaceflight. Others from the detachment, known as Chief Designer Sergei Korolev's "Little Eagles", would one day follow in his path: Gherman Titov, Andrian Nikolayev, Pavel Popovich, Valery Bykovsky, Vladimir Komarov, Pavel Belyayev, Alexei Leonov, Boris Volynov, Yevgeny Khrunov and Georgi Shonin. Each would achieve lasting fame as one of their nation's pioneering cosmonauts.

It was actually some eight years after Gagarin's historic accomplishment that the final member of that first cosmonaut group would fly into space, when 34-year-old research engineer Viktor Gorbatko was launched into orbit as a third crewmember aboard the Soyuz 7 spacecraft, on 12 October 1969. Much had happened during those interceding years: four more groups of cosmonauts had been selected; Yuri Gagarin was tragically killed in a mysterious aircraft accident; Vladimir Komarov had perished on his second spaceflight when the Soyuz 1 spacecraft he was commanding slammed into the ground at high speed after a troubled spaceflight; and two Americans named Neil Armstrong and Edwin "Buzz" Aldrin had walked on the surface of the Moon. Gorbatko was the 12th member of the first cosmonaut team to fly into space, but that group had initially numbered 20. Who were the missing cosmonauts, and why did they remain unknown candidates on the ground as their colleagues achieved glory and lasting fame?

With many clues to tantalize them, Western researchers would eventually realize that other cosmonaut candidates had been selected in that first group. But penetrating the shroud of secrecy that the Russian space chiefs maintained around their programme was an incredibly difficult proposition, filled with false leads and misinformation. Names were hinted at in some memoirs and publications on Soviet space activities, while the faces of unknown participants were found to have been crudely airbrushed out of photographs showing members of the first cosmonaut team. One of these mystery men would prove to be Senior Lieutenant Grigori Nelyubov, sometimes present but unidentified in photographs accompanying Gagarin and his back-up Gherman Titov on the bus ride out to the Baikonur launch pad in 1961. Officially

At top, Nelyubov's newer grave at Kremovo. Below is the refurbished gravesite and replacement marker at the Kapustyany cemetery in Zaporozhe. (Both photos courtesy Ivan Ivanov from *http://astronaut.ru*).

Gagarin (foreground) travelling on the transfer bus out to the launch pad, 12 April 1961. Seated behind him is his backup pilot, Gherman Titov. Behind Gagarin is his second backup Grigori Nelyubov, while Andrian Nikolayev is behind Titov.

recognized as a cosmonaut many years later, Nelyubov would finally be named as a member of the elite group selected from within that first cosmonaut cadre for advanced training, a group that space historian and investigator James Oberg came to call the Sochi Six.

Nelyubov is actually mentioned as a potential cosmonaut candidate in Evgeny Riabkchikov's 1971 book, *Russians in Space*, together with Ivan Anikeyev, another pilot who would join the first group of cosmonauts. One of the photographs in Riabchikov's book shows chief Soviet rocket designer Sergei Korolev relaxing with what is described as "a group of cosmonauts" in May 1961. Apart from several known cosmonauts, the photograph also features unflown cosmonauts who would later be identified as Nelyubov, Anikeyev and Rafikov.

Speculation that there had been a number of unknown cosmonauts in the first group gathered considerable strength with the publication of a book by Georgi Shonin, a flown member of that group. His autobiographical book, the title of which translates to *The Very First Ones*, was published in 1976, and in it he revealed that the first cosmonaut group numbered 20 men. He even gave the first names of his unflown colleagues: Anatoli, Ivan, Dmitri, Grigori, Mars and three others, all named Valentin. In order to distinguish the latter three he referred to them as "Number One", "Junior" and "Gramps". The pieces of the puzzle were slowly starting to come together.

In 1984, an émigré orthopaedic surgeon named Vladimir Golyakhovsky released his memoirs in a book published in New York called *Russian Doctor*. In it he told of a harrowing night in a Moscow clinic when a young man identified to him as a cosmonaut trainee was brought to the hospital, literally burned from head to foot and in a critical condition. He would die soon after. Golyakhovsky's account of that evening's dramas added considerable credence to lingering rumours of a young

cosmonaut dying after being extensively burned in a training exercise. This cosmonaut would finally be identified some years later as Valentin Bondarenko, the "Junior" mentioned in Shonin's book.

Two years on, in 1986, a series of officially sanctioned articles appeared in the Soviet newspaper *Izvestia* in which the full names and some biographical information was finally revealed on all eight of the "missing" cosmonauts. By then, a full quarter century had passed since Yuri Gagarin had flown in space.

By way of contrast, NASA's seven Mercury astronauts had been openly introduced to the American public amid much fanfare at a Washington, D.C. press conference on 9 April 1959. It was all part of the open information policy the civilian space agency had adopted and maintained in consultation with the White House, in which the nation could participate by knowing what space feats were being planned, when they were scheduled to launch, and who would fly them. It was an agreeable and workable policy, but one that would continually frustrate NASA officials as it gave considerable propaganda advantage and leverage to their Cold War adversary, the Soviet Union. In the early days of the adversarial Space Race to the Moon, as soon as NASA announced an ambitious manned space mission, Soviet leaders from Premier Nikita Khrushchev down would emphatically demand that this feat not only be carried out ahead of the Americans, but surpassed. And while America and the entire world were familiar with the names of the American astronauts well in advance of their flights, no one apart from a privileged few would know the identities of cosmonauts assigned to these increasingly hazardous flights.

In qualifications, expertise and experience, the Mercury astronauts (and later astronaut groups) far outshone their Russian counterparts. America's astronauts were highly qualified military test pilots with solid engineering backgrounds and hundreds of hours' experience in supersonic aircraft. As they were expected to participate in the design and actual operation of their craft in space, only the best possible candidates would be chosen, and the selection process was a long and arduous process. Conversely, the first Soviet manned spacecraft, Vostok, would be automatically controlled from the ground, and the first cosmonauts were expected, in the main, to be little more than sightseeing passengers taking part in some relatively innocuous onboard experiments and monitoring systems. Therefore, the search for suitable candidates was a relatively easy one, carried out and finalized within the ranks of jet pilots in the Soviet Air Force and Navy. No real engineering skill was required, and while test pilot experience was useful, it was by no means mandatory.

Overall, the Soviet candidates were much younger than their Mercury counterparts and also shorter in stature, in order to comfortably fit into the confines of the Vostok craft—also reflecting Soviet aircraft design. They would need to have some experience in parachute jumping as (unknown to Western observers at the time) they would not be landing in their spacecraft. The Soviet spacecraft designers were still working on a satisfactory rocket landing system, and harboured concerns that the impact with the ground on landing would be far too hard on the cosmonauts. As a consequence they would be automatically ejected from their craft as they neared the ground. In Gagarin's case this would later provoke controversy in regard to Soviet claims that he had orbited the Earth. Under Fédération Aéronautique Internationale

(FAI) regulations, a record—and orbit—could only be claimed if a participant actually landed in the same craft in which they had been launched. Pragmatists therefore continue to argue that while Gagarin may have been the first person to fly into space, he cannot be considered the first person to have actually completed an orbit of the Earth. That honour, they still say, should be bestowed under FAI rules on U.S. Astronaut John Glenn.

Less than a year after NASA officially named the space agency's seven Mercury astronauts the first Soviet cosmonauts were reporting for spaceflight training, initially in temporary facilities located in Moscow. Later, when completed to occupancy stage, they would continue their training in a special complex outside Moscow that came to be known as Zvezdny Gorodok, or Star City. And less than a month before Alan Shepard became the first American to travel into space, a member of the cosmonaut team—one of Korolev's "Little Eagles"—would enter the history books as the first person to be launched into space.

Apart from a burning desire to achieve spaceflight and weightlessness, Russia's cosmonauts shared one thing in abundance with the Mercury astronauts: an extreme competitiveness to not only be the best, but to fly first. Many, however, would miss out. While America's astronauts were for the most part highly disciplined individuals, a reckless arrogance often fuelled by alcohol and high spirits soon crept into the much larger company of the first cosmonaut team, resulting in four of their number being summarily dismissed without ever flying into space. A physical problem during centrifuge training cost another man his place in the team, yet another suffered a serious, disqualifying neck injury in a simple accident, and a third candidate would be diagnosed with a stomach ulcer at the wrong time in his career. Finally, the youngest of all 20 candidates, 24-year-old Valentin Bondarenko, would suffer a horrible death just a few weeks before Gagarin's flight when his body was engulfed in flames during a training exercise in the oxygen-enriched environment of a pressure chamber.

Told in narrative form for the first time, the story of the original Soviet cosmonaut team is a truly compelling study of human endeavour. It is not only one of extraordinary courage and high ambition, but of over-confidence and sometimes foolish behaviour, extreme disappointment and the abject bitterness of failure. The lives, inspirations and aspirations of these 20 men before and after their selection can now be fully related for the first time in factual detail. But while some of their number would come to know greatness and global adoration, others would sadly and anonymously fall by the wayside through accidents, illness, arrogance, disciplinary action and even death.

Many of the inherent mysteries of the Soviet space programme still abound. Frustratingly, investigations into these are often hindered by the determination of many early participants to adhere to time-worn fallacies surrounding their training and flights. However, one of the greatest fallacies still causing conjecture is that of the so-called "phantom cosmonauts". This 20th century legend thrives on persistent but unfounded rumours that several men and women died in Soviet space disasters before and after Gagarin's orbital flight. These rumours, and the names of those allegedly involved, will be examined in this book and due homage paid to many of the very real

technicians, designers and test engineers who actually participated in successfully creating the hardware, equipment and procedures that later exemplified the Soviet manned spaceflight programme.

This is a book that had to be written and needs to be read in order to gain a more complete understanding of the incredible technological era known as the Space Race and those humans who were the first to train to leave our planet. One could not imagine visiting a library without finding a profusion of books on the Mercury programme and its astronauts, yet, apart from some excellent Who's Who–style books, principally those of Michael Cassutt, Doug Hawthorne and Gordon Hooper, no publication has ever specifically told of the first group of Soviet cosmonauts. With this book, the authors have hopefully redressed that anomaly. It has been researched and written with the utmost respect for those who flew atop the Soviet rockets, and for those once-forgotten few who were left in their fiery wake, never to realise their dreams or potential.

During the period in which this book was being researched and written the world celebrated the 50th anniversary of the Soviet satellite *Sputnik*, a feat which truly ignited the incredible era known as the Space Race. Less than four years later a man would follow that basic satellite into orbit. At the time of writing this book, only 6 of the original 20 Soviet cosmonauts who might have been the world's first spacemen are still with us as living ambassadors of one of the most exclusive fraternities of explorers ever assembled: Valery Bykovsky, Viktor Gorbatko, Alexei Leonov, Pavel Popovich, Boris Volynov and the unflown Dmitri Zaikin. All of them have now been interviewed, and their words are an intrinsic part of this book. There are many revelations contained in what they told the authors, giving even more personal and historical impact to the remarkable story of the first Soviet space team.

This collaborative effort had its genesis in the lifelong interest of two people on either side of the world in the wondrous history of spaceflight. Both became entranced by space exploration at a time when human activity in this new arena was in its infancy, and for both it has remained an enduring interest. Some years back a mutual Dutch friend by the name of Bert Vis provided the catalyst for introducing the two authors of this book to each other. Bert, a fireman from The Hague, is a long-time and devoted researcher into Soviet/CIS space activities, and on many occasions he would travel on self-funded trips to Moscow and other world capitals with the specific aim of conducting in-depth interviews with dozens of cosmonauts and other leading figures involved in the origins, and continuance, of this remarkable era in human history. Many of those personalities are no longer with us, which lends these interviews an even greater historical significance. On occasion, Vis would be accompanied by other space historians such as Gordon Hooper, Chris van den Berg, Neil Da Costa and Rex Hall, together with Rex's wonderfully supportive life partner Lynn.

Many of the details within this book represent the extraordinarily incisive and sometimes difficult work carried out by this small band of self-funded enthusiasts, which is gratefully recognized and readily acknowledged by the authors.

About the authors

COLIN BURGESS I owe an incalculable debt for much of my fascination with human endeavours in space to my late and beloved grandmother, Beatrice Morgan. In my early teens I used to treasure any time spent with her as precious days filled with wonder and excitement. We would play old records and discuss episodes of human triumph and tragedy, and together look through a modest collection of newspapers she had collected over the years pertaining to these events. To me, they were a goldmine of information.

Sometime during an Australian summer school break (I believe in January 1962) my grandmother and I fell into a discussion on the much-delayed Mercury flight of Marine Lt. Colonel John Glenn. She said I should follow the progress of his flight, suggesting that this would be a truly pivotal event in history, and that I might begin my own collection of historic newspapers with his safe return from space. From that time on I found myself propelled into the interest and fascination of a lifetime. I not only began clipping out newspaper and magazine articles on Glenn and his mission, but started tracing back and reading up on earlier manned spaceflights; those of Yuri Gagarin, Alan Shepard, Gherman Titov and Virgil "Gus" Grissom.

The following year I entered the workforce with a job near the notorious streets of Kings Cross in Sydney, and one of my guilty pleasures each pay day was to visit a small Red Star bookshop near where I worked. This tiny, ill-lit shop sold all manner of magazines and books about life in the Soviet Union. After a while the elderly proprietor came to know me well, and on each visit he would happily point out magazines containing stories on the cosmonauts which I would purchase and take home to add to my growing collection. I know my mother feared for my mortal soul, and often told me that the FBI would have me on a list of suspected Soviet sympathizers. In a cultural sense that was true, because in reading these magazines I would come to know a great deal about the lives of the people of the Soviet Union, and even though this was at the height of such worrying episodes as the Cuban missile crisis, I never really feared our Cold War adversaries. I knew a lot about the way they

lived, but mostly I thrilled to the exploits of their cosmonauts, and regarded them—along with America's astronauts—as heroes.

The interesting thing about growing up in the first few years of human spaceflight was the absolute competitiveness of the Space Race. NASA would openly announce its plans for each successive mission, but there were only ever very broad hints leading up to each Soviet space spectacular. While I empathized with the Americas, there was always a certain thrill in walking by a news stand and seeing a banner headline about a Russian walking in space, three cosmonauts aboard a single spacecraft, or a manned link-up in space.

Yet there were always persistent, dark rumours about a number of cosmonauts who had either gone to glory in training accidents, or who had perished in spaceflight catastrophes before Gagarin's successful mission. Indifferent Soviet officials never really bothered to deny these rumours, or if they did it was to simply dismiss them as complete fantasy, so one never really had any idea whether there was an unexpected truth lurking behind these stories. However, I kept all of these articles, plus a number of magazine photos of men purported to be the missing cosmonauts, hoping that one day the truth about the Soviet space team would finally emerge.

James Oberg's revealing book *Red Star in Orbit* was released in 1981, and it became a source of fascination for spaceflight enthusiasts the world over. Oberg not only discussed (among many topics) the life and premature death of the mysterious so-called Chief Designer of the Soviet space programme, Sergei Korolev, but for me he provided the most intriguing narrative when he described how some men had been deliberately but clumsily airbrushed from some photographs of the first cosmonaut group, effectively going "down the memory hole" of Soviet history. Oberg even gave these mystery men names: there were three known as Valentin, and others were named Anatoli, Ivan, Dmitri, Grigori and Mars. In this he proved to be totally correct, although it would be several more years before their full names and what befell them was officially documented and released. That would occur in 1986, on the 25th anniversary of the history-making flight of Yuri Gagarin.

We even learned the fate of young Valentin Bondarenko, who, at the tender age of 23, died in a horrifying fire in a soundproof pressure chamber just three weeks before his cosmonaut colleague made mankind's first-ever flight into space. To this day, he is still the youngest male candidate ever selected to any nation's space team.

As the horizons of my interest in human space exploration widened, so I came into contact with many fine people who shared my enthusiasm and passion for the subject, and friendships of lasting tenure evolved. Two such chums are Simon Vaughan from Canada and Bert Vis from The Netherlands, with whom I shared a wonderfully productive and enjoyable week at the 1993 Association of Space Explorers' Congress in Vienna. Both were friends with British space historian Rex Hall, whose name I already knew well, and they encouraged me to get to know him. Thus, over the years, another great friendship ensued. As my airline job meant I was in London several times a year, Rex and Lynn would always throw their home open to me for a visit, an animated talk-fest in their living room, and a local takeaway Greek dinner washed down by a splendid bottle of Australian red wine. Truly an international evening!

Rex has always proved to be of great assistance to me in almost everything I've written to this time on the Soviet/Russian space programme, and I am therefore delighted that he so readily came onboard when I first broached the concept of this book with him. Like me, he feels that this story needs and deserves to be written—not only to recognize the many accomplishments of those members of the first cosmonaut group who were able to fulfil their ambitions of flying in space, but also the eight men whose names and achievements were held in limbo for so many years, and who have never been properly accorded their place in spaceflight history.

This, then, is our respectful salute to them.

REX HALL It was in the summer of 1961 that a Soviet touring exhibition came to London, and being swept up in all the excitement of the early days of the so-called Space Race I decided to attend. One of the exhibition's centrepieces was a full-scale representation of a spacecraft, duly marked as a Vostok vehicle. It was in fact Sputnik 3, but the organizers were giving away a small Novosti booklet on the Soviet space programme which I eagerly accepted. I was hooked.

Having had my curiosity aroused, I decided to seek out more information on the men who were flying these craft, so I wrote to NASA and to my joy received a large package of photos and biographical material on the astronauts. It was easy and much appreciated, but where, I thought, would I get the same material relating to the Soviets? I had no idea. I tried writing to the Soviet embassy in London but did not receive a reply. However, I discovered a book shop that had a set of cards on the subject which I purchased. My interest in the cosmonauts was reignited.

In the mid-1970s I discovered American space researcher Jim Oberg through his great article on missing cosmonauts in the British Interplanetary Society's *Spaceflight* magazine, which showed through his investigations that some cosmonauts had been selected in 1960 along with the known group members, but had not flown. Some had even had their images removed from group photographs. He attempted to identify men from the first selection in part from photographs which are reproduced in this book. I was in fact compiling a similar list with backups missing from early missions. It was the start of the "sleuths" who tried to make sense of a Soviet programme set against a background of secrecy. Then, in the mid-1990s, I discovered for myself the intrigue of these matters while sitting in the kitchen of a 1965 military cosmonaut who disclosed that for 20-plus years, both his involvement and his identity had been kept a State secret.

These sleuths, all of whom became firm friends, included some mentioned earlier by Colin such as Bert Vis and Dave Shayler, but this eclectic group also included noted researchers Michael Cassutt, Gordon Hooper, Neville Kidger, Phillip Clark, Antony Kenden, Bart Hendrickx and Geoff Perry. There were others who in many ways have also contributed to understanding the Soviet programme. It is thanks mainly to those amazing people with their enthusiasm, talents and persistence that a new openness came about, which has not only shown how much we did know but sometimes did not understand, as well as uncovering some of the secrets which still exist and hopefully one day will be in the public domain.

My interest, for me, came full circle in 1996 when I visited the cosmonauts' training centre known as Star City for the very first time, and I have subsequently returned a number of times. On these visits I have had the honour and privilege of interviewing a large number of cosmonauts covering the entire spectrum of the Soviet/CIS manned spaceflight programme, asking them how they became a cosmonaut, as well as their trials and tribulations, successes and failures. I now call a number of them friends. Little did I realize that momentous day back in 1961 how my sparked interest in spaceflight history would one day set me on a road that eventually led to the gates of Star City, and the chance to meet, interview and even befriend many of the men and women whose names and exploits had meant so much to me all those years ago.

I would have to say that my proudest moment came when I was laying flowers on the graves of the cosmonauts in the Kremlin Wall and Novodevichy cemetery along with their families and friends on Cosmonautics Day in 2001; it was 40 years to the day since Yuri Gagarin became the world's first human space traveller.

We trust that this book does bring to a wider world the story of those men who were, or could have been, pioneers of our new frontier of space.

Acknowledgements

With more decades of interest in space exploration between us than both authors would care to acknowledge, much of the extensive research carried out for this book required little more effort than simply reaching out for a particular book or file in our respective studies. But as always there are a multitude of unanswered questions, and it is wonderfully reassuring to know that there is always a host of good people out there ready and eager to assist where they can: perhaps in a large way, perhaps even in a very small way, but on each and every occasion very much appreciated. Worthy of particular appreciation are those unsolicited messages that usually began with a salutation, and something like, "I came across this and wondered if it might be useful to you for your book." Almost invariably, yes, it was.

Our individual helpers need to be acknowledged with gratitude. They are, alphabetically, Michael Cassutt, John B. Charles, Kyra Collins, Francis and Erin French, Dr. Vladimir Golyakhovsky, Bart Hendrickx, Ivan Ivanov, Anne Lenehan, Tom Neal, James Oberg, Alex Panchenko, Tony Quine, David M. Scott (not the astronaut), David Shayler, and last, but certainly not least, to our Dutch chum Bert Vis. A vast amount of information and quotes in this book are the result of Bert's many investigative forays into Star City, where he is now widely recognized, admired and treated as a trusted friend for his work in interviewing cosmonauts, engineers, designers and other folks over many years in order to transcribe and retain for posterity a social history of the entire Soviet/CIS space programme. Specifically for this book, Bert interviewed Marina Popovich in Star City, Moscow, and Alexei Leonov at a space conference in Edinburgh, Scotland. Our thanks also go to those two people for graciously consenting to be interviewed.

We would also like to offer profuse thanks to Elena Esina, curator of the museum in the House of Cosmonautics in Star City, who always comes up trumps as a friendly liaison person with the residents and workers at that remarkable place. We also acknowledge the staff of the Yuri Gagarin Training Centre and the cosmonauts of

the Air Force detachment, without whom this book would definitely not have been possible.

Kudos also to the staff and work done at *Novosti Kosmonavtiki*, Russia's leading magazine on space exploration, and to the amazing Spacefacts website (*www.spacefacts.de*) so capably administered by Joachim Becker. Many thanks as always to the Council and Staff of the British Interplanetary Society in London for once again allowing us access to their extensive library and photo archive.

And finally, our love and thanks go to our respective First Ladies, Pat and Lynn, for their ongoing but sometimes strained patience and understanding of our shared passion for spaceflight history.

Figures

While the vast majority of photographs came from the personal photo files of the authors, and ownership or permission of others has been acknowledged, it has proved impossible to correctly identify the source of a number of photographs taken during the Soviet regime. The authors wish to extend their apologies to those whose work cannot be properly identified and formally acknowledged in this work.

Abbreviations and acronyms

ARS	American Rocket Society
ASTP	Apollo–Soyuz Test Programme
ATC	Assembly Testing Complex
CapCom	Capsule Communicator
COSPAR	Committee on Space Research
CPSU	Communist Party of the Soviet Union
DM	Descent Module
DOSAAF	Freewill Society for the Army, Aviation and Navy Support
Elint	Electronic intelligence
EN	Everything normal
EVA	Extra-vehicular activity
FAI	*Fédération Aéronautique Internationale* (International Aeronautical Federation)
GCTC	Gagarin Cosmonaut Training Centre
GMK	Chief Medical Commission
GMVK	State Interdepartmental Commission
HAFP	Higher Air Force Pilots aviation school
IAD	Air division
IAP	Interceptor fighter regiment; training fighter regiment
IBMP	Institute of Biomedical Problems
ICBM	Intercontinental Ballistic Missile
IGY	International Geophysical Year
IMBP	Institute for Medical and Biological Problems
IP-1	*Izmeritelny Punkt-1* (Tracking Point 1)
KGB	*Komityet Gosudarstvennoy Bezopasnosty* (Committee for State Security)
KS-4	*Korabl-Sputnik 4* (Spaceship Satellite 4)
LII	M.M. Gromov Flight Research Institute

LK	*Lunniy Korabl* (Lunar Spaceship)
MIAN	V.A. Steklov Institute of Mechanics, U.S.S.R. Academy of Sciences
MOUSE	Minimum Orbital Unmanned Satellite of the Earth
NKVD	*Narodny Komissariat Vnutrennikh Del* (Soviet Secret Police)
OKB	*Opytnoe Konstructorskoi Byuro* (Development Design Bureau)
OM	Orbital Module
RNII	*Raketnynauchno-Issledovatelski Institut* (Reactive Scientific Research Institute)
RRS	Retrorocket system
RSC	Rocket and Space Corporation (Energia)
SAF	Soviet Air Force (see VVS)
SAS	Space adaptation sickness
TsAGI	*Tsentralny Aerogidrodinamicheskiy Institut* (Cental Institude of Aerohydrodynamics)
TsIAM	*Tsentralny Institut Aviatsionnogo Motorosroenya* (Central Institute of Aviation Motors)
TsPK	*Tsentr Podgotovka Kosmonavtov* (Cosmonaut Training Centre)
TsVLK	Central Medical Aviation Commission
TsVNIAG	Central Aviation Institute of Medicine
VMF	*Voyenno Morskoy Flot* (Soviet Navy)
VNA	Vietnamese News Agency
VPB	Ventricular premature beat
VVS	Soviet Air Force