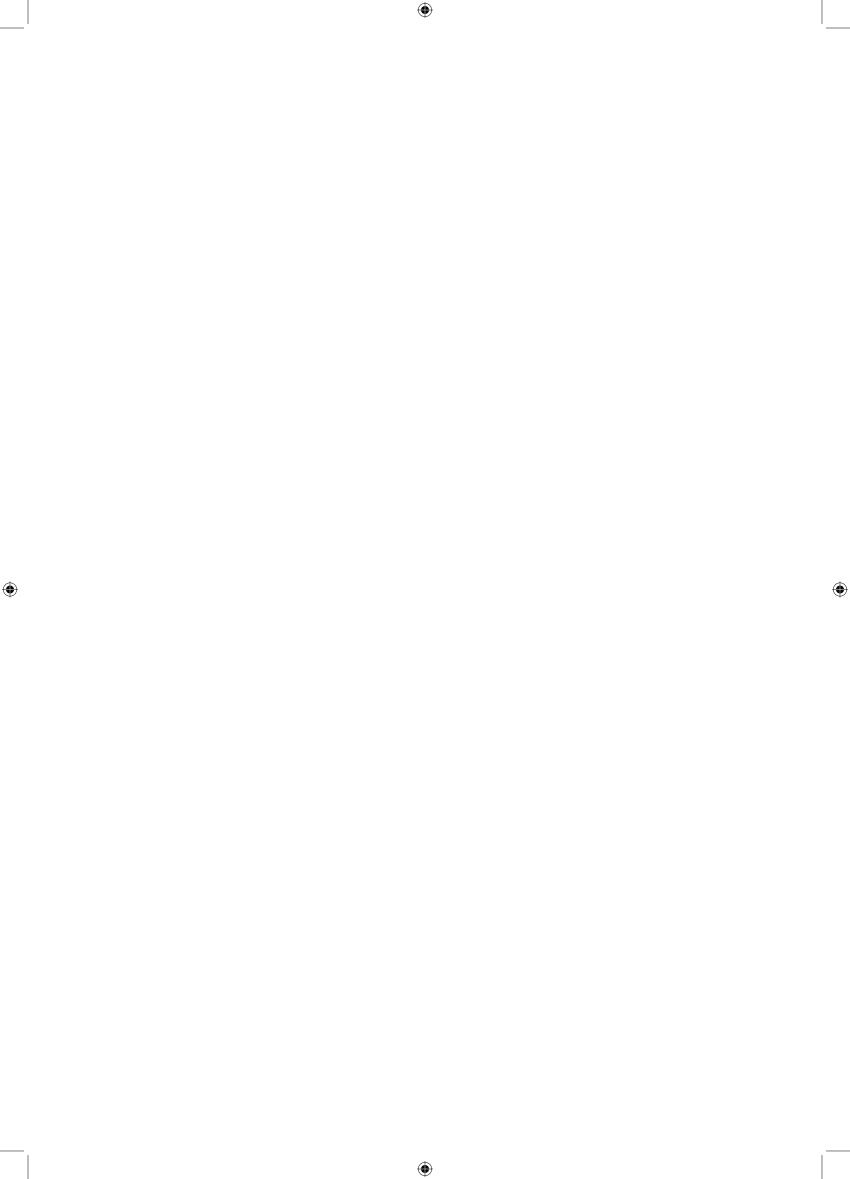


Patricia Arlene Vickers-Rich
with
Boris S. Sokolov



The Flight: Boris S. Sokolov

Natural History and Paleontology in the Changing Landscape of 20th and early 21st Century Russia

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Natural History and Paleontology in the Changing Landscape of 20th and early 21st Century Russia

A Short Biography of Russian Academician Boris Sergeevich Sokolov, geoscientist, naturalist, philosopher, historian and humanitarian

By
Patricia Arlene Vickers-Rich
in conversation with
Boris Sergeevich Sokolov

Natural History and Paleontology in the Changing Landscape of 20th and early 21st Century Russia

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with

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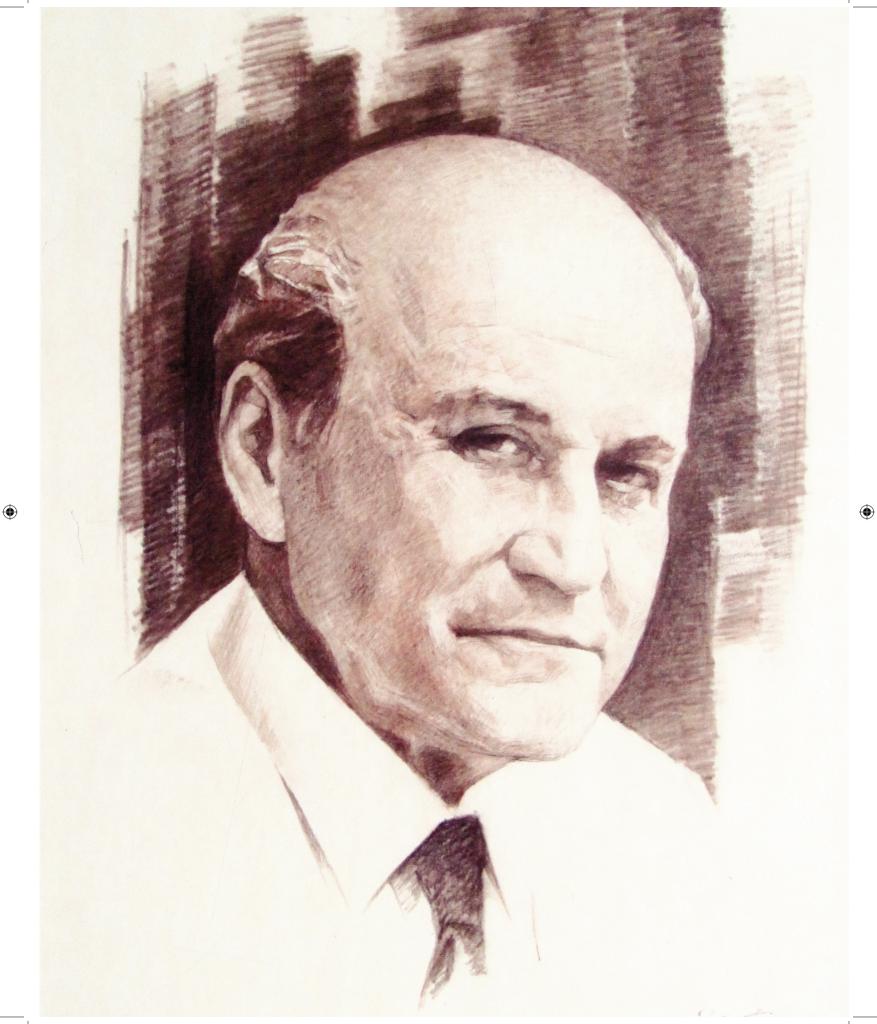
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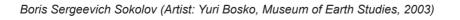


The Road Not Taken

Two roads diverged in a wood, and I – I took the one less travelled by, And that has made all the difference

Robert Frost (1874-1963)













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Foreword

This Foreword to Patricia Vickers Rich's splendid volume on the life and times of Academician Boris Sergeevich Sokolov — one of the 20th century's most notable and influential paleontologists — is a joint effort by J. William "Bill" Schopf (University of California, Los Angeles), Mikhail "Misha" A. Fedonkin (Geological Institute of the Russian Academy of Sciences, Moscow) and Dmitriy "Dima" Grazhdankin (Institute of Petroleum Geology and Geophysics). We each have known this towering paleontologist for many years, Misha even longer than Bill. Each of us has benefited, greatly, from his friendship, support, encouragement and wisdom, and we each have known him in different ways at different times. So, we use this opportunity not only to introduce this important work on the history of Soviet/Russian paleontological science, but to also recount a few anecdotes about our own interactions with Boris Sergeevich. Our Foreword is divided into four parts: first, Bill Schopf's recollections of interactions with this sterling scholar; then, Misha Fedonkin's reminiscences of his interactions with Boris Sergeevich, his mentor and great friend; third, Dima Grazhdankin's lessons from the life of Boris Sergeevich; and, finally, a short preview of the volume.

Recollections of J. William ("Bill") Schopf

I first met Academician Boris Sergeevich Sokolov in 1972, during my initial visit to the Soviet Union. Three years later, when for six months I was a US National Academy of Sciences Exchange Scientist with the USSR, I spent two months working at the institute he headed in Novosibirsk, the Institute of Geology and Geophysics at the Siberian "academy city" Akademgorodok. I well remember my first visit to his office, in early March 1975, shortly after I arrived. He greeted me warmly and we chatted for quite a while (as, I think, he was sizing me up, figuring out how I might have changed over the previous three years). After a time, he pointed to a thick monographic volume he had authored on Paleozoic corals and, with a shy smile, told me "That's my Lenin Prize." He was rightly pleased. The volume had earned him his first national accolade — later to be followed by three Orders of Lenin, a Hero of Socialist Labor Medal, and, in 1998, the Lomonosov Grand Gold Medal, the most



prestigious award of the Russian Academy of Sciences.

For me, this 1975 visit to his institute was a wonderful time as I learned from his colleagues about their science. But the visit was not without challenges. Having spent the two previous months at the A.N. Bakh Institute of Biochemistry in Moscow (headed by Academician Alexandre Ivanovich Oparin, whom I had known for several years before I met Boris Sergeevich), and having prepared for my extended stint in the USSR by six months of intensive Berlitz training in the Russian language (claimed by my teacher to be the equivalent of two years of college Russian), I realized that it would be important for me to give a public presentation about my work early during my research visit to Sokolov's institute. Boris Sergeevich agreed, and to translate my lecture assigned an expert on fossil algae who was working hard to master English, telling me that for her this would be a "valuable learning experience." She and I met, several times, to go over the presentation. During our practice sessions, I discovered that she was not acquainted with many aspects of my presentation.

The Institute members assembled, some 500 strong, to hear my remarks. To begin, I spoke a sentence 10 words long. Its translation came out as five words. So, I cut further. Then, after a time, to my astonishment (dare I say "terror"?), this gifted scientist departed the stage. She simply left. There I was, all-but-nude in front of these many scientists, with only my slides and my poor 2nd-year college-Russian to help me through. But Sokolov's colleagues came to the rescue. I completed the talk in my broken Russian, with the audience calling out the Russian equivalents of the English words I was often forced to use!

I learned from this -- and, subsequently, the words in Russian that I needed to discuss my science -- as my survival of this near-catastrophe gave me the confidence to give lectures in Russian, without a translator, some five times more during my six-month exchange visit. Most importantly, this episode served to introduce me to a member of Sokolov's institute, geologist Yuli (Julius) K. Sovetov, with whom I wrote the first report of chert-permineralized microorganisms ever found in the Russian Precambrian. And, we followed-up this initial report with a block-buster paper in 1977, co-authored by five Soviet geologists-paleontologists, announcing discovery of six new Precambrian microbiotas that taken together doubled the number of such finds world-wide.

During my visit, I was invited to Boris Sergeevich's home where I met his highly accomplished and exceptionally intelligent wife (who time and again did her best to improve





my fractured version of the Russian language) and their daughter, Marina Gnilovskaya, herself an important contributor to Precambrian paleobiology. It was truly kind of Boris Sergeevich and his family to be so hospitable. After all, I was in my mid-30's and still unproven, not someone who mattered. But they were exceedingly generous, and they treated me with friendship and respect.

In 1976, the year following my six-month exchange visit, Boris Sergeevich was kind to me, yet again. I had returned to the USSR, this time to give a talk at a geological meeting in Moscow. Unbeknownst to me, Boris Sergeevich had asked his fellow-Academician Alexander Vasilevich Sidorenko, the USSR Minister of Geology, to invite me to be interviewed by nation-wide "Radio Moscow." I agreed, but with the proviso that my comments in English be translated into Russian!

Near the end of the interview, after we had discussed my six-month experience in Moscow, Leningrad and Novosibirsk, the interviewer enquired, "Which did you like better, Moscow or Leningrad?" Given the long-term rivalry between these two metropolitan giants, this had all the earmarks of a "loaded question" -- whichever of the cities I chose was bound to annoy a sizeable number of listeners. My response: "Moscow is busy, bustling, the capital of the country. And Leningrad is beautiful, with the Hermitage and the River Neva. But, in truth, what I most enjoyed was my time in Novosibirsk, at Akademgorodok. The snow flew, the trees sparkled, the squirrels played, and I got work done."

Immediately after the interview, a long black limousine pulled up and I was whisked away to Minister Sidorenko's office. This was a complete surprise. Sidorenko was responsible for overseeing some 5,000 geoscientists -- not just those in universities and research institutes, but all geologists of the Soviet Union and the oil, gas and coal industries as well. I had never before met such a high-up personage, much less a Cabinet Minister.

The first to greet me in Sidorenko's spacious suite was Boris Sergeevich who, I discovered, had arranged this reception. There were a dozen or so attendees and a more than ample supply of canapés, wine, vodka, and Armenian cognac. The room buzzed with conversation while the Minister and I chatted, mostly about how to improve the political systems of our two countries. As our conversation came to a close, Minister Sidorenko shook my hand, thanked me for my "honesty and candor", and presented me with a remarkable gift -- a beautiful, hefty, multifaceted synthetic quartz crystal, the latest prize-product of Soviet





technology. To this day, this stunning crystal is displayed prominently, along with my other Russian mementos, at our "dacha" in the mountains that rim Los Angeles.

A year or so later, at the International Geological Congress in Australia, I again shared thoughts with Academician Sidorenko and we remained friends until his untimely death in 1982. I owe my acquaintance with Sidorenko, and the friendship that followed, and so much more to the generosity of Boris Sergeevich Sokolov.

Reminiscences of Mikhail ("Misha") A. Fedonkin

Academician Boris Sergeevich Sokolov is undoubtedly one of the brightest personalities in the field of the Earth Sciences of the second half of the 20th century in Russia. His research interests cross a range of disciplines including paleontology, stratigraphy, regional geology, paleogeography, facies analysis, the nature of the biosphere as well as history of science. He is the author of more than 600 scientific works, including twelve monographs. Fifteen paleogeographic maps of the Precambrian and early Paleozoic of the Russian Platform with scale 1: 5 000 000, were published in 1960 under his supervision.

Sokolov is well known globally for his outstanding work on fossil corals and stratigraphy of the Upper Precambrian, which forms the foundations modern biostratigraphy.

In the early years of his career, beginning in 1936, Sokolov distinguished himself as a talented geologist and a manager of a major research project in Central Asia and China, a significant contribution to understanding the geological structure of this vast Asian region and a firm base for assessing the oil-and-gas prospects in this region. In the 1950s he compiled five volumes on the "Paleozoic Tabulates of the European part of the USSR", which became a classic resource and inspired research on fossil corals globally leading to a series of workshops and international projects. Sokolov was the first scientist to carry out an indepth analysis of large groups of Paleozoic corals and provided a detailed classification that reflected their evolution, stratigraphic and geographic distribution, having a marked impact on the ideas about the history of their development.

In the mid-1950's, having concentrated his efforts on studying the lithology and distribution of the sediments derived from cores recovered from the deep drilling of Paleozoic sediments of the Russian Platform, B.S. Sokolov made a major discovery. This is considered





a great achievement in the understanding of global stratigraphy during the 20th century. Sokolov recognized a new geological system, which he called the Vendian, made up of ancient strata formed during the Vendian Period. This discovery had a major impact on the understanding of paleontology and stratigraphy of the Precambrian.

The scientific and organizational contributions of Boris Sergeevich have been invaluable in the development of science in Russia, and globally. In 1975 he held the post of Academician in the Department of Geology, Geophysics, Geochemistry and Mining Sciences of the Academy of Sciences. He established the Department of Paleontology and Stratigraphy at the Institute of Geology and Geophysics, Siberian Branch of the Academy of Sciences at Akademgorodok, as well as the only Laboratory of Precambrian Paleontology in Russia, based at the Paleontological Institute in Moscow. He led several pioneer research programs in the field of Earth Sciences and several international projects within the International Geological Correlation Program of UNESCO. B.S. Sokolov's name is associated with the establishment of a paleontological school, which received international recognition. More than 50 Doctors and Candidates of Science were trained under his supervision.

Sokolov is a Laureate of the Lenin Prize, a Hero of Socialist Labour, and was awarded three Orders of Lenin, as well as the Order of the Red Banner of Labour, the Badge of Honor Order, and many other USSR medals. He was also awarded the A.P. Karpinsky Gold Medal accompanying his international Karpinsky —Schweitzer prize (Hamburg Foundation). He was elected as a member of the Geological Societies of France, Sweden, Bulgaria, the USA, the UK and Canada, and the Academies of Science of both Czechoslovakia and Germany. Boris Sergeevich today is the Honorary Chairman of the Interdepartmental Stratigraphical Committee of the Russian Federation, the President of the All-Russian Paleontological Society, and in different years past the Vice President and President of the IPA (International Paleontological Association). His great contribution to science and to the Academy is noted by his receiving the M. V. Lomonosov Large Gold Medal, the highest award of the Russian Academy of Sciences.

Working together with Dr. Sokolov for more than three decades and being a good friend certainly determined the direction of my work for many years. His influence still is a very important and valuable aspect of my life.





In 1971 after graduating from the Moscow State University and serving two years in the army, I was invited to the Geological Institute of the Academy of Sciences of the USSR, the leading Institute in the field of fundamental Earth Sciences research. My first research was on the stratigraphy of Proterozoic sediments of the Southern Urals, but later I became interested in paleoichnology, a study of ancient traces of Cambrian invertebrates. My professional development was much influenced by my senior colleagues - B. M. Keller, I. N. Krylov, M. A. Semikhatov, A. Yu. Rozanov, N. M. Chumakov, S. V. Meyen. At that period of time, Sokolov, then a recognized leader in Soviet paleontology, and foremost authority on fossil corals and stratigraphy, discoverer of the Vendian period, was working in Novosibirsk, in the science city Akademgorodok. I seldom crossed paths with him, and only from a distance.

However, everything changed for me after the discovery of the remains of soft-bodied animals in sediments of the Vendian period (more than 550 million years ago) on the Onega Peninsula of the White Sea during a Geological Institute expedition led by Professor B. M. Keller in 1974. The next year, N. M. Chumakov and I continued field work on the Onega Peninsula, our excavations leading to the discovery of a variety of fossils. In 1977, I was lucky enough to discover a staggeringly rich fossil fauna in the Vendian sediments on the Zimny Coast of the White Sea, no doubt the best preserved fossils of these ancient animals on Earth.

In 1975 Boris Sergeevich moved from Akademgorodok to work in Moscow, so our professional meetings became more frequent. I felt him becoming most interested in these strange fossils from the White Sea, the majority of which had been known before our discoveries only on the Avalon Peninsula (SE Newfoundland, Canada), in Namibia and South Australia. Within the vast territory of the Soviet Union such productive sites were unknown. But it was Boris Sergeevich, the discoverer and the "godfather" of the Vendian period, who since the 1950's had patiently been collecting the "crumbs of information" concerning these ancient organisms that lived on this Earth in the late Proterozoic. In his personal collection there were a few remnants of the fauna and flora, collected by him or by his colleagues in different parts of Siberia, the Ukraine, and the Russian Platform. It is interesting to note that the bulk of these ancient fossils obtained while studying the bore cores were only thin prints on rounded cleaved cores. But even these rare and precious samples led him to study each carefully and along with a few foreign publications which he was able to collect – all this gave him the inspiration and a determination to understand just what they represented. I enjoyed Dr. Sokolov's articles, his measured conclusions, his ideas and hypotheses about the nature







of these mysterious soft-bodied organisms and their evolutionary fate. In Boris Sergeevich's scientific work, I was attracted by his emphasis on the paleobiological significance of these ancient fossils, and the questions they raised about the early history of organic life and the biosphere.

In the summer of 1978 I headed off from Moscow for three months to the White Sea Winter Coast, accompanied by three of my colleagues. A large team of 13 men led by Boris Sergeevich joined us. His field team included members of his new Laboratory of Precambrian Paleontology at the Paleontological Institute in Moscow, geologists from Arkhangel'sk and Sverdlovsk, and some technicians. They all arrived on a large helicopter. By that time my small team and I had collected hundreds of fossils from different levels of sandstone and clay strata cropping out along the steep and tall cliffs on the White Sea coast. We had some experience in searching and collection of those unusual fossils and we generously shared our knowledge with Sokolov and his team. Thanks to Boris Sergeevich, we were able to use the helicopter to study Vendian deposits in the area far from the sea, in the upper reaches of the Zolotitsa River. There, in the northern taiga, we did cover much territory and quickly found the clay strata exposed in the river valley, but also discovered that these outcrops were not so favorable for finding fossils.

Having finished our work, my companions and I decided to take two rubber boats and float down to the mouth of the river to the village of Nizhnyaya Zolotitsa, and from there boarded a large motor boat (dora) to return to our field camp for the continuation of the excavations. Our colleagues were to fly back to Arkhangel'sk by helicopter. We all warmly said goodbye to all our colleagues, and began the walk through the bush to our loaded boats near the shore. I was going last, but heard footsteps behind. I turned around and saw Boris Sergeevich walking behind me. He asked for a couple of minutes to talk. We stopped, and a little embarrassed he asked me to think about the possibility of my transition from the Geological Institute to the Paleontological Institute to his new laboratory. It was said in such a gentle manner. He understood that the decision to leave the Geological Institute was not an easy one. I thanked him and promised to let him know my decision when I returned to Moscow. Boris returned to his helicopter and our boats pulled offshore, caught by the current. We waved goodbye to each other. At that time he was 64 and I was 32. Upon my return to Moscow, I moved to Sokolov's Precambrian Laboratory, and we had a decade of working together, in the organization and development of one of the most exciting disciplines in paleontology - Vendian paleobiology.





During the next years Boris Sergeevich, despite his heavy responsibilities in the Presidium of the Russian Academy of Sciences, paid regular visits to the Laboratory as its leader, as well as a senior experienced colleague, and an observant, wise and gentle person. These years of interaction with Boris Sergeevich deeply influenced me both professionally and spiritually. Sokolov and I have organized and conducted dozens of expeditions in Russia and abroad. We have collected more than ten thousand fossils from the White Sea region alone, but in addition to that there have been ongoing field researches of the Vendian deposits in Siberia, the Urals and other regions which have expanded our understanding of the events during this critical period of life on Earth.

For the last 5 years Boris Sergeevich has not left his home because of health reasons. He gave away several truck loads of books from his library as gifts to several Institutes of Academy of Sciences in Moscow, Novosibirsk and St. Petersburg, and to the Museum in his native town of Vyshny Volochyok. It should be said that his room is still full of books, and the collection continues to expand! His physical world is now narrowed to the limits of his room, but his spiritual world is quite unlimited, and it too is expanding. At 98, he continues to work, read, write articles and craft books, review scientific theses, maintain an extensive correspondence written with an incredibly stable hand, is interviewed for TV and other media, spends hours speaking with his numerous colleagues and friends, helping them with advice, authority and his wisdom. He continues his determined mission as a Russian academician for the benefit of science and his country...

Three Lessons from the life of Boris Sokolov from Dima Grazhdankin

When the student is ready, the teacher will appear. And Boris Sergeevich Sokolov did! As his student, I was offered a once-in-a-lifetime opportunity to continue my education at the University of Tübingen in Germany and later at the Cambridge University in England. Sokolov oversaw me writing my very first scientific paper, and he mentored me in my first steps as an independent researcher, submitting my PhD and then defending my thesis. Out of many lessons that I've learned from Boris Sergeevich Sokolov, there are three that I value most.

Lesson 1: One can only be truly cosmopolitan if he/she is deeply rooted in his/her "Small Motherland." For Boris Sergeevich, it is the unique spiritual connection with his birthplace,





the small village of Berezki that gave him the fundamental understanding of globalization and the appreciation of cultural treasures.

Lesson 2: A human's capacity for learning can be boundless. Maximize your efficiency.

Lesson 3: Be prepared to step and think beyond established paradigms. Be prepared to reexamine your reasoning.

These are the lessons that I pass on to my students at the faculty founded by Boris Sergeevich in the science city of Akademgorodok in Novosibirsk, the place where I am currently based. I am enthusiastic about teaching here. For several years I have led field trips, taught laboratory courses and supervised research projects at undergraduate-level paleontology, stratigraphy and sedimentology. My teaching experience is a quintessence of different approaches and methods filtered through over many years of my interaction with the leading universities in many countries all of which I owe to Boris Sergeevich for the opportunities that he has generously provided me.

A special source of inspiration for me has been, of course, the very life of Boris Sergeevich Sokolov.







Preview of this volume

This book is arranged chronologically -- from the birth of Boris Sergeevich Sokolov, in 1914, to the present. To paleontologists, its strength centers on his contributions to knowledge of Paleozoic invertebrates, primarily reef-building corals, and his seminal, exceedingly influential work on the pre-Paleozoic fossils of early-evolved animals preserved in the Russian "Vendian" (Ediacaran), the geological Period immediately preceding the so-called Cambrian Explosion of Life. But to historians of science, this work is even more important, containing a first-person account of how Soviet science progressed during Russia's communist years when in the Western World it was too often ignored and widely underappreciated, denigrated in many circles as being tainted by political ideology. It is a "good read" -- concise, personal, trenchant, compelling.

Paleontologists who wonder about the history of their field, and historians of science who wonder about how 20th century achievements in the USSR/Russia have influenced the geological sciences should read, ponder and learn from this short volume on the life and times of Boris Sergeevich Sokolov.

J. William Schopf
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Introduction

The book that follows is based on many sources – direct interviews and conversations with Boris Sergeevich Sokolov himself over several years beginning in 2002 and continuing to the present. Consulted as well were a number of books and papers written by Sokolov himself, or others, over his long life, through some of the most dynamic times in the history of Russia – the 20th and early 21st centuries. And there have been many conversations with colleagues over these years as book research progressed.

It has been both an honour and a wonderful time spent with such a vast source of information as well as working with a broad range of people associated with Sokolov over his long career – one which continues to this very day as Boris writes prolifically in his 98th year! The most delightful aspect of this project has clearly been working with Boris Sergeevich, his protégé Mikhail Alexanderovich Fedonkin, Sokolov's daughter Marina Gnilovskaya, grandson Andrey Gnilovskoy and the Precambrian Laboratory men and women at the Paleontological Institute in Moscow, a laboratory founded by Sokolov in the 1970's. The open door to that Institute afforded me by its Director Alexei Rozanov and his staff, is profoundly appreciated.

My sincere gratitude goes to Academician Mikhail (Misha) Fedonkin for opening the door on the wonderland of the Precambrian to me in the early 2000's, for without that, my life would be so different and this book and others would not exist. I would likely never have met Boris Sergeevich.

Why this book? Boris Sergeevich himself is the reason. He stands as a beacon for the way in which life can be lived and how curiousity-driven science can lead to a much better understanding of the planet and its history – with stunning relevance to planning for the future. Sokolov stands as an icon of strength in following many paths before untrodden, driven by his childhood curiousity, unabashedly. He stands as a guiding light for moral behaviour towards colleagues during difficult times in Russian history, when this was no easy task. His advice to future scientists only reflects his humanitarian outlook that has nurtured so many and led to exceptional discoveries in the geosciences.

Sokolov's life has been full, and he has published detailed accounts of his projects and approaches. Most of this literature is in Russian. And so, this book in a small way bridges a language gap. The book is not meant, however, in any way to be a comprehensive account of Sokolov's life nor a detailed commentary on Russian history or the highlights of scientific thought in Russia over this long time beginning with the late 19th century and tracking to the present - first Tsarist, then Soviet, and finally today's Russia. The book simply follows the highlights in the life path of an upright and curious man through changes over time that have deeply influenced Russian society and its science. The book is meant to pass on to the next generation the thoughts of how one man approached life, a life driven by an abiding curiousity





and managing to work with a great variety of human beings in a changing cultural and political landscape. Through all these dynamic and unpredictable times, Boris Sergeevich Sokolov, the centrepiece of this book, has never lost his deep interest in the world around him, in its past, its present and the infinite possibilities of its future nor compromised his gentleness to humanity.

Many of the lines in this text come as direct quotes or from the vast literature that Boris Sergeevich Sokolov has generated over more than 8 decades or from a series of interviews beginning in 2003. I suspect the book might have to be revised in another decade, when Boris Sergeevich has himself penned more words!

The Robert Frost poem at the beginning of the book succinctly outlines the manner in which Boris Sergeevich charted his path through life. It was a zigzag flight, as he expressed to me so many times, and thus the title, The Flight.



Boris Sergeevich Sokolov and Patricia Vickers-Rich, Moscow, Winter 2011. (N. Hunt)





Acknowledgements

The list of people and institutions that have facilitated the compilation and writing of this book is long, and I am sure there are those whom I have left out. My apologies, and sincere thanks to them as well as those noted below.

Fundamental to the writing of this book has been my long-time colleague and research assistant, Dr Patricia Komarower, herself a geologist and science historian, who has for years helped me gather information, assess it, question my text, arrange the data, and just be there to help in every way possible. This book would not exist, nor would several others, without her devoted support and wise assistance.

Assistance with graphics, both in book design and in the gathering of material has been substantial. My thanks to Maxim Leonov and Steve Morton. Leonov was crucial as my guide and interpreter when I visited Berezki and St. Petersburg, seeking out the places that Sokolov had lived and worked in. Draga Gelt plied her brilliant skills and experience in meticulously designing this book, she who has written and designed so many of her own.

I thank my home institution, Monash University, in which part of the writing of this book was accomplished, the National Geographic Society and the UNESCO International Geosciences Program for providing some of the funding that allowed me to carry out the interviews and data collection needed for this project. Both of my bosses, Profs. Ray Cas and Sandy Cruden, gave their support for some of the drafting charges. Especial thanks are also due to the Monash Vice Chancellor, Prof. Ed Byrne, for his abiding support through tough financial times. Without his faith in my work, I would never have had the assistance fundamental to the completion of this book.

A number of colleagues have been instrumental in both translating and interpreting during the time this book has been written, and two stand out: Academician Mikhail (Misha) Fedonkin and Nathan Hunt. Fedonkin is the reason that this book exists, for it is he who welcomed me into the world of the Precambrian, and I have been fortunate to work with him in the field and in the lab gaining my understanding of the Vendian and related rock sequences around the world. Misha is himself a student and dear friend of Boris Sergeevich Sokolov, like a son. Nathan Hunt has over the years not only interpreted but also exquisitely facilitated my work in Russia, with visas, with transport, with translation and so much more, and not only for me but my Russian colleagues as well. The warmth of his family is likewise much valued. Elena Zlokazova, Mikhail Fedonkin, Yuliya Shuvalova and Maxim Leonov have by far



provided the most extensive translations and assistance in so many ways along with Natasha Bochkareva, Olga Anisimova, Yuri Gubin, Ekaterina Serezhnikova, Alla Ragozina and Andrey Ivantsov. My sincere thanks to them all, for without their enduring help, this book would never have been completed. Thanks to the staff at St. Petersburg State University, especially those in the Geological Museum, for allowing me access to facilities and archival material in their care.

Others most helpful were Andrey Yur'evich Gnilovskoy (grandson of Boris Sokolov) and his family, Dr Aleksey Sokolov (VSEGEI) in St. Petersburg and Nikolay V. Sennikov and Yu. I. Tesakov in Akademgorodok - for taking me to places where Boris Sergeevich once worked and lived.

My sincere gratitude is due to Academician Alexei Rozanov, who has always encouraged my work at the Paleontological Institute, which he has directed over many years, and to his family who long have made me feel at home whenever I am in Russia.

The final writing of this book was accomplished at a stunning locale in the far north of Queensland – Lizard Island – managed by Robyn Pontyn, who somehow makes this place a quiet haven, allowing me the space I needed to finish. Lisa Watt kept my hands in good shape for the hours of typing needed in a short time to finish something I have been working on for nearly a decade, and the staff at Lizard Island made sure my husband and I were well fed, well looked after and had the silence needed to pull this project together.

And thanks to my husband, Dr Thomas Hewitt Rich, for putting up with my intensity, ordering needed reference books, critiquing manuscript and agreeing to put a significant amount of our own finances into making the research for this book feasible. Thanks as well, to my son Tim and daughter Leaellyn, my late Mother Mary Lee Vickers Macdonald and my students and colleagues, especially Dr Corrie Williams, who forever is organizing my travel to and from Russia to accommodate my interviews and looking after the Monash Science Centre in my absence. Mark Colier helped with printing and design — endlessly. Thanks to Barbara Wojtkowski and Jennifer Kain for assistance with maps. And last but not least my thanks to Peter Trusler for providing some of the beautiful artwork that graces some pages of this book, reconstructions of the very past that Sokolov brought to life with his research on the Vendian sediments of the Russian Platform and beyond.

But, in the end, my greatest gratitude belongs to Boris Sergeevich Sokolov and his daughter Marina for opening their lives and home to me and showing an incredible patience with the time of theirs I took. They answered the many questions that I have asked of them both over the years. Boris Sergeevich, you stand as a beacon of hope for the future of good science and an example of an upright and humane person who guides me and all those who know you!





(1)

Places in Boris Sergeevich's Life



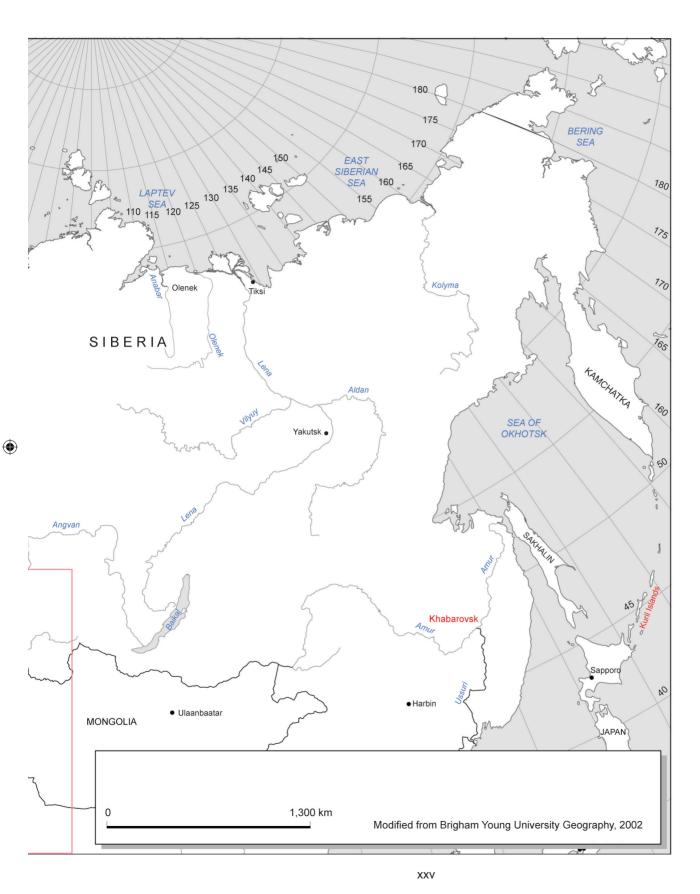










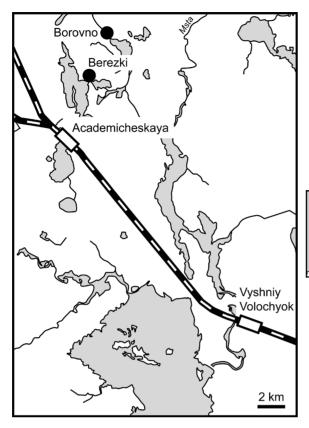


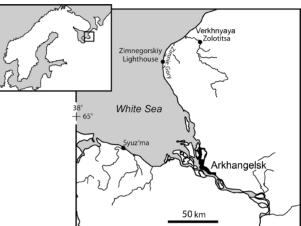












Map on previous pages:

Areas that Boris S. Sokolov spent much of his professional life exploring. Modified from Brigham Young University Geography, 2002 with the assistance of Draga Gelt and Patricia Komarower.

Maps above:

(left) Region around the birthplace and early childhood years of Boris S. Sokolov, which much influenced his approach to life. See Chapter 1. Courtesy of Yulia Shuvalova.

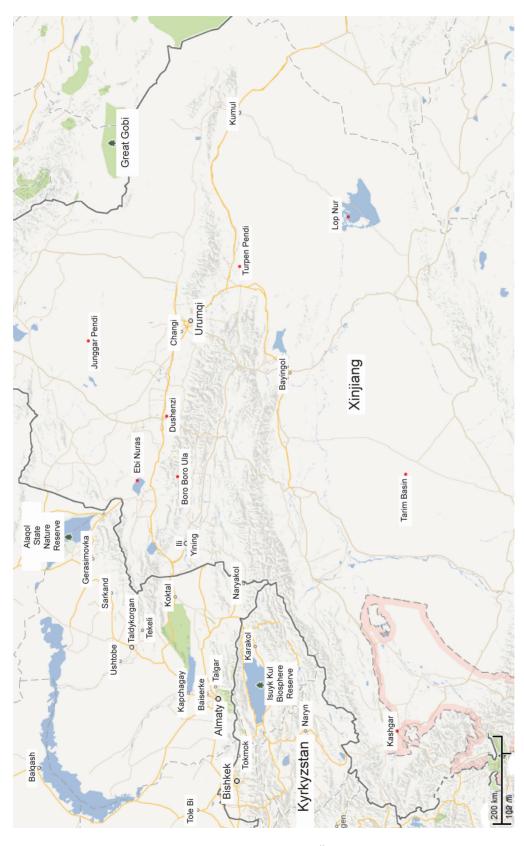
(right) White Sea region of northern Russia where Boris Sokolov worked over many years, where he and his teams gathered the data supporting a new section of the Geologic Time Scale, the Vendian. See Chapters 4-6. Courtesy of Yulia Shuvalova.

Map on opposite page:

Western China and Eastern Russia where Boris Sokolov spend the "War Years" from 1941 to 1945 and even before that in the late 1930's when he was based at the University of Leningrad. See Chapters 2-3. Modified from Google Maps (2013@AutoNavi) by Patricia Komarower, Yulia Shuvalova and Draga Gelt.





















My Epoch

- 1914 to 1931 Land of the Birch Trees: Vyshny Volochyok, Berezki (Beryozki), Childhood, Mother and Father, V. E. Voskresensky, [eternal student]. "Nature Central"; School, influential teacher A. V. Vessky in natural history, geography, chemis try, biology, geology.
- 1931 to 1941 Leningrad State University, student of Geology and Paleontology. Influential teachers: M. E. Yanishevsky, A. N. Krishtofovich, Yu. A. Orlov, Ya. S. Edel'shtein, N. M. Sinitsyn; also took part in Biological Science Department. Subjects Studied – paleontology, stratigraphy, regional geology.
- 1941 to 1945 Western China and Soviet Middle Asia (Tien Shan Mountains and the Jungar (Djungar) Basin near Urumchi). A. V. Peive recommended Sokolov to Narkomtsvetmet (Commissariat for Non-Ferrous Metal Resources); M. P. Lozhechkin and D. I. Neretin, colleagues in the Commissariat for Oil Resources; A. V. Kuchapin, a colleague on special oil expedition to Middle Asia for regional mapping and oil exploration.
- 1946 to 1960 VNIGRI (Oil Institute), Leningrad State University. Worked on stratigraphy, paleogeography, paleontology with colleagues F. A. Alexeev, D. V. Nalivkin, and A. P. Bystrov.
- 1958 to 1975 Akademgorodok, Novosibirsk, Siberian Division of the USSR Academy of Sciences. Senior academic in the Department of Paleontology and Stratigraphy in the Institute of Geology and Geophysics. Colleagues T. A. Trofimuk with Akademgorodok under the leadership of Academician M. A. Lavrentev.
- 1975 to 2011 Moscow, Presidium of the Academy of Sciences of the USSR. Paleontological Institute. Colleagues A. P. Vinogradov, M. V. Keldysh in the Department of Earth Science, Interdepartmental Stratigraphic Commission, Paleontological Society.





Figure 2. Ceremony for the Karpinsky-Schweizer Medal, Moscow, Presidium of the Academy of Sciences of the USSR, 1992, a foundation established by Professor A. Topfer. In connection with this award a year's funding was provided to B.S. Sokolov to visit Hamburg, with one of his students [Dmitry Vladimirovich Grazhdankin], by the Friedrich von Schiller Foundation. (Sokolov Archives)

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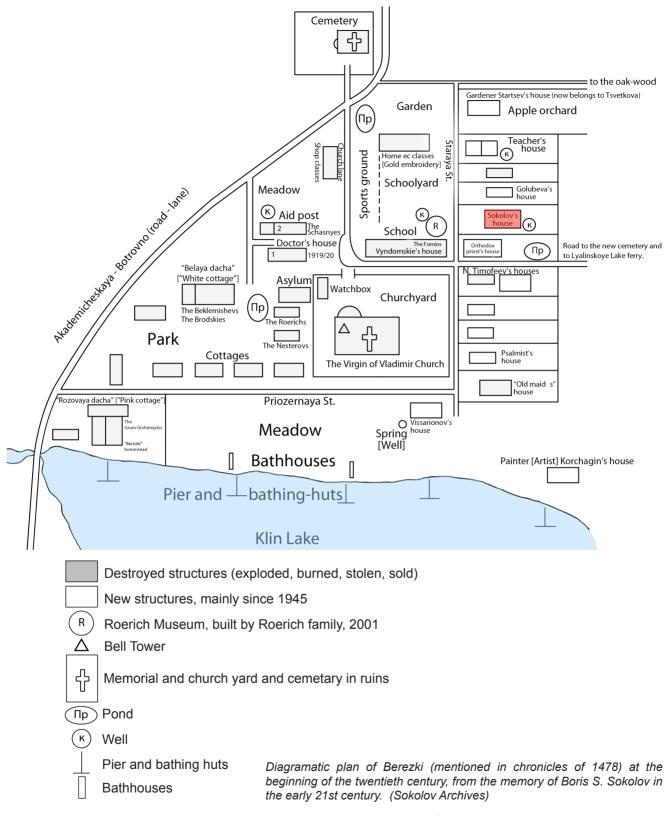


"I think that during the 20th Century, which heavily impacted the destiny of its children, I have been a lucky man. I married early and was happy for half a century; God defended me from fools and scoundrels; almost always I have been surrounded by interesting, educated and clever people. I have never served in the military, never participated in the wars, and this is a debt too great for me to ever repay those who did. I never belonged to any political party, but cannot say that I am politically indifferent. I have never been arrested or subjected to persecution, though sometimes I felt I was being watched; I have never had any special concern about my career. I have not taken any post-graduate course, never wrote a dissertation on purpose, but as time passed I produced books and papers. Even being elected as an Academician in the Russian Academy of Science followed the 'logic of circumstances' related to my scientific activity, rather than being sought....I have always been indifferent to trends, my path always guided by my curiousity – and it was a zigzag path that delved into many different disciplines."

Extract from a speech given by B. S. Sokolov when he received the Karpinsky Award. (1992)







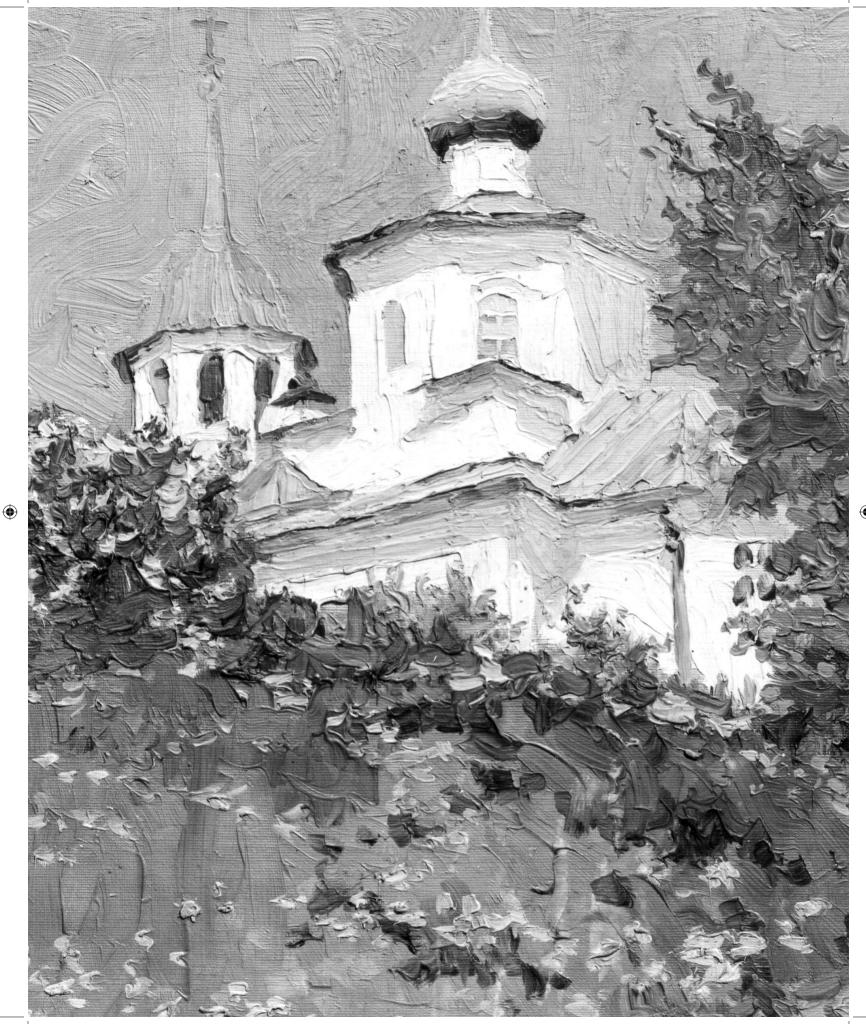
(opposite page) A church in Berezki, painted by N. V. Rozanov, 1907. Since destroyed. (State Hermitage, G. D. Dushin Collection Archives)

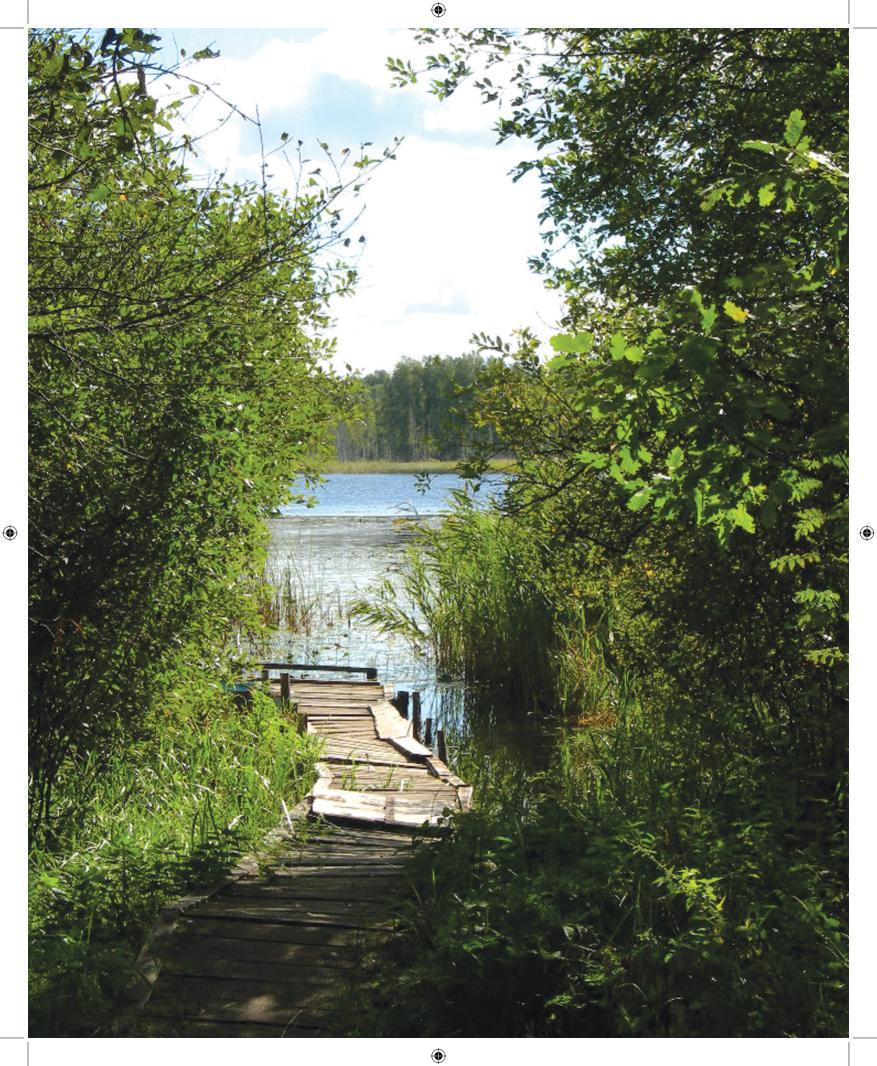
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Chapter 1: Vyshny Volochyok, Berezki – Land of the Birch Trees, 1914 – 1931

Figure 1. (opposite page). Boardwalk out to Lake Imolozh'e, Berezki. (P. Vickers-Rich, 2007)





Figure 2. Birch trees in Winter, the namesake of Berezki. (P. Vickers-Rich)



Figure 3. Father and Mother of Boris Sokolov: Sergei Borisovich Sokolov (1887-1967) and Dar'ya Andreevna (maiden name Skurlova) (1885-1951), Tver, 1913. (Sokolov Archives)



Vyshny Volochyok, Berezki – Land of the Birch Trees, 1914 – 1931

Boris Sergeevich Sokolov arrived on the 9th of April 1914 (Gregorian calendar, but 27th of March on the old calendar!), born into a large and warm family, on the cusp of events that would forever impact on the lives of the Russian people. Great changes were underway in Russia, but Sokolov's birth in the small town of Vyshny Volochyok, in the Tver Region south of what is modern day St. Petersburg, was into a relatively peaceful landscape amidst a surrounding sea of tumultuous change.

Vyshny Volochyok was strategically situated about half way between St. Petersburg and Moscow, and had for a long time attracted people moving back and forth between these two great Russian cities, at first along a well-travelled coach road and later, from 1851, on the Nikolaevsky Railway. Even earlier, the Vyshnevolotsky canal system had been established

in 1703 connecting St. Petersburg with the Volga River basin, its center being a storage lake in Vyshny Volochyok. Its location made it an important center for communication and trade, with a rich cultural life.

Sokolov's father - Sergei Borisovich Sokolov - was a local doctor, his mother Dar'ya Andreevna Skurlova. There were six children in his family, including Boris. Both his father and mother had their roots in the Tver lands. Sergei grew up in Zubtsov along the Vazuza River, the son of a gardener who managed the Zverova Estate. He trained as a medical doctor in Tver and became the head of the Kuvshinovo Hospital. Sokolov's mother, born in Novy Torzhok, was from a coachman entrepreneur's family, educated in orthodox culture. She likely graduated

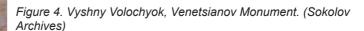










Figure 5. Skurlov family in Safrontyevo Village near Kuvshinovo, Tver Province. Beginning of 20th century with D. A. Sokolova, Boris's mother, in the upper left. (Sokolov Archives)

Figure 6. Boris Sokolov. Vyshny Volochyok, 1916. Photo by C. Zemmel. (Sokolov Archives)

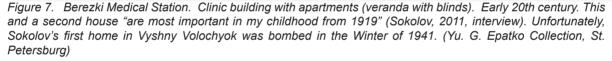


from the Kuvshinovo six-year school. There was a rich cultural life in Kuvshinovo at this time, with a variety of theatre, concerts and dances, and it was probably at one of these events that Boris's parents met. Both were avid theatre-goers. They were married in 1913 and were fortunate to receive a seven-room home in Vyshny Volochyok from Dar'ya's wealthy, yet childless, Uncle. That, in fact, is the house in which Boris was born.

Boris was born before the beginning of World War I, but when this conflagration began, his father was at once mobilized and sent to St. Petersburg to be trained as a war physician in preparation to serve in Finland's Helsingfors Hospital. Then, in 1917, immediately after the February Revolution, on the 27th of March, he was demobilized and returned to Vyshny Volochyok, never to serve in the Red Army. Sokolov has memories of this time, somewhat disconnected:

"Silent film, Rome burning, grand piano crashing, I am crying with fear and they take me away – it is war and only my Mother is with me. Mother is packing a little parcel to my father in Petersburg or Helsingfors with little white and rose pastilas [a kind of sweet made of fruit or berries] – it is the beginning of war. My mother and I are going to Bologoe and find ourselves standing in a closed officer's saloon carriage on the train with another parcel for my father – of course this is the last days of the February Revolution. I can see through the window of our house poorly dressed people in Russian high boots with several painted red banners – these are the days of the revolution, but things here are quiet. I don't understand the change of power, the conversations are chaotic. I only know that my father is far away...."

Boris Sokolov in his essay entitled "Notes from the Imolozh'ye Lake Banks," 2007







With all such turmoil, the ravage of wars - not just one - sorrow and suffering were widespread. N. K. Roerich, outstanding painter and philosopher who spent considerable time in Berezki, noted in a letter written in 1924: "from 1914 humanity gave way to cosmic agitation...

Everything was raised, everything went off." But beyond the battleground and the food shortages, the typhus and Spanish flu epidemics wrecked absolute devastation, taking more lives than the wars themselves. With the movements of masses of people – from the Baltic, from the war fronts, living conditions were primed for the spread of disease. It was because of this and the age of the resident doctor, Isidor Romanovich Schasny, that Sergei Sokolov was asked to assist at the Berezki medical clinic. In fact, Schasny died in 1922 at the age of 90, so it was fortunate that Sergei Sokolov was already well established to take over the clinic.

Berezki and Borovno for generations had belonged to hereditary landowners, the Volkov-Mounseys. At the time Boris was a child, the lands around these two villages were in the hands of most thoughtful and community-supportive landowners — Aleksandra Ivanovna Mounsey (Mansey) and Sof'ya Nikolaevna Volkova, born Mounsey. They were to be the last of the gentry for this region, despite their long tenure and responsible commitment to the people of the region. By the middle of the 1880's, and with the monetary support of this enlightened "bourgeois" family, the Berezki medical facility was one of the best appointed in the district — with a head physician and three surgical assistants. Isidor Romanovich Schasny, his wife and daughter, ran this clinic with passion, not only treating the local population but also the injured returning from the Far-Eastern battle front in the early 1900's, later from the Civil War.

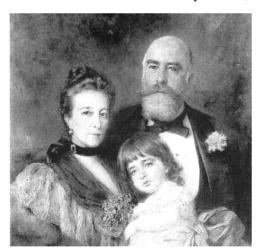


Figure 8. Volkov family by K. E. Makovsky, end of the 1890's. State Hermitage Collection of G. D. Dushin. M. S. Volkov, his wife Sof'ya Nikolayevna Volkova (maiden name Mounsey), their son, S.M. Volkov-Mounsey. The last holders of the Borovno homestead before the revolution in 1917. (Reproduced from the Collection of Grigory Diomidovich Dushin. St. Petersburg State Hermitage, 2002, cat. #23)



Figure 9. Portrait of Lyubov'na Markovna Brodskaya (1888-1962 – maiden name Hoffman) (by Brodsky). On elevated pier on Borovno Lake. Satygino village on the horizon. Canvas, Oil, 205 x 203, 5. Borovno, 1908. (Sokolov Archives)



The funds that established the medical clinic were provided entirely by the Volkov-Mounseys, originally from a heritage of Scots who, having migrated to Russia in the 1700's, served the Tsars and the military. For this they were granted their estates by Empress Elizabeth (Elizaveta) Petrovna and Pavel I for services rendered to the rulers of Russia. Further wealth came from the marriage of Nikolai Loginovich Mounsey (1784-1862) to Sof'ya Sergeevna Yakovleva (1799-1882), the daughter of a rich manufacturer and granddaughter of a well-off farmer in the time of Catherine (Ekaterina) II. Nikolai also owned a successful metallurgical company, founded by Savva Yakovlevich Sobakin (who changed his name to Yakovlev in 1774). This young couple, with their inherited land and wealth took over a mansion, which stands today in Borovno, in 1819, and set about improving it as well as the well-being of the local peasants and the lands they all occupied. Sokolov has described in detail the long history of the Volkov-Mounseys in his 2007 publication on the Berezki region, *Notes from the Banks of the Imolozh'e*.

This landlord family had not only established and maintained the medical clinic (first opened in 1902) for a considerable time but had also set up a thriving school for local children from all walks of life and even a residence for those who had to come from some distance to study. They had organized and supported needlework and handicraft classes for local girls, with the help of such people as Ekaterina Ivanova, rector of the Petersburg Academy of Arts, and E. I. Beklemisheva, a lover of decorative needlework, as well as woodworking and leather craft apprenticeships for local young men. Aleksandra Ivanova Mounsey and Sof'ya Nikolaevna Volkova managed all this as well as the summer cottages for visiting intellectuals. And through times of food shortages and other privations associated with the wars, both foreign and domestic, these two strong and committed women kept things working. Come the Russian Revolution, these charitable landowners lost everything, but were able, fortunately, to move some of the family art treasures to St. Petersburg. There, due to the responsible action of both Sof'ya and her son Sergei Mikhailovich Volkov-Mounsey, and later the daughter of the Berezki clinic's first doctor Schasny, these treasures survived the siege of Leningrad. Tragically, neither Sof'ya nor Sergei lived to see the end of these murderous 900 days of the Great Patriotic War. But the protected historical art, for the most part, now resides in the Hermitage.

Figure 10. Berezki Medical Station. Dr Isidor Romanovich Schasny between soldiers from the Russian-Japan war front that he had nursed to health. (Yu. G. Epatko Collection, St. Petersburg)









Figure 11. Sister of Sokolov, Lydia (Dinulova), bibliographer and poet. Born in 1922, she lived with her parents in Lyalino during WWII, moving to Vyshny Volochyok due to bombings. She taught until 1943. Photo from 1940's. (Sokolov Archives)

As noted above, the Berezki medical clinic was truly in desperate need of a younger doctor as Shasny aged and was unable to cope with the massive illnesses that prevailed in this region. So. Sokolov's father transferred from his practice in Vyshny Volochyok to Berezki, not long after being The Berezki facility was the only demobilized. medical clinic in the region at this fragile time, and thus of critical importance. Not long after Sergei Sokolov moved to the Berezki clinic, however, he contracted a serious form of typhus and nearly died. Dar'ya had to travel each day 20 km by railway to Akademicheskaya station and then walk another 5 km across the frozen lakes from Vyshny Volochyok in order to look after her husband, then return at night to look after her children. Boris's sister Vera, had been born in mid-1918, and fortunate for Boris in all of this, his cousin Klavdiva, daughter of his mother's sister Aleksandra Andreevna was able to take charge of her small boy relative. another cousin of Boris, Viktor Yemelyanovich Tsverkov, also helped care for him as a young boy, and years later became his history teacher!

At this time, besides the serious illness of Sokolov's father and the stress imposed on his mother, food was short, and times were tough. So, a decision was made to move the whole family to Berezki. The

leaders of the Borovno-Berezki Commune were desperate for reliable medical assistance. The move took place in the winter of 1919-1920, and this immediately solved the food problem, as it was easier to find food in the countryside than in the towns. There was a real deficit of bread, and the cost of sugar and salt was enormous – 2000 rubles for a pound of sugar, 600-700 rubles or more for small measures of salt and so on.

The Borovno-Berezki Commune, was one of the first set up at this time from 1917 to 1918, with an aim to immediately organize a new form of collective labor by the arriving immigrants into this region. This action crushed the old tenor of life by requiring the sharing of property. Centuries-old manors were "given over" to "emancipated labor" [the Communards], which meant destruction of the grand houses and plundering of their contents. As a result of the "lofty" ideas of the Revolution, power passed to a new group, and epidemics, hunger and terrifying mortality rates were the result in many parts of Russia.



"It is necessary to do justice to the Communards of Berezki, however, for they not only prepared for my father and us a good apartment in one of the local houses, but furnished it as well as they could, with quite decent furniture - no doubt confiscated from the deserted or overtaken cottages and very likely the big country estate house (the Pink Cottage), the second largest structure in Borovno that had previously belonged to the Volkov-Mounseys....and in addition since the estate house apparently had a good library, and the Communards were not really interested in this, both books and magazines were given to my father, probably in part "payment" for his medical services. I do remember, too, picking up thrown out books from the snow, and my mother happy to get a pile of discarded window blinds which she used to make into clothes for some time. It was simply impossible to buy such cloth. Father did not receive a salary during the first years in Berezki, but instead wood, food, items in trade. By the spring of 1920, however, this was not enough to survive on, and we needed to organize our own "kitchen-garden" and buy a cow. These early years of manual labor for our very survival introduced me to skills that would serve me well for the rest of my life....The move to Berezki was a real turning point in my life, radically affecting the direction of my interests, moral development and concern for animate nature."

Boris Sokolov, 2007 and interviews

Berezki ("birch trees") had (and still retains) a calming landscape during these times. Its rich physical presence had an even richer heritage. The forests teemed with wildlife – cuckoo calls throughout the lengthening spring days, lakes that only in Spring lost their ice-bound winter cloak. Frogs were resonant along the stream banks, and the lakes were festooned with water lilies. Buried in the forest soils, were the remains of long-forgotten inhabitants that occasional archaeologists had burrowed into, laying bare the activities of past peoples. Boris recalls in an interview in 2007:

"There was such an amazing combination of wild and country-estate nature with my most complete freedom of inexhaustible enterprise, that even with loneliness coming sometimes, it did not oppress me at all. The world was so colorful, full of sound and motion within a picturesque landscape, from which it was difficult to tear myself. I was shy in communication with strangers, but my inquisitiveness prevailed over care and sense of fear, and my 'geographical discoveries' scared my parents quite often. I went through the forest and found a big stone [one of the glacial dropstones left by the last ice age]. I also saw mushrooms and then, as a 7 year old, I wondered how long it took the stone to grow that big, like the mushrooms!? Because of all this natural wonder, I did not even notice the devastation being wrought in Russia or the changes even going on nearby. All this wonderful nature left a strong imprint on my character and formed my path as a future naturalist."

Interview, 2005







Figure 12. A group of the Berezki homesteaders, August 9, 1915. From left to right, upper row: Elizaveta Putyatina, Lyubov Shasnaya, Nikolai Grum-Grzhimaylo, Kseniya Volynskaya, Maria Putysergey. Front row, Sergey Mikhaylovich Volkov-Mounsey, Sergey, Vladimir, Alexey and Yuri Grum-Grzhimaylo. The latter two, as their father, were metalwork specialists and were executed in 1938 and 1942. Vladimir died in the A. V. Kolchak army in 1918. (Yu. G. Epatko Collection, St. Petersburg)



Figure 13. Glacial dropstone in the forest near Berezki that fascinated Sokolov as a young boy. Glaciers covered this region in the Pleistocene times only a few tens of thousands of years before, and as they melted the "baggage" that they had picked up was unceremoniously dropped. (P. Vickers-Rich, 2007)

The intellectual landscape of Berezki and surrounds just prior to and at the time of Boris's birth was also truly stunning. In the not so distant past, and not far from Vyshny Volochyok, in 1884, a region termed Akademiyeskaya Dacha was set up, near where Sergei Sokolov had set up his medical practice. Here, surrounding the tiny village of Berezki, in this forest and lake country, a myriad of dachas harbored academics young and old, as well as aspiring painters and their teachers, especially in the summers. The region was a haven





Figure 14. Ekaterina Ivanova Beklemisheva (maiden name Prokhorova), wife of the head of the Petersburg Academy of Arts, V. A. Beklemishev. Ekaterina was a sculptor herself and took an active role in charity work, establishing clinics and hostels. In 1909, she organised a gold embroidery workshop for schoolgirls in Berezki, with the financial assistance of S. N. Volkova. (Yu. G. Epatko Collection, St. Petersburg)

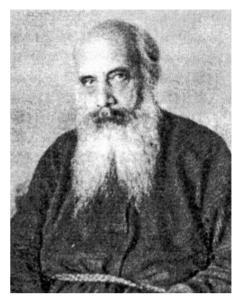


Figure 15. Vladimir Efimovich Grum-Grzhimaylo (1864-1928), Russian inventor and metalwork engineer, teacher and businessman, professor and Corresponding Member of the Academy of Sciences of the USSR, 1920. Vladimir rented "Rozovaya Dacha" in Berezki village. Reproduced from: "Grum-Grzhimaylo, Vladimir and Sof'ya. A Secret of the Happy Life". A book for family reading, Ekaterinburg, 2001. (Sokolov Archives)



Figure 16. "Three Bogatyrs" by Vasnetsov (1898, Tretyakov Gallery), one of the painters who spent time in Berezki.





Figure 17. Painting by N. K. Roerich, "The Messenger. (Tribe has risen against Tribe)," 1897, Roerich's graduation painting at the end of his studies at the St. Petersburg Academy of Arts. It appears that this landscape was inspired by the coast of the Mista River near the Akademischskaya homestead. (In the collection of the Tretyakov Gallery)



Figure 18. N. K. Roerich with his sons in the summer countryside near Bologoe or Vyshny Volochyok, around 1909. Svetoslav sits on his knee, while Yuri is dressed as a sailor. (Institute and Museum of the Roerich family in St. Petersburg)

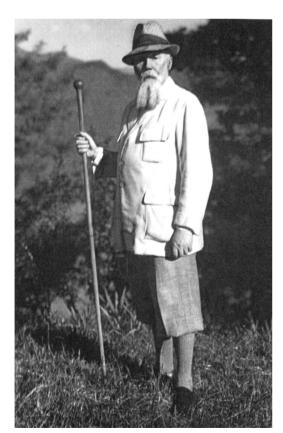




Figure 19. "Mount M" by N.K. Roerich (1931, Roerich Museum, New York). A copy of this painting graces the wall of Sokolov's study. (P. Vickers-Rich, 2011)

Figure 20. Nikolai Konstantinovich Roerich — an outstanding painter and researcher specializing in Central Asia. Naggar, India, 1930's. Roerich was also an archeologist and a philosopher. He was a full member of the Imperial Academy of Arts and founded The Institute of Himalayan Research in 1928. (Archives of the Museum of Nikolay Roerich, New York)



for innovative minds, often escapees from the bustle and turmoil of St. Petersburg, later to become Petrograd and then Leningrad. During these times prior to the Russian Revolution of 1917, this very place was a haven for a long list of famous artists – Repin, Kuindzhi, Nesterov, Levitan, Vasnetsov (See Fig. 16: Three Bogatyrs), Stolitsa, Rozanov and Brodskii, along with such influential people as the Dean of the St. Petersburg Academy of Art. Academician V. A. Beklemishev, amongst many others. Repin had set up an art colony here in 1884. This tradition continued sometime even after the Revolution, the area still a haven for those less favored elsewhere in the developing social experiment that led to the formation of the USSR. The idea initiated by the last landlords of this land continued to attract bright people to this region, and these "bourgeois" were able, for a short time after 1917, to pass on their knowledge to young children and the local people. Certainly, in Sokolov's case – this truly impacted on his worldview.

Amongst the bright minds that had flocked here during the long White Nights of June and July was the well-respected artist N. K. Roerich. Sokolov's parents knew the Roerichs, and this long friendship lasts until today. Nikolai Konstantinovich Roerich and his wife left Russia amidst the turmoil of 1917 and travelled extensively, finally settling for a time in India. Roerich longed to return to Russia, and in 1946 wrote to Stalin asking permission, but he never received it. However, his sons Yuri and Svetoslav Roerich travelled to their homeland some time later. Both had been children in Berezki, and it was through Svetoslav, a portrait painter himself, that Boris became involved in the Roerich Society. Boris has promoted and worked with this group for many years. On the wall in his apartment today hangs as a beautiful Roerich painting, presented to him by the Institute of the Roerich family, a muchtreasured belonging (Fig. 19).

Besides attracting bright minds to the region, Sof'ya Volkova was, as noted before, clearly concerned about the well-being of the entire community of the region carrying on family tradition. Her aim was to connect these bright minds to teach the young, receptive



Figure 21. House of Vyndomsky in Berezki, built Figure 22. Borovno Estate house in 2007 in the middle of the 19th century. Photo by Boris in 1949. From 1894 this structure was rented by M. S. Volkov for the purpose of setting up a school. In the 1920's there were four classes of students taught here by one teacher, A. N. Il'inskaya, on the upper floor of the house. The house has not survived to present. (Sokolov Archives)



(M. Leonov, 2007)



minds. It was this Sof'ya who established excellent professional training workshops for the youth of the region as well as funded the local school, as noted before. It was she who had supported the medical center, which had engaged Sokolov's father. And a significant part of the funding for these community enterprises came from the wealth of her husband, Mikhail Sergeeovich Volkov, who was himself a mining engineer. Surely this Scotch-Russian family had the entire population at heart – decidedly forward thinking in their outlook. Perhaps if the Volkov-Mounsey's community commitment, together with the agrarian reforms envisioned by Prime Minister Pyotr (Petr) Stolypin had been given the time to mature, the future of this region and others in Russia would have been guite different than it turned out. It is important to remember that at this point in time, upwards of 80% of the Russian population was involved in some way with agriculture. Stolypin's reforms clearly had the intention to break up the old peasant communes into individual holdings and so put in place a more prosperous and stable countryside – "a wager on the strong and sober" as noted by Stolypin himself (Malia, 1994). Unfortunately, this was not the mind-set of the majority of Bolsheviks, who gained more and more influence over the next few years, and it was the peasants who suffered significantly from this political stance.

Tragically, Stolypin was assassinated in 1911, and further to that the First World War totally destabilized Russia's "still immature political structures to the point where the Bolshevik Party, a throwback to the violent and conspiratorial politics of the 1870's, was able to seize power in the 'October coup' of 1917" (Malia, 1994) – chaos ensued. As noted before the Volkov-Mounseys lost nearly everything – their land, their home, even their agricultural equipment – they moved to their St. Petersburg apartments. They took some treasures, including art and archives, which spanned as far back as the time of Pavel I – fortunately still preserved today in the Hermitage in St. Petersburg and in several local district museums. The Borovno estate house, including the remaining mahogany furniture, doors, window frames, even floorboards, and horse collars, nails, agricultural tools from the outbuildings – all were taken by locals. The building itself was divided into flats for the Communards, the front part on the first floor fitted out for a grocery shop (Sokolov, 2007).

In Russia at this time, private property was abolished, and all social groups above the "simple people" or "toiling masses" were dismissed as unacceptable – including the gentry, like the Volkov-Mounseys. Unrecognized any more were the "clergy, the liberal professionals, the middle classes or the bourgeoisie" (Malia, 1994). These people were still there, of course, but they were "legally discriminated against under the new order, deprived of suffrage and given less food rations" – civil society as previously known in Russia disappeared (Malia, 1994). All of these changes were emplaced rapidly by deliberate Bolshevik policy. And yet, in Berezki, there remained a semblance of sanity, despite the excesses in many other parts of Lenin's experiment. It was not paradise, and much had been lost, but not all, perhaps in some way related to how the "toilers" had been treated by their past gentry.

Boris was fundamentally influenced by this unusual community history. And, in addition, he had an insatiably curious mind. Some of the first things he remembers, and his favorite items of interest were:



"Anything that moved! But birds were my favorite. The Cuckoo brings me feelings of nostalgia even today. Nightingales too. But butterflies and beetles also were fascinating."

Boris Sokolov, interview, 12 July 2007



Figure 23. The lake at the edge of Berezki village. (P. Vickers-Rich, 2007)

In Berezki, the school that had been set up and maintained by the Mounsey family provided the standard formal lessons – and it survived the changes that were going on in Lenin's Russia of the time. This was to be the place of Sokolov's first formal education. As a result of the new order, teachers encouraged, in fact required, a number of activities that were not part of the previous regular curriculum. There were a variety of social activities put in place – on Saturday, for example, the children were asked to get involved with work that benefited the whole community ("subbotnik"). There was ample opportunity to take part in the local theatre and to make posters on a variety of topics ("stengazeta") – poetry, painting, just about anything. Children were encouraged to read. Sokolov loved to read old magazines, particularly those related to natural history. And, he continued chasing insects and developed a real love of gathering fossils from this region – the first of his lifelong "expeditions."

"From the beginning of 1919 till the Autumn of 1921, I can say that my education was domestic – but not really systematic. It was to a great degree, a moral education, mainly given by my Mother. She could reasonably and not dictatorially tell what was good or bad. I accompanied my mother to church quite often, listened to her explanations about some prayers and services, and the solemnity of the choir and quiet of the church environs, influenced my mind. In the evening, the reading by my mother by the light of a kerosene lamp under a glass lampshade on a table covered by a beautiful cloth, in absolute quiet, with the twinkling of a lamp near an icon in the corner, was always greatly anticipated. My love of books has lasted through my life – all of which began with these evenings with my mother."

Boris Sokolov, 2007 and interviews





Sokolov's father also brought a special visitor to their home, whom Boris describes as:

"...a completely new, cheerful man, very tall, strangely dressed, and always with a cigarette in his mouth and a mandolin in his hands with fingers hosting black fingernails! He was an eternal student. Vladimir Evgen'evich Voskresensky knew about my passion for nature – fish, birds, animals, anything that moved as well as the fossils and rocks. He gave me a most luxurious present – a book with the title of "Young Naturalist." It became my reference text that taught me how to dry butterflies and manage my 'zooarium.' Vladimir had been a student at Petersburg University and taught in his native village and from that introduction on he would spend much time with me. This 'perpetual child' stirred my keenness of observation – true to his valuing of critical thought, he died in the 1930's in a Murmansk concentration camp."

Boris Sokolov, 2007

Figure 24. 'Local inhabitant', Berezki village. (P. Vickers-Rich, 2007)



The years between 1917 and 1923 were difficult in the Tver region. Food was extremely short. Boris's Father had no salary and depended on his patients' gifts for service. His Mother managed to buy a cow, some chickens and maintained a vegetable garden. It provided good training of how to live off the land.

In September 1921, Sokolov entered Berezki's elementary school. He was at that time only able to "read" his favorite book and was not all that good at writing letters. This village school had been "liberated" from its original patrons, the Volkov-Mounseys. From a well-sourced and well-managed school before the Revolution, it had become a Soviet school, with old manuals, somewhat impoverished, but not yet very antireligious. Boris was, however, most certainly already political. He studied there for four years, all four classes and years in one room. The number of pupils attending dropped from the numbers of

the past, for children who had once been subsidized by the landowners to come from distant villages were no longer able to do this. They had few or no winter clothes, and no assistance with this as they had in the past. It was impossible to heat some rooms in a once much more expansive school, as there was only one stove. Even so, there was a shortage of firewood. So, all students had to crowd into one room, students of many different ages.





"Our teacher, Aleksandra Nikolaevna Il'inskaya, was excellent. She lived with her Mother in the teacher's house. She was most considerate, rather strict, and well-educated, but not very healthy. Our books and maps were in good condition and quite varied. She wanted to advance me in school early, but my parents refused. So, I listened to the lessons of the elder pupils, especially about history – as I went through this early stage of my education, I studied at four levels all at once! I also made three big collections and got a great deal of my knowledge from reading our home library, from my parents' friends and nature herself in my constant wanderings through the landscape."

Boris Sokolov, 2007 and interviews

Sokolov finished his four-year school in Berezki in the Spring of 1925 and then by 1926 went on to the equivalent of Middle School, a Real'noe Uchilische ("Real" School, United Labour School No. 1), neither a gymnasium nor a private school, in Vyshny Volochyok. Sergei Volkov-Mounsey, son of the previous landholders of Borovno and Berezki was his German teacher!



Figure 25. Tombstone in the churchyard of modern Berezki of one of the early residents of this village, more than 300 years in the past. (P. Vickers-Rich, 2007).



Figure 26. Sof'ya Nikolayevna Volkova - Mounsey and her son Sergei M. Volkov-Mounsey at Borovno. Sergei was later Sokolov's German teacher. Early 20th century. (Yu. G. Epatko Collection, St. Petersburg)





Fig. 27. Real'noe UchilischeSchool in Vyshny Volochyok, which Boris attended, photo taken in 1985. (Sokolov Archives)

Sokolov also remembers with gratefulness other teachers who influenced him during his early years, two in particular Vladimir Yevgen'evich. strongly encouraged and nurtured his interest in nature, not just for Boris alone, but for all students. Another. Alexander Vasil'evich Vessky, a chemistry teacher, was the first to introduce Sokolov to geology. These teachers clearly worried some parents, including those of Boris, because they encouraged their young charges

"I remember very well my German teacher at Vyshevolotsky United Labour School #1, where I entered in 1926 after finishing school in Berezki. He was distinguished in appearance with an unusual face – handsome, with a bald head and black beard. He had excellent articulation as well as musical talent, readily joined in the theatre performances of our 'blue blouse,' liked to play volley-ball. I remember him at school until 1931. It seems that he also taught in Berezki, where the school became a seven-year school for a short time at the beginning of the 1930's. Last time I saw him on Nevsky Avenue, probably at the beginning of 1941, he was walking swiftly, and I was ashamed to stop him – so much a pity in hindsight. In May 1942 Sergei Mikhailovich died during the blockade of Leningrad and after that so did his mother, Sof'ya Nikolaevna. He was 46, his mother 81. Who knows if things had been different what their fate would have been. Maybe terrible, maybe not."

Boris Sokolov, 2007

Figure 28. Alexander Vasil'evich Vessky, teacher of natural sciences and chemistry in Vyshny Volochyok United Labor School No.1 (now Middle school No.2 named after A.G. Venetsianov). Vessky was the first teacher of natural sciences of B.S. Sokolov in the 1920's. (Photo taken in Vyshny Volochyok, 1910; from E.I. Stupkin's Collection)



to wander about in the remarkable forests and along the shores of the abundant lakes. As far as Boris remembers, such childhood wanderings led to no disasters, despite parental concerns!

Boris wrested answers from these mentors to questions which had been on his mind since a young boy. During some of his excursions with Vessky, he found that the large rocks common in the churchyard of Berezki, were indeed stones (not mushrooms!), those carried from the north by glaciers which once blanketed this area. As the glaciers melted these "passengers" had been dropped. Sokolov was also introduced to the fossils of animals that had once lived on the ancient







Figure 29. Graduates of Vyshny Volochyok United Labor School N1 with their teachers. Vyshny Volochyok, June 24, 1926. Sitting in the centre (in black): B.S. Sokolov's form-master A.A. Speranskaya, to her right—school director N. A. Anikhanov and literature and Russian language teacher V. D. Zosimovskiy. Boris in the upper row on the right. (A. A. Speranskaya's Archives)

reefs, now trapped in the limestone bedrock of this region. Quite amazingly, these would later become critical to his research at Leningrad University, and his lifelong interest in ancient corals, (one of his youthful collection which he later identified and described as *Chaetetes septosus* Sokolov!) and coral reef structures. In addition to study in the third decade of the 20th century . . .

"There was certainly some 'animation' in public life in Berezki and Borovno. In the middle of the 1920's home-theatre clubs began to appear. Some guests from Vyshny Volochyok, Lyalino and Borovno started to visit us in our home. They had good voices and sang together. We actually were able to eat white bread, sugar, pies and at Easter we had cakes and rich mixtures of sweetened curds, butter, raisins, and almonds ("paskha"), even ham! I didn't bother to ask why we found it now possible to eat white bread – as much as we wanted – but wondered what was happening. This was connected with some mysterious "NEP" (New Economic Policy), but almost at the same time, the persecution of religion began to intensify. Even our church in Berezki was robbed repeatedly. The attitude to priests (so called "have-beens") became suspicious..... It was the prelude to a sharp turn of all economic and political life in Russia.... It was during this time that the Commune in Berezki began to fall into decay and was no longer able to maintain the medical point. Equipment was removed and taken somewhere else and finally in 1928 the medical clinic was closed..... Although I had already moved back to Vyshny Volochyok in 1926 and lived there as I attended school, eventually the whole family returned to the house we had there. But I often returned, when possible, to this land of my early years [Berezki]."

Boris Sokolov, 2007 and interviews







Figure 30. Vladimir Nikolaevich Tagantsev (1889-1921), geographer, Professor at Petrograd University, Scientific Secretary of the Sapropel Commission for Expeditions of the Academy of Sciences (KEPS) and a Head of Sapropel Station at Zaluch'e near the Akademicheskaya railway station. Son of N.S. Tagantsev. Vladimir was executed in August 29, 1921 with his wife and also with N.S.Gumilyov along with more than 60 persons after being arrested in connection with the "Petrograd Fighting Organization" court case. He was rehabilitated in May 29, 1992 (posthumously!). (Collection of R.I. Matyunin, Vyshny Volochyok).

Many of the teachers in the Realnoe Uchiliche were of the intelligentsia, who were "pushed by the turbulent revolutionary sea" (Sokolov, 2007) to peripheral towns in Russia. These well-educated teachers not only imparted their in-depth knowledge, but also instructed their charges in the utopian ideas of the Manifesto – a kind of brigade study...

Through all of this "modernization" of Soviet Russia, these teachers did not lose sight of the importance of the past, something that many of the politicians in charge at the

time were not too keen on. Positive aspects of the new order embraced the idea that people should work as part of a team for the common good – not at all a bad idea. And besides encouraging behavior to work for such community good, this provincial middle school certainly, for Boris, was a continuing and very real stimulus to his interest in science, fuelling his innate childhood curiosity, as well as giving it the recognition that it deserved. Such attention to the natural world was looked upon as leading to a legitimate profession.

It was an unusual combination of factors that affected Sokolov during this dynamic challenging time in Russia. The enchanting rural environment with its rich tapestry of birch forests, serene lakes and the mere quietness and isolation of Berezki provided some respite from turbulent times that blew across this vast land and its peoples. Berezki's long history of resident intellectuals, some who managed to survive in this region during the changes that were afoot, preserved the memory of the great personalities, a history described in depth by Sokolov in his 2007 book about Berezki. This unique "environment" maintained much of its character even after the Revolution, as it does even now. Somehow, the combination of this deep history and rich environment managed to overshadow the tearing down of structures that had given this regional community stability over long stretches of time. But....







Figure 31. Church of Our Lady of Vladimir in Berezki, 1907, by N. V. Rozanov. Oil on canvas. (State Hermitage, G. D. Dushin Collection)



Figure 32. N. A. Sinitsyn, priest of the church of Our Lady of Vladimir in Berezki, with his family and relatives. Presented to the daughter of the priest, E. N. Troitskaya. (Archives of the Vyshny Volochyok Local Historical Museum)







Figure 33. Church near Berezki which was destroyed in 1933 during Stalin's Time of Terror. (M. Leonov, 2007)



Figure 34. Marina B. Gnilovskaya (daughter of Boris Sokolov) and G.E. Zigert at the sanctification of the Memory Cross of Our Lady of Vladimir Church, destroyed in 1934. Berezki, August 21, 2004. (Photo by E.I. Stupkin)



Figure 35. A day in Berezki Village — August 21, 2004. Religious procession and sanctification of the Memory Cross on the site of Our Lady of Vladimir, destroyed in 1934. Near the cross — academician B.S. Sokolov and Prior of the Church of Transformation of the God for Solnechnoye Village (Vyshny Volochyok district), priest Alexandrei Smirnov. (Courtesy of B. S. Sokolov, photo by E.I. Stupkin)

"... horrible things happened. Church's tombs were broken up, family burial vaults were destroyed, burial-ground crosses were destroyed, graves opened, human remains, some centuries-old, were thrown out – and anything that glittered was stolen...there were literally skulls on the roads. For a normal mind it is impossible to understand the nature of the cruelty."

Boris Sokolov, 2007 and interviews

Yet even with the bombing of the churches, the melting down of their melodious bells, the antireligious propaganda, the push to literally take and destroy the past to make way for the "new," did not rob everything from the people of this somewhat sheltered region. Much of Berezki was destroyed during this period, but the destruction did not subsume the intense beauty of the land of Sokolov's childhood, nor quench the curiosity that has driven him though all his life. And there came a time in 1928 when he decided "to quit being a fool". Young people were being pressured to join the CUY (Communist Union of Youth). Sokolov could see the great cultural destruction around him and left for St. Petersburg. He never filled out the forms . . .

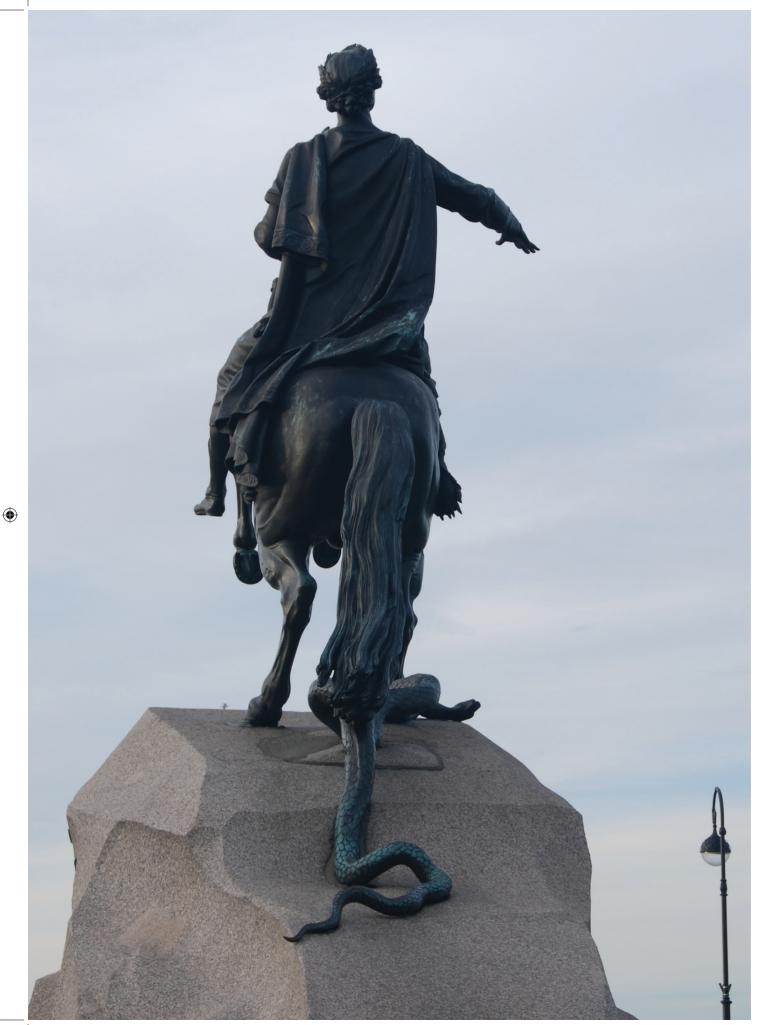
Figure 36. (opposite page) Old well, Berezki. (P. Vickers-Rich, 2007)

















Chapter 2: Leningrad, 1931 - 1941







Figure 38. St. Petersburg State University (previously Leningrad State University). Long hall where portraits of famous professors and other outstanding personages hang. In the 1930's, one by one such portraits disappeared, and so did some professors during Stalin's purges. (P. Vickers-Rich, 2011)



Leningrad, 1931-1941

By the time he was 8, it was quite clear to Boris that his interests lay in the natural sciences. He was not overly impressed with technological topics. After finishing Middle School, he continued his education, going onto a polytechnic, the United Labour School in Vyshny Volochyok, where he received his certificate as a fully qualified electrician as well as draftsman in May of 1931. His heart and mind lay elsewhere – but he was, after all, a son of the intelligentsia and had to find a way to access university, because his background was as it was.

During these years, with the strong determination of Stalin to educate the masses and "defuse" the intelligentsia, in order to be admitted to a tertiary institution, one needed to demonstrate some years of dedicated experience in some kind of "practical" work. So, always practical, Sokolov had applied for entrance into the Elektrotok (Lenenergo, Leningrad Energy), a state company. This would give him work experience, as a fitter or electrician. Between "high" school and his electrician training, he worked with a "tough lot", as a log transporter. But, at 18 years of age, and after putting in nearly a year in this Trade School, he decided to go to Leningrad and make every attempt possible to enter university. His boss at the time was a Czech. He commented to Boris:

"You are a fine young man and hard worker, fast learner, so I would like to recommend you for entry into an Electro-Technical Institute – in fact, this is the very best training you can get in the country."

Still Boris had no interest in doing this. His boss was taken totally by surprise! He asked Boris:

"What do you want to do? How can you not see this is a wonderful opportunity?"

Boris made it absolutely clear that his burning desire was to gain admission to university and study either geology or biology and that he was just not enthusiastic about a job as an electrician. In a heavy Czech accent his boss replied:

"You could be a good boy and a very good technician, you know."





...still unable to fathom how a young man could turn down such a lucrative offer.

Most fortunately, in spite of his profound surprise, Sokolov's boss provided him with an outstanding recommendation for university entry. But, because of his intellectual background, in the early 1930's, Sokolov was only allowed into evening classes, not full day courses and not offered any supporting stipend.

"I continued to work during the day for the Electrotak company, because I was not able to get a stipend, and fortunately my aunt gave me a place to stay (on Barmaleev St.). At night I then attended university and began to build my priceless fundamental library – such a treasure." "My first job was as a radio repairer and electrician and I even used 'claws' on my feet to climb poles to access the high wires."

Boris Sokolov, interview, 2005

Alongside Sokolov in these night classes were 20 other students, most with 9 years of pre-university training – young students in much the same situation as Boris. As things progressed, Boris was able to enter the government approved faculty "Rabfack"- a Robotchi Fakultat. This would, supposedly, eventually give him access to the real university. At first he studied in the Geological Soil Science and Geography section. His Dean was Yakov Samoilovich Edel'shtein, the first academic in the USSR to set up university level training in geomorphology. Edel'sthein actively recruited young students who had received a normal education in the State-run middle schools (thus 9 years of education). The Bolsheviks' effort to educate youth as well as older people, in order to rapidly increase literacy, assisted Edel'sthein. It seems, in hindsight, such a program might have been in conflict with the strict rules imposed on the "intelligentsia." But, nonetheless, because of the route Sokolov had taken in his pre-Tertiary education, he was able to reach for that education he so passionately desired, despite his family background.

This was a "most unusual and peculiar time," as Boris noted in a July 2005 interview. On the one hand there was an explosive development of art, science and industry building. Big factories and dams and many other projects were underway, funded by the central government. Parallel to this was repression, even shooting of "undesirables," or at the very least imprisonment and banishment to the outposts of the Soviet Union. A national tragedy. Neither professors nor students were insured against trouble. And even though Sergei Kirov, the popular Party leader in Leningrad, tried to liberalize this region, at first with the encouragement of Stalin, his assassination in December 1934, did not encourage a feeling of free expression.

Memories still reoccur to Sokolov about the goings on at Leningrad University. One of these recollections concerns the long building built by Peter the Great – which housed 11 Collegia of the University – within which was a long hall (Fig. 38) - nearly 400 meters in length. On the spaces between the windows hung paintings, along with black and white sketches, all manner of graphics of present and previous professors, who had hallowed these halls over decades and centuries.







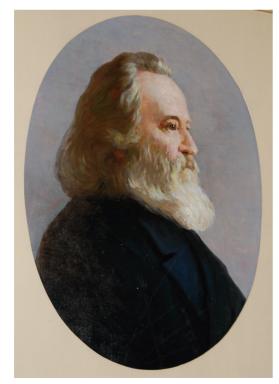


Figure 39. On far right in the painting is Tsar Peter I, and the other men are members of his government. "Let there be a university!" Painting by Lydia Davidenkova, 1988. This work, on display in the main Leningrad State University long hall, depicts the session of the State Council on 28 January 1724 during which Peter the Great signed a decree estabilishing the Academy of Sciences, the University and a Gymnasium

Figure 40. Portrait in the long hall, Nikolai Ivanovich Kareev (1850 - 1931). Historian, public figure. D.Sc. (History), Professor, Corresponding Member of the St. Petersburg Academy of Sciences (1910), Honorary Member of the USSR Academy of Sciences (1929), Moscow University graduate (1873). His works were devoted to problems in philosophy and history. Presented a comprehensive description of the development of West European civilisation. (P. Vickers-Rich, 2011, with thanks to St. Petersburg State University)



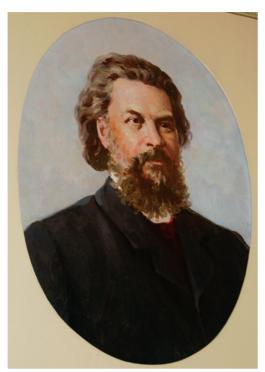


Figure 41. One of the notables whose portrait hangs in the long hall. Ivan Parfen'evich Borodin (1847-1930). Anatomical botanist and plant physiologist, florist, educator, Doctor of Botany (1886), Professor, Full Member of the Petersburg Academy of Sciences (1902). Studied respiration of plants. Headed the Environmental Protection Commission at the Russian Geographical Society, created the concept of measures aimed at nature protection. President of the Russian Botanical Society. (P. Vickers-Rich, 2011, with thanks to St. Petersburg State University)

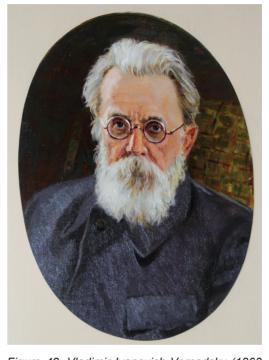


Figure 42. Vladimir Ivanovich Vernadsky (1863 - 1945), naturalist, geologist, mineralogist, crystallographer, philosopher, Doctor of Geology, Professor, Member of the Petersburg Academy of Sciences (1912) and USSR (1925) Academy of Sciences, founder of such earth sciences as biogeochemistry, radiology, hydrogeology in Russia. Author of the comprehensive theory of biosphere and its evolution. Contributed to formation of ecological consciousness. (P. Vickers-Rich, 2011, with thanks to St. Petersburg State University)



Figure 43. Nikolay Konstantinovich Roerich (1874 - 1947), painter, archeologist, writer, traveller, public figure, philosopher. Full member of the Imperial Academy of Arts (1909), Member of the World of Art Association and its chairman (1910 - 1913). Founded the Institute of Himalayan Research (1928). Initiator of the International 'Roerich Pact' (1929). (P. Vickers-Rich, 2011, with thanks to St. Petersburg State University)



"One after another of the drawings disappeared. And then some of the professors disappeared. Finally almost all of the art was removed and stored in the attic. Students saw this and wondered what was happening. Professors at this time were dubbed 'enemies of the USSR.' Then some students disappeared – no explanation. Still, parallel to this, young students were involved in a great variety of cultural life – opera, chamber and orchestral music, sport – even scientific seminars and debates. Such contrasts, confusing, conflicting signals."

Boris Sokolov, interview July 2005

Anatoly Rybakov eloquently captured these times of parallel universes in his *Children of the Arbat*, and Bulgakov conjures up the strangeness of the surrounds in his *Master and Margarita*. There was an edge of danger felt by staff and students, by everyone. Clearly something was wrong, something amiss. There was significant anxiety, but at Leningrad University there was no attempt for any form of organized response by the students or the academics. Jokes were made, but people were careful where and to whom and about what they spoke. In Orlando Figes' *The Whisperers – Private Life in Stalin's Russia*, this mood and behavior is well documented. Counterpointed against this, universities opened their doors to the working class, while on the other hand made it difficult for those of the bourgeois or intelligentsia. This did not daunt Sokolov – he continued to pursue his burning curiosity – for as he noted:

"I could not change my parents."

Boris Sokolov, interview 2005

The Faculty of Geological Soil Science and Geography at Leningrad University, most delightfully, had a field research station located at Sablino. This was where all field training took place – offering many options for research programs in climatology, paleobotany, general geology, including detailed mapping, and, of course, geomorphology.

While carrying out his own investigations as a new student, Boris was asked to be a tutor for practicals offered at Sablino. By the second year he was further requested to fully teach one part of the course. Then, his professor B. M. Timofeev put him in charge of coordinating all practicals. Boris compiled 20 notebooks of his experiences during this period, which were later presented to Prof. Yanishevsky, and are now on file in the archives of St. Petersburg University. Sokolov clearly took his teaching and observing quite seriously and thoroughly documented this!

Then began his "flying," a word he uses to describe himself, following a "zigzag path." Some students even teased him by calling him a "rolling stone" [a quote from a speech presented by Sokolov at the presentation of the Karpinsky Medal in Moscow, 1992]. As noted before, from the beginning, even as a child, he had broad interests, and this interdisciplinary nature has followed him through his entire life. His teachers and peers in Leningrad viewed him as a "flyer" in the most positive sense of the word. First he was interested







Figure 44. Student at Leningrad State University, B.S. (Sokolov Archives)

in geomorphology, then at the suggestion of his professors, geochemistry. He kept his interests broad, spanning the entirety of geology and even biology. He tried to integrate information from such a variety of disciplines to explain larger phenomena. This breadth has led him on a path across the broad sweep of science, and for that matter many other disciplines even outside of science.

Finally, in 1933, Sokolov became a full-time student in the Geological Faculty of Leningrad State University - his preferences split between two faculties: Geology/ Geography/Soil Science on the one hand and Biology on the other. He continued to move back and forth between the two, finding his interest drawn especially to the carbonate deposits and the fossils he discovered in these ancient shallow marine precipitates. Not only did he comb the limestones of the Sablino region alone, but he attracted a number of fellow students around him to investigate these rocks and their enclosed biotas over a much Sokolov, Autumn, 1936. Photo by B.V. Matveev, cousin broader area. The passion for knowledge of of E.N. Polenova. After the first Tien Shan Expedition. this young student was unstoppable, seemingly unlimited.

"I was astonished by the possibility of learning everything I wanted to. It was clear to me if I had a question, I was free to seek an answer. My passion for knowledge did not let me concentrate on one particular topic. "

Sokolov, 2004 and interview

There were problems, however, with such wide-ranging interests. During his 5 years at University, he had split his time between the two faculties. And as a result, Sokolov had to pass 50% more exams than a normal student in order to comply with the requirements of both. This "inconsistency" caused further problems in 1937 when he applied for postgraduate work at Leningrad University where evaluations written by colleagues and Party Bureau staff based at the University determined one's fate. One evaluation noted that it was:

"....unclear what his political face is, and he was close to reactionary professors."

(Sokolov in Prozorovsky 2004)







Figure 45. Aleksander A. Inostrancev (1843 - 1919). Geologist with paleontological interests. Became Corresponding Member of Russian Academy of Science in 1917 as well as Corresponding Member of the Philadelphia Academy of Natural Sciences (USA). (P. Vickers-Rich, 2011, with thanks to St. Petersburg State University)



Figure 46. Academics who were associated with Leningrad State University. From left to right, front: M. Yanishevsky (Sokolov's mentor), A. P. Karpinsky, N. N. Yakov, A. A. Borisyak; rear: A. N. Ryabin, P. I. Stepanov, M. D. Zalesky and B. K. Licharev. 1924. (Courtesy of St. Petersburg State University)





Figure 47. Fossil collection at Leningrad State University (now St. Petersburg State University), 1889. (Archives of St. Petersburg State University)



In the end, this did not affect Sokolov's entry into or progress within the University. Sokolov's behaviour was rightly judged to have resulted from his broad interests. And he continued to approach his professors with questions.

"These clever professors directed me one way or another in order to facilitate my education."

Sokolov in Prozorovsky, 2004

There were a number of well-known professors with global reputations in Leningrad State University at this time in the Faculty of Geology and Soil Science. Some had international connections: U. Levinson-Lessing and A. A. Polkanov (later elected an Academician of the USSR Academy of Science); N. A. Eliseev (later a Corresponding Member of the Academy of Science); P. A. Zemyachensky (Corresponding Member of the Academy of Science); P. A. Pravoslavlev, O. M. Ansheles, V. V. Okhotin, Ya. S. Edel'shtein, B. L. Lichkov, and many others. Intellect was alive in the halls of this university in Leningrad, despite the difficult times being lived through. And, there was a definite awareness of research outside of Russia, based on the professors' knowledge from previous times, when in the 1920's there had been significant international exchange of scientific literature and scientists. But, the 1930's were different – interchange decreased dramatically. Surprisingly, however, libraries continued to receive geological journals as well as those covering the fundamental sciences. The work of Wegener, and the earlier Russian works of Dmitry Ivanovich Sokolov, Y. Tesakov) who wrote in the 1800's concerning mobile continents, were well known at this time, but not those of Alexander



Figure 48. M. E. Yanishevsky, Sokolov's mentor at Leningrad University. (Courtesy of V. Tasakov)

du Toit, the South African geologist who at that time chronicled a mass of geological and paleontological evidence supporting the continental drift of Wegener. Access to international literature clearly was a bit random, hit and miss.

The Paleontology Department was the major attraction for Sokolov, and it was in its "bloom." The department was headed by Prof. M. E. Yanishevsky, who in 1919 had already established in Petrograd (St. Petersburg) the first Department of Paleontology in the entire country. Yanishevsky himself was an extraordinary paleobiologist and stratigrapher. He mentored a constellation of brilliant scientists, including Boris. Yanishevsky attracted as a student the future Academician Yuri Orlov, one of the founders of the Paleontological Institute of the Russian Academy of Science; future academician of the Ukrainian Academy of Science, A. N. Krishtofovich; docent A. F. Lesnikova, D. L. Stepanov, A. I. Torotanov-Ketova



were all his students. Aldona Lesnikova was one of the outstanding lecturers at the time, and a devoted mentor to Sokolov. She died during the siege of Leningrad in 1942.

At the beginning of his studies, Sokolov emphasized geomorphology. His first scientific paper, published in 1939, in fact, was devoted to the Quaternary geology of "cut-off lakes" in a meandering river system.

In 1935 Prof. Timofeev from the Petrography Section of the faculty suggested that Boris should change his emphasis to geochemistry, for he certainly had proven his worth in the monitoring of work at Sablino. However, Boris was inclined to remain more broadly based in the Faculty of Geology. Willingly, Timofeev convinced Prof Ya. S. Edel'shtein that this was the right course, and so Boris did become a geology student, but with interests in biogeochemistry. In particular, he wanted to know more about the role of marine organisms in sedimentation.

Sokolov proceeded to organize an extra-curricular club ("kruzhok"), which investigated aspects of marine geology. When he began planning programs for this group, he quickly realized that there was a lack of paleontological data. This was an area that he was familiar with, and he was most impressed by the support given him by Prof. Yanishevsky, who had significant contact with researchers in Western Europe and North America, despite the times. Yanishevsky had extensive knowledge of the geology of the Urals, Siberia, the Caucasus and European Russian. He was knowledgeable about a broad range of fossil phyla. His department had a cosy, home-like atmosphere, which was supported by skilled and very organised secretaries S. N. Protopopova and A. I. Shuvalova.



The relations amongst people in the department were excellent and sincere – people worked together towards a common goal and openly facilitated each other. There was a sustained interest in the accomplishments of each other. Sokolov does not remember any rumors or scandals being discussed - it was simply a tremendously supportive atmosphere to work within. Professors, technical personnel, secretaries and some students regularly attended meetings in the department with scientific presentations and discussions at the table where tea was served - in other words the staff from secretary to professor looked upon themselves as colleagues and were intellectually connected. This was a true shelter in times leading up to World War II and in Stalin's times of "Terror."

Figure 49. Associate Professor Aldona F. Lesnikova, one of Sokolov's teachers at Leningrad State University, 1920's. (Sokolov Archives)





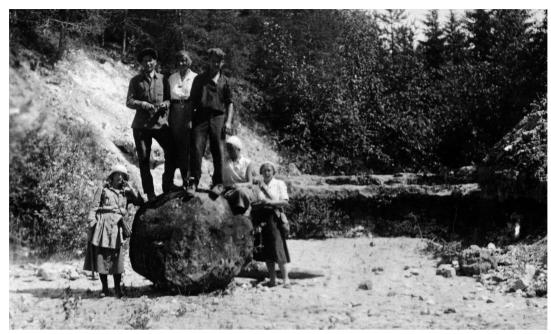


Figure 50. Sokolov's first student geological expedition to the Borovichi Region on the Priksha River, a tributary of the Mita. On and near a granite boulder that had eroded from the glacial deposits into the river, 1935. From left to right: docent A.F. Lesnikova and students of the Paleontology Department of Leningrad State University V.N. Mahaev, O.V. Kazakova-Durnovo, B.S. Sokolov, E.N. Polenova, and T.L. Derviz. (Photo by M.E. Yanishevsky from the Sokolov Archives)



Figure 51. Students from Leningrad State University at Sablino Field Station: From left to right: B. S. Sokolov, A. A. Kotovich, K. A. Shurkin and P. O. Boichenko, 1933. (Sokolov Archives)



In general, contacts with foreign colleagues, outside the Soviet Union, were significantly curtailed during this period, and so supportive relations during this time were especially important. Still, there were puzzling anomalies, during these isolationist times, unexpected. The International Laboratory of Paleontology (1933-1936) was strongly supported by the Soviet Government and *there were Foreign Corresponding Members* – this institution was based in Moscow and the predecessor of the Paleontological Institute. Hartman-Weinberg from the Ministry of Education at this time was even able to attract foreign currency support!

(The 1930's was the time of Stalin's most serious attacks on the intelligentsia and upper class, but people were affected much earlier. Stalin died in 1953).

As Boris launched into his studies towards to a higher degree, there were also new Ph.D. colleagues – L. B. Rukhin, later to become a world-renowned sedimentary geologist (lithologist), and paleogeographers, A. M. Obut, V. P. Barkhatova, V. H. Tikhi, E. A. and Z. G. Balashov – all would later become prominent researchers. Sokolov's fellow students stimulated his interests: K. A. Shurkin in the area of Precambrian geology; P. O. Boichenko, in ground surveys at construction sites; V. Zavadovsky, a student of the geology of NE Asia; A. Kotovich and P. V. Grushvitsky, the latter who died in WWII; A. D. Miklukho-Maklai, later to become a Professor in Leningrad, whose interests lay in the Permian System; V. A. Frank-Kamenetsky, a crystallographer at Leningrad University; A. A Savel'ev, with interests in Mesozoic molluscs and the geology of Mangyshlak, in particular its petroleum potential; Elena Nikolaevna Polenova, his future wife and his constant assistant, a leading specialist



Figure 52. Elena Nikolaevna Polenova (1915-1987), wife of Boris, at the age of 16. In 1964, Boris's teacher, the director of the Paleontological Institute, Yu. A. Orlov, presented this portrait to Sokolov. Pencil on paper. (Sokolov Archives)

on Devonian ostracods. Her family background was in both science and art. Elena's father, Boris Constantinovich Polenov, was a well known geologist in his own right, a student of Inostrancev, her mother, Tatyana Borisovna Polenova, an analytic chemist.

With a strong staff and student community, one of Prof. Yanishevsky's favourite regions to study was the Moscow Syneclise where numerous rivers cut deep into the Carboniferous marine sediments, more than 350 million years in age. So, he encouraged students to study this area with him. One of the training grounds for students was the Sablino Field Station. During one expedition in 1935, a considerable collection was amassed. In the autumn, this material was distributed amongst a number of students for description.

Sokolov took on the chaetedid "corals" – unusual forms, which were not all that well understood. As per normal, Sokolov began his descriptions with great passion and quickly established a systematic scheme for this group for the first time in Russia. He wrote his first monograph on this group, and eventually became a leading specialist on Palaeozoic corals. Although not planned, this became his Ph.D. (Kandidat Nauk), which he began in 1937, publishing his first paper in 1939,





Figure 53. Recent graduates (1937) of the Geological Faculty of Leningrad State University in front of Sberegatel'ny, Mendeleevskaya Liniya St. From left to right: P. Grushevitsky, G. Mikhalevich and B. S. Sokolov. Grushevitsky, a geochemist and the most gifted student in the faculty died at the Front in WWII. (Sokolov Archives)

not on corals, but cutoff lakes. His dissertation was completed in 1947, after he returned to Leningrad following on his work in China during the War. By 1955, Sokolov had prepared five monographs dealing with the tabulate corals of the Paleozoic for the European part of the USSR, and received his second degree (Doktor Nauk) for that work. It is worth noting that before Boris left Leningrad, on his way to work in China in 1941, he had already prepared an advanced manuscript , which was to become his PhD. Yanishevsky saved this manuscript, and it was later published in full in 1950.

Following on with this early work, through the 1960's when he occupied his position in the new science city of Akademgorodok, Boris arranged regular USSR All Union meetings as well as many international symposia dealing with corals. These took place in many countries. He maintained regular contact with colleagues outside the Soviet Union, when sometimes, especially during the Cold War, it was not possible for other research groups. During one session in Washington, he was elected as the Honourary Founding President of the Association of Coral Paleontologists. In 1967, he was awarded the Lenin Prize, together with Yu. A. Orlov, V. E. Ruzhentsevim and B. P. Markovsky, for the 15 volume *Fundamentals of Paleontology of the USSR*. The volume prepared by Sokolov on the lower vertebrates was



published in English as well (Sokolov, 1971). *To say the very least*, Sokolov was a prolific writer and editor. Where he found the hours in a day is hard to understand!

During his early field work targeting the corals, Sokolov became aware of how important detailed field data gathering was, even though the main purpose of the study was collecting fossil material. Having a broad knowledge of the geology of the region and its long term history, as well as the distribution of rock types and mineral resources, gave one a much better understanding of the total ecosystem and where the fossils themselves fit in this "landscape." As a result of this understanding and wanting to extend his skills, Sokolov joined the Faculty group involved in the mapping the mountains of Middle Asia, including the Tien Shan Ranges, a group led by Nikolai Sinitsyn, who later became Head of the Department of General Geology and Dean of the Geological Faculty at Leningrad University. In 1938 Boris actually travelled to this region and remembers its fresh air, beautiful sunsets. He brought back a large collection of Devonian carbonates filled with brachiopods - these all survived the Leningrad siege and were studied after WWII.

Sokolov's research while in Leningrad before the "Great Patriotic War" (WW II) had targeted three different topics: fossil corals from the Paleozoic, Lower Cambrian stratigraphy of the Moscow Syneclese and crafting of a 1:500,000 geologic map as part of a general survey of the Tien Shan Mountains in western China. And, as a result of the latter field reconnaissance, he received an invitation in 1941 from the Narkomtsvetmet (the Peoples' Committee on Non-Ferrous Metals Industry) of the USSR to take part in a major expedition contracted by the Provincial Government of Xinjiang in the west of China. This study was to be a regional geologic investigation of an enormous part of Central Asia. For Boris, this was a hard decision to make, to tear himself away from the Geological Faculty of Leningrad State University where he had a significant teaching load and active research programs.



Figure 54. Fossil coral-like Chaetetida from the Carboniferous, around 340 million years old. Found near Berezki village in Pleistocene glacial deposits by Boris in 2002. Sokolov began collecting such fossils as a boy around Vyshny Volochyok in the 1920's. (Sokolov Archives)

But, it was Professors Yanishevsky, Krishtofovich and Edel'shtein who strongly advised Boris that the new generation of geologists in Russia should travel broadly to gain experience.

Sokolov was not the only geologist to be approached with this opportunity. A V. Peive (Peyve) was also canvassed, but due to his commitments in the Northern Caucasus at the time, he refused. Boris still hesitated. He first thought that if he accepted the offer, it would interrupt his current investigations. And some of his friends thought that this "adventure" to the East was a risky one. This was an anxious time – the Finnish-Soviet conflict had taken place, and there was a great distrust of the German-Soviet Non-Aggression Pact, entered into by the Russians on August 23, 1939.



Even after World War II the Tien Shan region became a major research focus for staff of Leningrad State University. Students and professors alike studied the tectonics of this region, and in doing so discovered vast mineral resources unknown before their work. Indeed, in the city Osh in Kirghizia, one of the streets was even named after geologist Sinitsyn! Clearly Boris was much influenced by this experience, and it was critical when he later worked in China, Siberia and other regions.

"No one thought about war, but it was so close. 'Personalities of the Third Reich', a book just published, provided character sketches of Hitler's entourage very 'expressively,' but it did not give an accurate understanding of the dangerous situation at hand. Political confrontations began to increase. In one panel discussion of the University teaching staff the possibility of a violation of the non-aggression pact by Germany was discussed. The outcome of this uncertainty was that Russia should be ready for conflict – but we truly did not realize the seriousness of this talk. At that time, of course, Europe was going through some very hard times."

Boris Sokolov, 1991, "Far from the War"



Figure 55. Tashkent, Autumn of 1936. From left to right: Nikolai M. Sinitsyn, E. G. Sinitsyna and B. S. Sokolov. (Courtesy of Y. Tesakov).









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Chapter 3: On the Eve of the Great War – China and Soviet Middle Asia, 1941–1945







Figure 57. China Camp, in front of the pass at the confluence of the Great and Small Uldus rivers, 1941. (Sokolov Archives)

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On the Eve of the Great War – China and Soviet Middle Asia (Kazakhstan, Kirgizia, Uzbekistan), 1941–1945

In the end, Sokolov decided to go to China, his first major "zigzag." He knew that once he crossed the border into China, he had a huge job of mapping ahead of him. Initially he decided to go alone, without his wife Elena or his young daughter Marina. His idea was that they would later follow him to Gulja (Kuldzha, Yining) for the winter, when the field work was completed for the season. But, when it came to getting the passports organized, he and Elena decided it was easier to all leave together. This was a stroke of good luck, even perhaps one of survival, for had they remained in Leningrad, who knows what would have

transpired in the tragedy that was to follow. Boris only realized the gravity of what their situation could have been when he returned to Leningrad in the Spring of 1944 and viewed the ruins that remained of their old flat – it was so devastating that he had to stay his first night in this heavily wounded city with one of his friends.

Not long after Boris, Elena and Marina left for China, Leningrad came under siege by the Nazis. It began on 8 September 1941 and lasted for upwards of 900 days until January 27 1944. Leningrad State University moved many of its students and staff away to Saratov, while some remained behind. Collections were hidden, when they could be. Some survived, while others were never to be seen again – both collections and staff! More than half a million citizens perished in the siege.

Thus, on the eve of Great Patriotic War (1941), Sokolov began his journey east as head of an expedition team to explore a vast and almost unknown region of Xinjiang – where he



Figure 58. Gulja, Western China, 3 December 1941. Boris and his wife Elena Polenova and daughter Marina (2 years old). (Sokolov Archives)



"We [being Boris, his wife Elena and 1 year old daughter Marina] were invited to western China in June 1941. We went by train on the 11th of June from Leningrad to Alma-Ata, which took five days. We were quite shocked by the flow of trains going east with masses of goods and soldiers. Three days later, on the 19th of June, we took an American McDonnell Douglas aircraft to Gulja (Kuldzha) in Xinjiang. No expenses on this trip were spared for us 'VIP's.' On the 20th of June 1941 the Germans invaded Russia, and so began the Great Patriotic War. We were far from the war (Daleko ot Voiny)."

Boris Sokolov, 14 February 2010 interview

spent close to 3 years. He gathered data on this huge territory and established plans for development of mineral and oil reserves.

Boris and his family and colleagues spent the years between 1941 and 1945 in various parts of this Central Asian region, the main purpose being to search for viable deposits of nonferrous metals and other resources - oil, coal and gold to support the War effort. A. M. Obut, his closest colleague, like Sokolov brought along his wife and young daughter.

'The Arms Industry needed non-ferrous metals, especially wolfram. That is why the aim of our expedition had very practical importance and the reason for its funding."

Boris Sokolov, 1991, "Far from the War"

This vast region of the interior of the Asian continent has always occupied a special place in the destiny of the peoples of Central Asia. It is the largest province of China and shares more than 3000 km of border with Russia. As Boris noted in his book on this period:

"When the first phase of the Civil War in China came to a temporary end, the Kuomintang government began to consolidate power across a number of provinces. Governor General Sheng was appointed as head of the provincial government of the region that we were working in. He was interested in protecting the region against Japanese aggression – in particular after the puppet state of Manchukuo was set up in 1931 in China's NE. This was a real threat not only to China but also the Soviet Union. And so, the Soviets were decidedly interested in assisting the Kuomintang in securing Central China and Xinjiang. Xinjiang assumed great importance for both countries."

Boris Sokolov, 1991, "Far from the War"

With the urgency for acquisition of resources high on the list of the Soviet Government, in a very short time, arrangements between the USSR and those in charge of the Xinjiang region were put in place. There were many Soviet specialists from a variety of professions deployed to western China – not only to work as technical staff themselves, but to train local Chinese. In southern Junggar, at the northern base of the eastern Tien Shan Mountains, the first commercial oil field Tushantszy (in the Shiho district, now Dushanzi) was discovered,





and immediately a refinery was constructed and put into operation. This solved the pressing problem of literally fuelling the transport of goods from Alma Ata to Lanzhou, as the threat of Japanese aggression loomed.

The first geological surveys of this region had certainly noted a number of possible metal-bearing deposits – and these early assessments allowed Sokolov's group to make a further estimate of what the region might hold. But Xinjiang was not at all sufficiently explored by the early 1940's, and it was clear that Soviet geologists held enough experience and data, that they were the most likely to find more resources rapidly. The local government of Urumqi had set up a Department of Mining but had no local professional geologists. Even though at this time there were several hundred skilled geologists trained in several university centres of eastern China (Beijing and Nanjing in particular), few had worked in the west. Much of the data for this region was held by others – Russians (P. M. Przewalsky, V. I Roborovsky, M. V. Pevtsov, G. E. Grum-Grzhimailo, N. K. Kozlov, V. A. Obruchev, etc.) and non-Soviet Europeans such as G. Merzbacher and Sven Hedin.

A crowning result of this Russian involvement was the 1:1,000,000 map of the Xinjiang region compiled by V. M. Sinitsyn and his group. Only after the Revolution in China did such institutions as the Academy of Geological Sciences and the Geological Survey of Xinjiang refine this original compilation. During the 1940's and into the 1950's, cooperation with Soviet geologists was much appreciated and highly regarded by the Chinese leadership and scientific community.

The region Sokolov and his colleagues had to explore was vast, divided into two basic regions by the complex system of the Eastern Tien Shan: the northern region, Junggaria and southern Kasha, *i.e.* Chinese Turkestan. In the northwest, this region was surrounded by the Junggar Plateau, in the north by the Mongolian Altai, in the south by the magnificent ridges of Karakoram and Kunlun. And to the east, the region merged with the Gobi Desert, terminating in the Turfan Depression. Between the Tien Shan and the southern mountain ridges lay the Tarim Depression and the Taklamakan, along whose northern edge was Lop Nur Lake. To Boris and his fellow geologists, the region was a most exotic terrane, full of

political intrigue, legend and the promise of discovery.

When Boris, his family and colleagues arrived in June of 1941, the provincial government was completely pro-Soviet and acted in a most independent fashion from the Central Government of China. Provincial officials clearly wished to expand industrial and trade relations with the Soviet Union. A General Consulate of the USSR was established in



Figure 59. Boro Horo Range, 1941, photo by A. F. Ilyin. (Sokolov Archives)



Urumqi, while additional consulates were located in Gulja, Chugachuk and Kashgar. Not only were the Russian geologists welcomed, but so too were many Russian émigrés. In fact, the Russian presence was so strong in this region that:

"Soviet movies and Soviet products were very popular, especially among Russian youth and children from mixed marriages – Chinese father and Russian mother, but not otherwise. Once I heard a child singing a Russian song in Uigur, and portraits of Chinese leaders and Stalin were seen presented side by side."

Boris Sokolov, 1991, "Far from the War"

Boris and Elena were based in Gulja, the centre for the Office of Geological Exploration in Xinjiang. This office was headed by F. A. Karpenko and M. P. Lozhetchkin. The Soviet group sent to the east on the eve of the war was subdivided further into 5 subgroups. The Kashgarian group was led by N. A Beliaevsky, the Kunlunian by V. I. Serpukhov, the Altayan by V. M. Sinitsyn, the Banenko, Dzungarian (Borotalinian) by A. Dh. Ivanov and the Tien-Shanian by Sokolov himself, assisted by Obut.

Sokolov's group needed a few days to organize provisions, horses and gather all the resources for their expedition - 20 horses and 10 people. In addition to the Russians, Sokolov along with A. M. Obut and A. F. Ilyin, there was a driver (an Uyghur), two panners (Chinese), a cook (Dungan, a Muslim) and drovers plus three of four caravaneers (Kazakhs and one Mongolian). The field team moved along the Dzungaria-Kashgar "highway" setting up base camps along the way. From there they would go "off road" with horses and supplies and eventually return to base camp, then move off again. This allowed the exploration team the greatest mobility, and they were able to cover large areas in their surveys. With no fixed plan for each of these forays, they followed the route of the most interesting – a bit like the path of Boris Sergeevich's life!

The Soviet work was carried out as an independent exercise - there was no contact with those renowned for their work [or even access to their reports] on the geology and paleontology of China such as Davidson Black, Teilhard de Chardin or Sven Hedin. Many of these explorers had come and gone before the Russians arrived. Boris, however, did later spend a night in a house in western China that Tellhard Chardin had once occupied.

The first task of the Tien Shan expedition was to produce a 1:500,000 map of the northern part of the Eastern Tien Shan – in the Dzungar drainage – from west of the Ente River Gorge and Ebi Nur Lake to Talkiiskii Pass and on further to the east. The Russians, of course, were on the lookout for significant mineral deposits. In this region there were only nomadic Mongol camps and occasional pasture for the horses. Along the road to Urumqi some small towns and settlements occurred, but only to the north along the southern margin of the Junggar Depression. The country was simply vast. The going was rough, but there was an abundance of game for the taking, so the expedition was well fed. The topographic maps available to this exploration team were sketchy, incomplete and often quite inaccurate, so those had to first be corrected and then geological features could be added. All this took a few months to consolidate.





Elena and Marina set up house in Gulja (Kuldja), but sometimes joined Boris in the mountains where he had a large house. Obut's wife and daughter lived together with Elena and Marina, as the mapping team moved about, often more than 24 hours away from where their families resided. Work was mainly on horseback, although there were trucks with drivers. But it was often simply more practical on extended transects, often greater than 700 km over rough country, to be equestrian-equipped!

Even early in the term of these expeditions, not all was stable - there were murders, and in the Kashgar region of the Tarim Basin, worrisome were the activities of a number of foreign intelligence groups (from the UK, USA, France and Russia). The area was certainly not entirely safe. It was also difficult to know exactly what was going on back in Leningrad and Moscow. Information was often late in coming and incomplete. Nevertheless, by the end of August 1941, it was quite clear that the Soviet Union was engaged in a serious war. Anti-Soviet sentiments began to surface then and intensified in the Xinjiang region. In addition, some of the local Kazakhs



Figure 60. China, 1941, Boro Horo Range, Tien Shan Mountains, October, Sokolov (right) and A. M. Obut with their field "vehicles." (Photo by A. F. Ilyin, Sokolov Archives)

rebelled against both the Chinese and the Russians. Some Russian experts based out of Urumqi and Gulja were killed. Despite all this, Boris and his team managed to finish their field work by the end of Autumn of 1941.

As Winter approached, Sokolov, Obut and Ilvin returned to Gulja, and over the next three months during the cold times of 1941 to 1942, they managed to put together the first geologic map of the Boro Horo region with detailed data on paleontological content and mineral distribution, concentrating on nonferrous minerals. They made predictions as to where further exploration might vield favorable results, and in 1942 their discoveries led to the opening of a commercially viable mine. Boris wrote a lengthy paper accompanying their map on the geological structure



Figure 61. Tushantszy, near Urumqi, Western China, Spring 1943. First successful oil show. Sokolov with Elena Polenova and daughter Marina. (Sokolov Archives)

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of the Boro Horo region, but it has never been published, a disappointment still for Boris.

Sokolov was clearly regarded as a leader in the search for resources in this region. In 1943, he was appointed Head of the Geological Party for exploration of the Tien Shan Depression – Tarim/Turfan/Dzungar/IIi in Kirghizia, Kazakhstan and Uzbekistan – by the Soviet government.

In 1942, Sokolov's group moved from Gulja to Urumqi, a move which went quite smoothly with no difficulties. However, once in Urumqi, Boris had problems gaining permits needed to work in the southeast and the more southern parts of this Province. Finally, he did get the permissions needed, but with it came no guarantee of safety for the expedition members. It was truly risky business. The influence of the anti-Soviet Kuomintang supporters in the Xinjiang Provincial Government was growing, and this impacted significantly on the Soviet groups working in the region.

Despite the political uncertainty, Sokolov and his team were fascinated by this region, and their field enthusiasm clearly shows in his notes:

"...we decided to work in the Turfan Depression with our base in Turfan. We had mostly studied the northern margin of this region. This depression is an amazing natural feature. It has the lowest topographic mark – nearly 152 m (the bottom of Lyukchun Lake). The south side of this depression is rimmed by low, dry mountains – the Chol Tag and further south the Kuruk Tag, extending from the main Tien Shan Range. The coal-bearing Jurassic lies along the base of Bogdo Ola. Here, from ancient times, coal was mined. Marco Polo reported the continuous underground fires alight even in his day. Despite the strong flow of glacial waters, escaping from the canyons, none reach the lake – being absorbed by the massive, pebble-rubble fan stretching along the base of the mountains. The valley bottom was covered by lifeless loess. Only in places where groundwater reached the surface was the land fertile. And, fortunately, this area was a recently active tectonic zone – FORTUNATELY!"

Exploration of the Turfan Depression did not take long, but was accompanied by a number of incidents with the local people that were none too pleasant. The exploration route followed the south side of the Eastern Tien Shan from Toksun to Karashar, across dry and rough terrane. Boris and his Russian colleagues met small groups of people on the move, seeking jobs and food. Some would fall upon their knees begging for a piece of bread. Sokolov has painful memories from these times. From there, they set up bases of operation in Karashar and Kurlya. Exploration was along the river valleys with the waters flowing off the Eastern Tien Shan. This was magnificent country with impassable gorges and lakes.

In this region the Haidyn Gol River, the Great Yuldus and Minor Yuldus rivers meandered through alpine meadows and tundra, a country of the Mongols, who had migrated from Hutun Sumun and lived in nomadic camps. According to the reports at hand (as well as





information from ancient times) "mineral oil springs" occurred east of Karashar. Boris and his team followed this up, driving several hundred km along the eastern side of the Tarim Depression to the west of Kurlya. And, near Kuchar in the Tertiary sediments they found the test pits from which the locals recovered their "lighting" (naphtha). So, of course, this area was a likely source of oil. The Russians were not able to either map this in detail or develop it, but much later, a Chinese-American expedition returned, and their work led to the discovery of a massive petroleum field, which had an estimated several billion tons of oil.



Figure 62. Boro Horo River, photo by Dindu Jin. (Sokolov Archives)

To finish off his work in this area, Sokolov decided to make one final geological reconnaissance trip – from the eastern Tien Shan near Karashar to Gulja, about 700 km. Horses were the only way to do this at the time. Boris was particularly interested in the

high mountain basin of the Yuldus rivers, which was then poorly known. It was to be an adventure, and lucky for him, he had the support of the local authorities. They assisted in the equipping of a small caravan and provided an excellent guide, Kalmyk. Kalmyk was critical in signalling the Mongolian nomads along that way informing them Sokolov's group was made up of "good people". All would have been considered incredibly successful, were it not for Kalmyk's murder! Once Boris and his team parted with Kalmyk, just before Narath Pass, nearly half way along the journey, he was killed, trying to catch up with them again. The following day Boris and his team managed a rough crossing of this pass and on the other side came upon a village with the name "Russian." It was really Russian, founded by White Russian Cossack refugees. To say the least, the geologists were greeted well!

Upon return to Gulja, reorganization took place. In the autumn of 1942, Boris, Elena and Marina moved to the oil settlement of Tushantszy. This was rather fitting, for ever since Sokolov was in his late teens, he had been involved in some way or other with petroleum. Based on his experience with the deep drilling project in Russia, he was able to provide expert advice on interpreting the Tushantszy structures. As he noted:



Figure 63. B.S. Sokolov on the expedition to Central Asia (Western China). After a hunt in the area of Bagrash Kul, springtime, natural food was aplenty, 1942. (Photo by A.F. Ilyin from the Sokolov Archives)



"The Yantszyhay cross-section studied previously by M. N. Saidov was the most interesting. It recorded the tectonic history of the Eastern Tien Shan and its submontane depressions during the Mesozoic and Cenozoic. So, in winter 1942-1943, I wrote an essay about the geologic history of the Southern Dzungar Depression, and it has never been published."

Interestingly, at the time that Sokolov was carrying out his early work deciphering the deep drill sections from Tushantszy, the first group of experienced Chinese geologists was sent from Chongqing to Tushantszy. In particular, Professor Huan Tzitsin headed the group, and his meeting with Sokolov established a lifelong friendship.

The war was in full swing in the west. Heavy Soviet losses signalled a sign of weakness to the Chinese leadership of the time. So, beginning in 1943, the relationship between the USSR and China began to change. The anti-Japanese front weakened, and Chang Kai Chek's Kuomintang pressured the Xinjiang Provincial Government to break ties with the USSR. In fact, in the spring of 1943, the KMT troops invaded Xinjiang. Attitudes to Soviet people worsened, and this led Sokolov and his colleagues to wind up their work and evacuate. It was pertinent to leave! And the Soviet government recalled their experts.

'I had to leave with my family in May, 1943. Crossing the border in Khorgos I lost some valuable material."

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Boris Sokolov, 1991, "Far from the War"

"we had to move out. Our Polutorka (a small 1.5 ton truck made with wood sides), had 2 people in front and the whole family on the top. In May we moved from Tushantszy (half way between Urumqi and Kurlya) to Alma Ata along the Emperor's Road. This was a two day drive – more than 1000 km. We sometimes simply had to hide for fear of being shot. We had a serious stop on the border between China and Russia. It was an official requirement that no documents could cross the border – but instead should be given to the Consulate General of the USSR in Urumqi, then supposedly sent by diplomatic pouch to Moscow – all the notebooks and maps. They never arrived."

Boris Sokolov, 2009, interview

The war worsened. Industrial operations in the western USSR had to be evacuated, and new ones set up in the east. New centers of the defence industry had to be constructed, and they in turn needed minerals and energy resourcing.





To coordinate all this. a new Special Petroleum Expedition was set up by the Commissariat of the State Petroleum Industry with the task of exploring for oil in the sedimentary basins of Kazakhstan and central Asia. and evaluating the petroleum potential of the Russian lands bordering Xinjiang. The work that had already been undertaken by Sokolov and his colleagues was of immediate relevance under these desperate conditions imposed by the ongoing and devastating war.

In the second half of 1943, Boris was appointed the Head of a Special Geological Party to map several sites at different scales related to the oil of the Tien Shan and adjacent terrane - the Tarim, Turfan, Junggar and Ili depressions (basins). This geological party was part of the Russian VNIGRI (All Russia Petroleum Research Exploration Institute), with which Sokolov later continued to work for some years, combined with his teaching at Leningrad University.

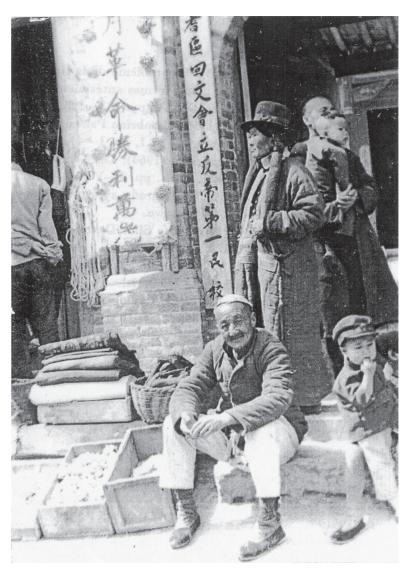


Figure 64. China in the War Years 1941-1942. (Sokolov Archives)

"My fate was predestined. Arriving in Alma Ata in the summer of 1943, I received an order to join the Special Petroleum Expedition. The direction came from the All-Union Petroleum Research Institute of the Communist Party Committee on the Petroleum Industry headed by A. V. Kuchapin, based in Alma Ata. I was appointed as head of the Ili Petroleum Group."

Boris Sokolov, 1991, "Far from the War"



The Special Petroleum Expedition had many tasks – and four groups were formed to carry out the work. One was geophysical, another topographic and two geological. Sokolov and his wife Elena (E. N. Polenova) were posted to the Kazakh village of Koktal. At this stage, Marina was taken to Leninpol (Kyrghyzstan) to live with her paternal grandparents, indicative that even during the Great Patriotic War, this small haven remained relatively quiet.

At first Boris and Elena found it difficult to settle in Koktal – for they had been away from the Soviet Union for more than two years. Adjusting to Soviet life was not easy, especially the bureaucracy. Still, they managed to get the horses and equipment required, because of the desperate Soviet need for petroleum. And so, Boris and his "team" began their geophysical survey. He described his "team" with some sarcasm, but indeed, this was the raw material he had to work with in a place that had the bare minimum of qualified geophysicists and geologists:

"We did finally get the required minimum of qualified geophysicists and geologists, but we had some difficulties in putting together the service staff needed to 'man' the expedition. Because of the rarity of able-bodied men, we had to rely on anyone that could be employed. A gypsy family, a feeble old man with his grandsons as grooms. During their employ, they stole one of the horses and ate it! Another employee was a frustrated actress from the Leningrad Film Studio, another, a young fellow from a prison in Koktal. He had been convicted of stealing carrots in one of the fields near Moscow. And then there were two Ukrainians, a fat middle-aged, wondrously lazy old man, who quickly found a soul mate at a homestead in Koktal, a frustrated singer from some local music college and a very intelligent young man whom we engaged along the road to Koktal, who disappeared just as suddenly as he appeared. It turned out that he had just escaped from prison! All of these people had to be provided for. We had to get food for ourselves, oats for the horses, as grass was not everywhere, repair equipment, and so on. And we had problems with shoes - sometimes we used thick wool socks as shoes! In spite of all this, there was a good atmosphere, and our work was quite successful. We had only one incident. Our topographer disapproved of my order for the team to give all their candies reserved for a party to a sick little girl, the daughter of one of our geologists."

Boris Sokolov, 1991, "Far from the War" and interviews

This work suited Boris, for it was a continuation of the mapping he had just conducted on the other side of the border – in Xinjiang. He was clearly interested in the Tien Shan and the geological history of the sedimentary basins filled with Mesozoic and Neogene sediments, laid down during the last 200 million years. He was also intrigued by the tectonic history of the region and petroleum prospects. Sokolov was entranced in working out the geologic history of this enormous and not well understood part of the planet – and besides, the landscape was simply inspiring.





Winter was spent in Koktal, where Boris related:

"by the light of church candles and a Betty Lamp, I wrote up with great pleasure the final work on the Ili Depression and its petroleum-bearing potential."

Boris Sokolov, 1991, "Far from the War"

Sokolov developed a detailed stratigraphic scenario for the Neogene and Quaternary deposits of the region, and sorted out its environmental and tectonic history. Work was completed in the Spring of 1944 in Alma Ata, but *still* has not been published – just kept in the archives of the VNIGRI and the Geological Survey of Alma Ata and Frunze (now called Bishkek). The lack of published material from this whole period of Sokolov's life is a recurring disappointment, and much of it has simply been lost – a great pity.

Sokolov's next assignment was a similar geophysical and geological investigation of the more southern depression of the Tien Shan, including the basins of the Chu, Naryn and Issyk Kul lakes. Boris moved base to the capital of Kirgizia (now Kyrgyzstan), Alma Ata, and gathered a new field party. There were no cars available, so light carriages and horses had to suffice. The horses, of course, needed water and grazing space, and that meant field base camp had to be near the river on the edge of the city of Frunze. This led to a fair few troubles related to the horses in the Autumn because of the lack of graze. These equines had to be fed on bundles of clover, which could only be purchased at the bazaar. But what to do for money that was supposedly transferred from Leningrad – but lost in the local counting house? Fortunately at that time the NKVD (People's Commissariat for Internal Affairs) somehow found the funds, but in the meantime, Sokolov had to sell personal belongings and use barter. In addition, he lost his gun in Naryn – robbed by a patrol officer in Takmak, under the pretext that "there were a lot of deserters in the mountains?!" For his gun, the commandant provided Boris with a fake cheque – which could never be cashed and was certainly not very useful in self-preservation!

Life in Frunze was scientifically rich. For the first time since the move to Xinjiang and then in Kirgizia, there had been a little time for intellectual conversation. In Frunze there were interesting gatherings at the home of S. S. Schultz. During this time Sokolov was able to write an extensive research monograph on the geology of the Naryn Depression and additional papers on the Buam Gorge and the Tien Shan section of the Chui Depression. All of this was complete when he and family moved back to Leningrad. Boris was determined to record all of this work and even turned down a chance to travel to Iran in order to finally sum up the years of field observations, which began even before the war when he was yet in the employ of the Leningrad State University. Working out the tectonics and sedimentary successions and the oil potential of this region dominated by the Mesozoic and Cenozoic had completely engaged Sokolov during these years, pushing out all other interests, except perhaps that for his Paleozoic corals. And then, it was time to return west as the war came to an end.

Victory Day, 9 May 1945 – Solokov was alive, healthy and in Leningrad. He was young and had so luckily been blessed with a series of extraordinary experiences in his travel





to the very heart of Asia, almost untouched by the war. Leningrad was filled with rejoicing and tearful people. Millions of leaflets were in the air, dropped from airplanes telling of the unconditional capitulation of Germany. Boris remembers walking through Tchaikovsky Street on Liteiny and Nevsky Prospects to Vasilevsky Island and then on to the University. He simply had to go there. Mendeleev Lane was filled with people. Lev Seminovich Berg appeared on a balcony and delivered an impassioned and inspiring speech. The day was brilliantly sunny.

Sokolov had left Leningrad as a Professor of Paleontology. He came back as a petroleum geologist, a member of the All Russia Petroleum Research Exploration Institute (VNIGRI). He was, at this time, perhaps the only Soviet geologist who had traversed the internal and frontal depressions of the Tien Shan region – more than 3000 km in its entirety. Both before and during the war years he had put in more than 7 years of detailed and determined exploration of this region and felt the need to put together some sort of synthesis on the Western Chinese and Central Asian material that he knew so well. Of this Sokolov noted:

"The time I spent summarizing the work during the war years in China and in the Soviet Tien Shan was the most successful and productive in my life. I summarized my expedition works in the monograph 'Comparative Review of the Tien Shan Depression and Some Questions of its Petroleum Resource.' The book was prepared for publication, but unfortunately, has not been published for various reasons (so they say). The manuscript is kept in the archives of the VNIGRI."

Boris Sokolov, 1991, "Far from the War" and interviews

Another monograph with the title of *Geology and Mineral Resources of Newly-Investigated Areas of the East (Chinese) Tien Shan* accompanied by a number of maps, was also left unpublished. A single copy was handed over to the Geological Survey of China in connection with the work on the Carboniferous sections in the Boro Horo by a young Chinese geologist, and its whereabouts is not known. This was not the end of Sokolov's involvement in China, but that will be dealt with a bit later.









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Chapter 4: The Post-War Years in Leningrad
(VNIGRI – The All-Russia Petroleum
Research Exploration Institute),
1946–1960





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The Post-War Years in Leningrad (VNIGRI – The All-Russia Petroleum Research Exploration Institute), 1946–1960

Upon his return from the War assignment, Sokolov, as a part of the Oil Institute (VNIGRI), concentrated on the Russian Platform sequences, a switch from the younger Mesozoic to the older Paleozoic – in a way, a return to what he had been involved with before the War!

The VNIGRI was closely connected with the VSEGEI, the A. P. Karpinsky All Russian Geological Research Institute, originally GEOLKOM (essentially the Russian Geological Survey) set up in 1882 - part of the Ministry of Natural Resources. Information on the Russian Platform and other areas was needed by the Soviet Union, spurred on by the military. Oil and petroleum stocks from local sources were in short supply. The Soviet Union did not want to be dependent on international reserves. Boris was in Leningrad, now for a second time in his life, and his staff grew to more than 30, including a batch of young researchers, who themselves, first with Sokolov and later independently, made significant contributions to the understanding of sediments much older than those Boris had been working on in China. It was during this period that Sokolov made the discovery he considers the most defining in his life.



Figure 68. B.S. Sokolov — assistant in the Paleontology Department of Leningrad State University, Leningrad, November 1948. (Sokolov Archives)

Figure 67. (opposite page) Leningrad State University, from which Sokolov departed in 1941 en route to Western China, on the eve of the Great War (today St. Petersburg State University). (P. Vickers-Rich, 2011)



Sokolov began exploration along the Caspian Sea near Baku and Grozny. Oil had already had a show in this region, but only in small amounts, 30 million tons per year at the beginning of WWII. At the end of the War, there was a push to explore this area as well as that of the Volga catchment all the way to the Urals – and a high priority was placed upon this work by Stalin. Some drill holes had been put down and cores pulled from these holes, especially near the Urals. So, geologists familiar with oil exploration from Leningrad, including Sokolov, were assigned the task of analysing these cores. Large numbers of deep boreholes were put down, and Boris was intrigued by the opportunity to study the results. Most importantly for the studies that became a highlight of Sokolov's career, the exploration was expanded onto other areas of the Russian Platform – the White Sea, the Black Sea, from the Urals all the way to Poland from 1945 onwards.

Boris was quite familiar with the mid-Paleozoic sequences – with his earlier work targeting the Devonian corals in the Leningrad region. But these new boreholes went much deeper down to the Cambrian and then 1000 meters or more below that! Sokolov noted that the older rock types, the marine sedimentary sequences of clays and sands, were much the same as those above in the Cambrian. As the drilling went down, he could recognize the Devonian, the Silurian, the Ordovician, the Cambrian, but then the drilling rig kept punching into much older sediments.

"I was greatly surprised by this. These rocks were much older. It gave me goose bumps when I finally realized that we were dealing with much older sediments. The obvious question posed by the head of the Oil Institute was: is there oil in these older rocks?"

Boris Sokolov, interview February 2010

And so, a detailed search of these sediments began. Sokolov was asked to carry out an in-depth evaluation of this new sequence. This was to be a very large undertaking, indeed.

"I was rather upset, because this was an enormous task, and this would distract me from the substantial work that I had carried out in the younger [Mesozoic] sediments of China. But I was advised by one of the older academics, Nalivkin, in Leningrad to leave my research on the corals, and that the discoveries that I will surely make in these new sediments will be much greater."

Boris Sokolov, interview February 2010

Fortunately for Boris, he had an excellent research assistant, E. P. Alexandrova, who was absolutely indispensable in helping collate the masses of data and just helping in so many ways with this gargantuan task. She was able to summarize the abundance of new borehole data that flooded in day by day. By 1952, Sokolov and his group had published the first maps summarizing the subsurface geology of the Russian Platform – *The Atlas of Lithology* along with a 1:3,000,000 map of the Palaeozoic for this region. In the text accompanying the maps, for the age of the oldest sedimentary cover of the Russian Platform, Boris first used the term Vendian. At this time a term established by A. Grabau (1922), the Sinian, was being





used to include rocks older than the Ordovician and Cambrian. Boris noted that the base of the Cambrian in his Russian Platform sequence was marked by the first occurrence of a small carbonate shelled form (a Small Shelly Fossil – SSF), *Mobergella holsti*, which had a common occurrence in nearby Finmark.

"You cannot imagine my surprise finding that there was a long sequence of rocks below this level that had never been recognized before on the Russian Platform. By the physical nature of this sequence, it looked just like the Phanerozoic. But it was not – what now do I do next?"

Boris Sokolov, interview 2010

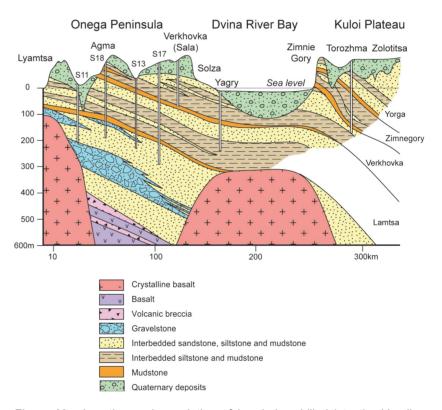


Figure 69. Location and correlation of boreholes drilled into the Vendian sequence on the Onega Peninsula and Zimnii Gory coast, White Sea, Russia. (from Fedonkin, et al., 2007)

Being involved in regional geological mapping, both on the Russian Platform and in Asia, Sokolov realized that in order to tease out the past history of an area, a detailed understanding of stratigraphy was indeed first and foremost. He spent much of his early research years focusing on the early Paleozoic, from the Cambrian to the Carboniferous (around 540-300 million years ago). Now he was into much older sediments. These became known as the Vendian, a sequence that Boris spent a large part of his life investigating.







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Figure 71. B.S. Sokolov — senior geologist and head of the laboratory in VNIGRI (All Russia Petroleum Research Exploration Institute). Near Leningrad, 1955. B.S. Sokolov dressed in the uniform of the Geological Survey of USSR. (Sokolov Archives)

The Vendian, which was later recognized as a major subdivision of the late Precambrian, the Neoproterozoic, was based on a sequence that lay between the Riphean and the Cambrian (Harland *et al.*, 1982, 1989). This fundamental discovery of Sokolov led to the definition of a particular time period (635-542 million years ago) characterized by severe glaciations and the beginning of deposition of sedimentary cover over the vast and ancient Russian platform. This time period saw the appearance and radiation of the oldest animals (non-skeletal), megascopic algae and other yet unidentified life forms, which were quite different from what came before and after. Recognition of this new time slice and the organisms of this age locked in the sediments on the Russian Platform, impacted on the science of pre-Cambrian paleontology from that moment onward. It threw light on Darwin's dilemma, which puzzled at where animals had come from – they seemed to appear in the fossil record abruptly in Darwin's time. However, as Sokolov and his Russian colleagues investigated further, the fossil forms recovered from the Vendian sequences, documented a much longer record of multicellular life, of megascopic life.

Boris and his colleagues had discovered an abundance of forms that were quite unusual, and it remained difficult to discern just how they related to living forms. For Boris, the realization that this thick sequence of sediments was pre-Cambrian was truly a moment of major discovery. These sediments needed a name. At this point the only appropriate name was Proterozoic – and that assignation represented a very large chunk of geologic time. So, the result was his Vendian – not the Vindhyan (Vendhyan) of India. Totally different. At this

Figure 70. (opposite page) Sokolov's apartment on the second floor, which he and his family lived in post war years, before moving to Akademgorodok. The façade, where the bricks show, was compromised by the bombing and shelling of Leningrad during WWII (P. Vickers-Rich, 2011)





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time, Sokolov did not want to put this forward as a formal name – just wanted to recognize it as a "complex." What, in fact, Sokolov did at this point was to energetically search through the literature for an appropriate name – and, of course, was aware that many terms in the official geological time scale were based on geographic or cultural features – for example, the Ordovician was named after an ancient tribal people or places, the Devonian for Devon in England - typical of where rocks of these times occurred.

In his search through the literature, with a special interest in the human history of the region where he had first discovered his sediments that were older than the Cambrian (Sokolov, 1958, 1962, 1964), Boris found that in the region south of the Baltic Sea, an ancient tribe with the name of Venedes had once held sway. Ptolemy had noted this in his writings, and there was even a water body in this region in that time called the Vendian Sea – in what is now Poland. The Venedes once occupied the region near Luzhitsa (Lusatia) in present day Serbia (perhaps then known as Benspeils). So, Boris zeroed in on this name for his new rock sequence.



Figure 73. The window in Sokolov's office in the Paleontology Institute offices in St. Petersburg with a linden tree Sokolov planted himself. (M. Leonov, 2011).



Figure 74. B.S. Sokolov with his daughters Marina (left) and Ksenia boating on a lake. July, 1958. (Sokolov Archives)

Figure 72. (opposite page) Entrance to the Twelve Collegia building, Lenngrad University, where Sokolov spent time in the 1940's and 1950's. (M. Leonov, 2011)



Sokolov and his geological associates put in decades of field reconnaissance and documenting of these Vendian sediments, culminating in the publication, with M. A. Fedonkin and A. B. Iwanowsky, of *The Vendian System* (1985, 1990), outlining the detail of this new sequence older than the Cambrian. The Vendian's relationship to other sequences around the world, and its use as an official name in the geologic time scale, remains a lively arena of scientific discussion, well spelled out in Sokolov's paper *The Vendian and Neoproterozoic-III* (1995) and discussed in the time scale of Gradstein, Ogg and Smith (2004).

The first fossils that came from Sokolov's newly crowned Vendian sequence were acritarchs, microscopic plankton with similarities, although perhaps convergently evolved, to living dinoflagellates. Macroscopic life forms included *Beltanelloides*. These ancient life forms were recovered from both deep borehole cores and outcrop samples, and were both common and widespread.

"I participated in many discussions about this new sequence of rocks – I have never in my life experienced such 'beatings!' Some of these conversations lasted 3 days at a time, which was my defending the ancientness of these rocks. Some of my friends would ask why I did not give up defending such a concept. But, Nikolai Shatsky gave me some support – he had previously established the Riphean – he was OK with my idea that the Vendian was older than the Cambrian, but he and I did not agree on where the Vendian sat – my idea being that it overlay the Riphean and represented an up to now unrecognized sequence."

As Boris began to publish on this material, he faced the same barriers as did Australian Reg Sprigg in the late 1940's when Sprigg found what he thought were Precambrian macrofossils, animal and not plant – disbelief of senior researchers, who still supported the

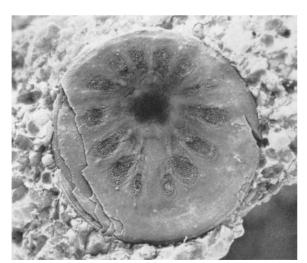


Figure 75. Mobergella holsti from the Early Cambrian of the Baltic Region, probably the operculum of a tube-like organism. (Bengtson, 1968)

idea that these forms actually were Cambrian in age (Fedonkin *et al.*, 2007; Vickers-Rich and Komarower, 2007).

For Boris, the critical marker of the base of the Cambrian was *Mobergella holsti*, and to him everything below the sediments hosting this form were older than Cambrian. Boris was in correspondence with Martin Glaessner in Australia and Preston Cloud in North America – and both noted to Sokolov that there was no such record of the Cambrian-Precambrian transition. This period was supposed to be marked by a great unconformity, a break in the record – despite the discoveries made by, but not yet accepted as Precambrian, by Sprigg. Sokolov was quite convinced that the record in Russia did not suffer this same problem –





Figure 76. Relaxing at Sokolov's dacha where he completed, in 1958, his monograph on corals. L-R: Elena Polenova, Yu. I. Tesakov and Boris's daugther Marina. Merevo, near Leningrad. (Courtesy of Y. Tesakov)

it was a near continuous record across this critical boundary, unlike the record in Australia and elsewhere with its many erosional epsodes and thus a discontinuous record.

After all of the introspection and search of the literature, Sokolov finally published this new name, the Vendian, in 1952 in his paper: *On the age of the oldest sedimentary cover of the Russian Platform (Izvestiya Akademii Nauk SSSR* Ser. Geol. 5, 21-31).

Later, in Paris during 1957-1958, in a colloquium on the deposits underlying the Cambrian, Sokolov first announced the term Vendian to an international audience. Here he noted its equivalence to the Sinian in China – thus, Precambrian in age. Still later in 1964 at the 22nd session of the International Geological Congress in New Delhi, India, his contribution outlined the time equivalence of the sedimentary sequences in Siberia, China, Scandinavia and Africa as well as the "Ediacaran" of Australia - all Vendian in his mind, and most definitely Precambrian in age!

And how did this affect his love of corals? It certainly did not lessen his "romance with corals", as later research papers and books attest, but it opened an entirely new world to him, full of potential and intrigue – it simply broadened his horizons without dampening his curiosity and commitment to past interests. Yet, although his research took a new turn, he was awarded a *Doctorate* in 1955 for his work on *Paleozoic Tabulata of the European USSR*, a 5 volume work (Sokolov, 1951,1952), a degree that he did not even apply for. In the same way, he had obtained his Degree of *Candidate of Science* based on his monograph *The Chaetetidae of the Carboniferous of North-Eastern Ukraine and Contiguous Districts* (Sokolov, 1946).

One of the most significant contributions of Sokolov's new discoveries was the understanding of the microfossil record encapsulated in his Vendian sequence. And this



was the function of a young scientist that he had met in 1946 – Boris Timofeev. Timofeev had an interesting background, of which Boris became aware. This bright young man had been working on a ship at one point, and had been reading from German books in order to access literature on microfossils – that was all. However, the powers that be of the time interpreted this to be undesirable – maybe he was a spy!? Someone wrote a letter to the government about this, and as a result, Timofeev was restricted in his movements and at that time, confined

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Figure 77. One of the Vendian animals, which may be related to living molluscs – Kimberella quadrata - associated with its feeding traces, Vendian sequence, White Sea region, Russia. (M. A. Fedonkin)

to Siberia – not in one of the Gulag camps, but certainly not allowed to go wherever he wanted. He was working with Kupletsky, a petrologist, who was also confined to one of the labor camps.

Somehow (and Boris is not sure just how) this young man was able to travel to Leningrad, and there he met Sokolov, who recognized his skills with the microscope – after all he had been picking small grains under the scope for Kupletsky. So, Sokolov put him to work with the micro-contents of his deep bore cores. At first the microfossils were thought to be pollen and spores, thus indicative of terrestrial sediments. But, as Timofeev studied them more closely, they turned out to be something else entirely. And even more striking was that Sokolov and Timofeev could see changes in the assemblages from one part of the core to another. Up and down the cores, the microfossil assemblages were quite different.

In correspondence with Glaessner, Boris was given the impression that these fossils were not useful—at

least in the Australian sequence. Boris and Timofeev did not agree. This was most certainly not true on the Russian Platform the sequence was where nearly continuous (Timofeev, And, as later made 1966). clear by the work of Australian micropaleontologist Kathleen Grey, along with colleagues in Russia and from around the globe, these tiny acritarchs are fundamentally useful in sorting out the biostratigraphy of the Precambrian (Grev. 2005).



Figure 78. Field crew from Sokolov's Precambrian Laboratory exploring Vendian sediments. Left to right: Yuri Gevorkyan, Natasha Bochkareva, Anatoly Stankovsky and Andrey Iwanowsky (co-editor of vol. 1 of the The Vendian System with Sokolov, published in English in 1990) along the Zolotitsa River. White Sea region, northern Russia, 1978. (M. Fedonkin)

Sokolov and Timofeev were able to access material from Scandinavia and Poland



for comparison with their fossils, and it was clear that these tiny fossil remains were most useful in dividing up time and for correlating one bore core with another. Later, in his book entitled *The Dawn of Animal Life*, Glaessner noted that the microfossil record and the macrofossil *Beltanelloides* were useful time indicators for these ancient sediments (Glaessner, 1985).

Sokolov contributed much to the development of stratigraphic and biostratigraphic schemes in Russia and Asia. He carried out considerable field work, and organized major expeditions to a myriad of isolated locales - central, southern and eastern China, the Dniester River of Podolia, the Anabar and Olenek regions of eastern Siberia, the Lena River and Lake Baikal, etc. He also served on many of the committees and played a role in a variety of organizations that were laying down the structure of the geologic time scale. For example, he was a member of the *International Committee on the Boundary Between Silurian and Devonian*. For 14 years between 1958 and 1972, beginning when he was based in Leningrad and later in Novosibirsk, Boris visited all representative sections related to the setting up of this boundary. Fortunately, at that time the stratigraphic commission, of which he was a part,

was able to study these sections in detail, and to access the vast fossil collections critical to refining the understanding of this time slot.

As a result, at the 24th session of the International Geological Congress held in Montreal in 1972, recognition of the value of this detailed evaluation was taken on board when officially defining the lower boundary of the Devonian, a boundary based primarily on the change in the graptolite associations recorded in continuous sections best represented in the region of the village of Klonk (Czech Republic). This decision followed the principles of boundary definition based on chronostratigraphic units. And the position of the boundary was noted by setting up a GSSP (Global Boundary Stratotype Section and Point) selected by the world community of specialists. This involved in-depth and lengthy discussions. and designated reference section at a place to which sections of sediments containing fossils from around the world could easily be compared. The end point of all this was to provide geologists in future a



Figure 79. Micropaleontologist Tamara Herman (left) and Boris Timofeev. (M. Fedonkin)



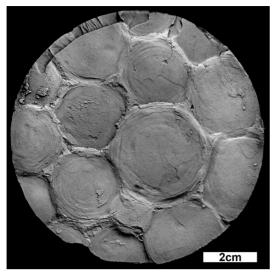


Figure 80. Beltanelloides sorichevae from a deep bore core into the Vendian sequence of northern Russia, Yarnema borehole, 118.4 meter depth, Ust' Pinega Formation, Lyamtsa, Zimnii Bereg, White Sea. (M. Fedonkin)

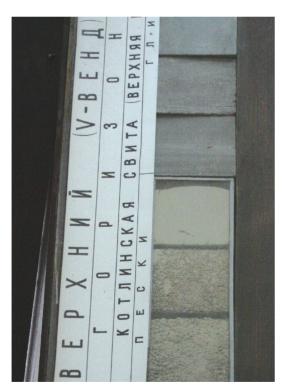


Figure 82. Core material which Sokolov studied from the deep drilling program on the Russian Platform. This investigation led to his recognition of the late Precambrian age of the Vendian sediments. Geological Museum, St. Petersburg. (M. Leonov, 2011)



Figure 81. VNIGRI - The All Russia Research/ Geological Prospecting Institute. (N. Hunt, 2012)

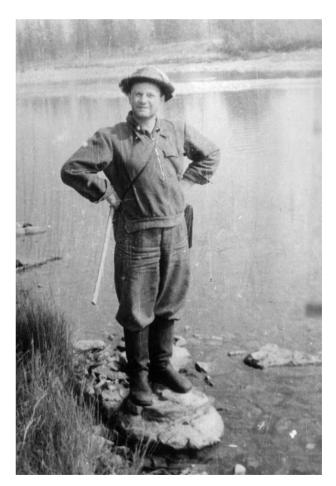


Figure 83. B.S. Sokolov on the first expedition to Eastern Siberia, Irkut River, 1956 (Photo by A.F. Ilyn in the Sokolov Archives)



reference point to which they could compare their sequences of a possible similar age, with a richly fossiliferous and continuous sedimentary record.

In 1971 the International Geological Correlation Program had been set up under the umbrella of UNESCO. Its primary goal was the better defining of boundaries and detail in the geological record. Sokolov led the Soviet group, aiming at a better understanding of the Cambrian/Precambrian boundary sequences and those events which took place during the terminal Precambrian. He was, and still is, particularly interested in ecostratigraphy, the understanding of the changes in ecosystems through time in this particular part of the Earth history. As he worked on teasing out the detail of the geological record, his role in both Russian and international commissions dealing with these issues expanded. He became the chairman of the *Interdepartmental Stratigraphic Commission of the USSR* from 1976 to 1988, and an Honorary Chair after that, as just one example.

And then there came a stunning opportunity which Sokolov could not have refused – a chance to become completely immersed in scientific research and well funded.

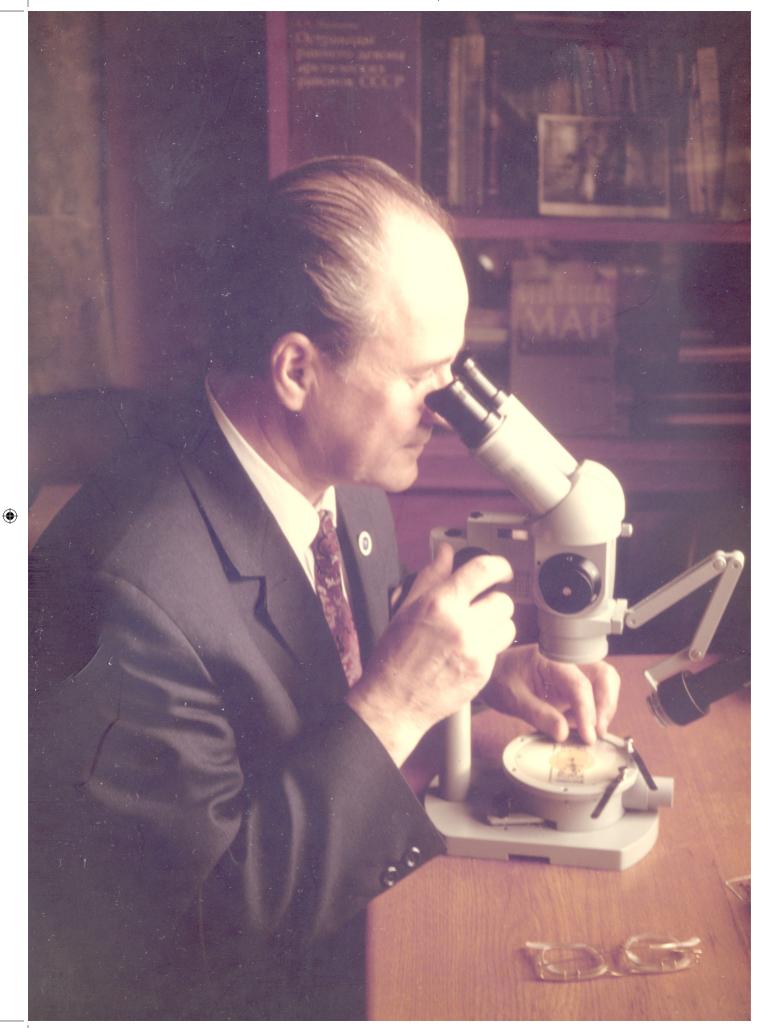
Khruschev was determined to use the strength of scientific minds to develop the resources of the Soviet Union - and Siberia seemed the best place to do this . . .



Figure 84. Rangea from the Vendian Sequence, Zimnii Bereg, White Sea, Russia. Specimen is 63 mm wide. (M.Fedonkin)







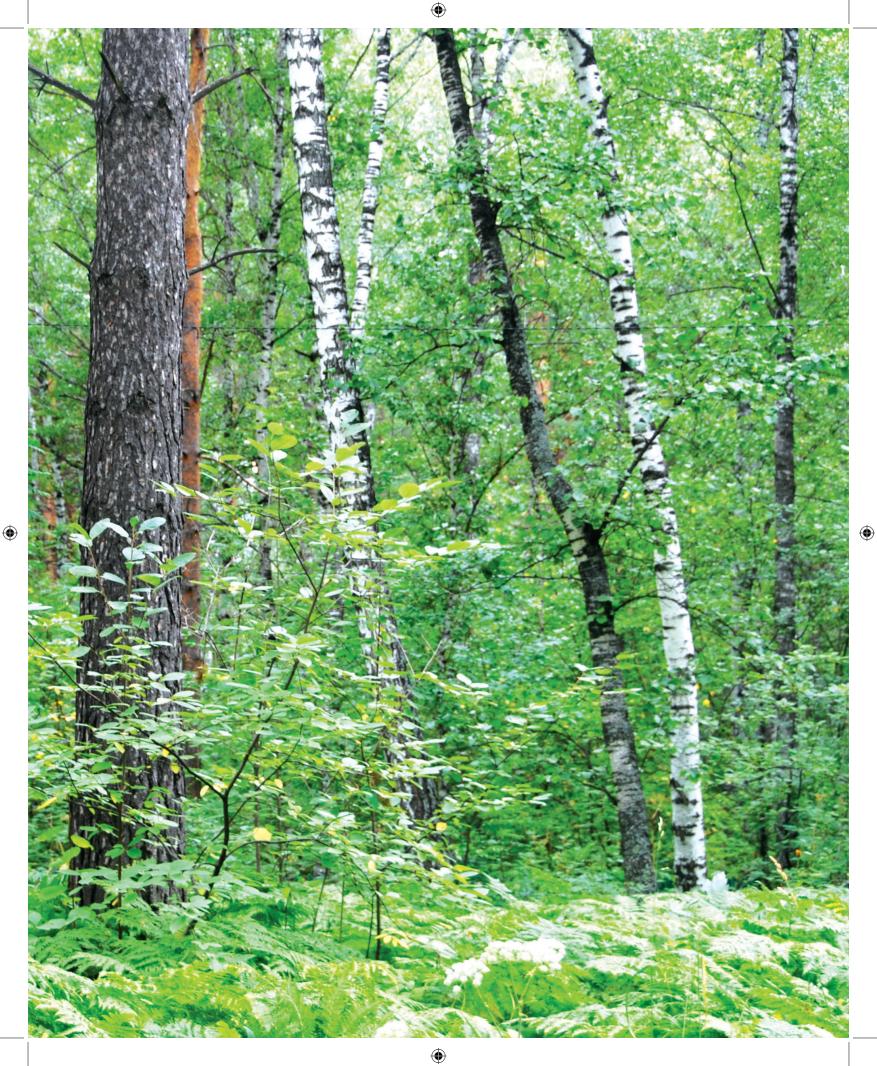




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Chapter 5: Akademgorodok, 1958 - 1975







Akademgorodok 1958-1975

Seventeen years in Siberia! For some this sounds like a disaster, but for Boris it was a time of flourishing, and according to him, his second zigzag. The science city of Akademgorodok was a dream that turned to reality for a time, nurtured by Nikita Sergeevich Khrushchev once he became Party Secretary – during a time of "de-Stalinization." Mikhail Alekseevich Lavrentev, "a mathematician with an interest in explosives" (Josephson, 1997) was a close friend of Khrushchev – connections fostered by the war years spent together in Kiev. It is likely this tie was what it took to implement a major project, which otherwise might simply never have happened. Khrushchev made sure that Lavrentev had open access to the Kremlin. He completely trusted him. Akademgorodok was also a symbol of post-war decentralization of science and a push to develop Siberian resources.

The decree to set up Akademgorodok came straight from the Central Committee of the Communist Party and the Council of Ministers - the highest of authorities – and was driven by Khrushchev. Not all Party officials agreed, and over time this utopian dream was gradually eroded, in particular with the coming of Leonid Brezhnev. Still, for a time, certainly until the late 1960's, the dream did live, and as a result, in a very short period of time, the distant Russian taiga was transformed into a lively and well-funded scientific enterprise, distant from the politics of Moscow, protected by its isolation. "Divorced from such pressures as public accountability, the need to beg government and industry for financial support, or concerns about how the fruits of their research might be applied" (Josephson, 1997), Akademgorodok gave great freedom to scientific thought and innovation.

Three Academicians were set the task of organizing this massive project in the middle of the Siberian forests. Led by Lavrentev, those three Academicians were mathematician Sergei Sobolev, physicist Sergei Khristianovich, who was interested in hydrodynamics and

Figure 86. (opposite page) The forest surrounding Sokolov's home in Akademgorodok, end of Summer. (P. Vickers-Rich, 2011)





the mecanics of liquids and gases, and Andrei Trofimuk, a geologist with special interest in oil. The lure of independence, academic freedom along with Lavrentev's boundless energy and political connections, made the staffing of this scientific city an offer not to be ignored.

Boris was part of the geology group, headed by Trofimuk, who by the age of 34 had been made a *Hero of Socialist Labour*. Boris was singled out by Trofimuk, because he knew Sokolov from their cooperative work in China in 1953. To this new group at Akademgorodok, Sokolov brought his years of experience, first gained in western China in the search for oil and other valuable resources. The focus in the new science city was certainly pure scientific research, but it also targeted research with a clear commercial application. Programs were pushed to drill wells in the Urals and Volga regions, Bashkiria and the vast spread of the Steppes. Most of the wells were non-productive, but the work continued. Commercial results were certainly expected, no matter what else was going on at Akademgorodok, and Boris noted at one point:

"Trofimuk was told that he had better find oil or else he might meet with some other medal – in the form of a bullet!"

B. S. Sokolov, interview, 2011



Figure 87. Elena Polenova and A. M. Obut in the field, 1963. (Sokolov Archives)

At the end of the war, oil output readily available to Russia was limited, and there was a determined push for the deep drilling program. Fortunately for Trofimuk, the Kinzebulatov Well in Bashkiria was a gusher! He had found what the Soviet Government so desperately needed.

So, in 1958, a new and very fruitful period of research began for Boris. After some doubts and consideration, he accepted an invitation by Trofimuk and moved from Leningrad to Akademgorodok near Novosibirsk. This new academic center aimed in particular to investigate a vast area from the Urals to the Pacific Ocean and, with the maximum freedoms from all sorts of bureaucratic procedures, there was opportunity for thinking, interacting with colleagues, fully supported field work and technical support. Academic freedom was present in Leningrad and in Moscow, but the paperwork was much greater.

To set up a fully functional academic institution in such an isolated place was no



easy task. The Trans-Siberian railroad was the only real connection from west to east. The entire property upon which Akademgorodok was to be outfitted had to be significantly groomed. To do this, Khrushchev put Minister of Defence Grechko in charge, and the military took this on. Even though there was a population of several hundred thousand already concentrated in the city of Novosibirsk, there were still major obstacles. The city had been industrialized during the war, but the organization was "random," as Boris put it in an interview in 2011. The city was all on the right side of the river Ob, and the science city needed to be on the other side!



Figure 88. B. S. Sokolov and Elena Polenova. Autumn in Golden Valley, Novosibirsk, Akademgorodok, Siberian Division of the Russian Academy of Sciences. (Photo by Yu.G. Gnilovskoy, 1963, Sokolov Archives)



Figure 89. Perm Region, Summer of 1964, after a recent boat capsizing, Sokolov is drying his clothes. (Sokolov Archives)





Figure 90. B.S. Sokolov with his daughter Ksenia, Autumn in Golden Valley, Novosibirsk, Akademgorodok. (Photo by Yu.G. Gnilovskoi in the Sokolov Archives)

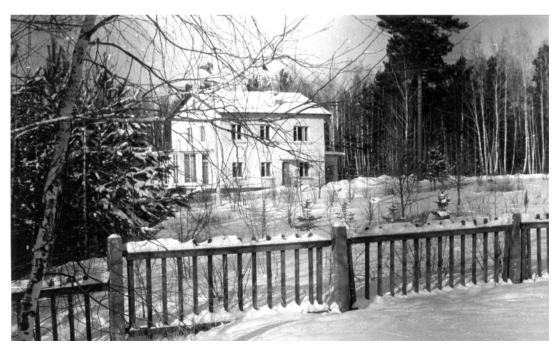


Figure 91. Home of B.S. Sokolov in Novosibirsk Akademgorodok, Zolotodolinskaya Street. Winter 1967-68. (Photo by B. S. Sokolov)



So, the first meeting to take this city from dream to reality occurred in May of 1958. The place chosen was:

"28 km from anywhere along a bad road. Cars and trucks frequently got stuck in the masses of loess, left behind by the receding glaciers. But, I was not afraid – it was a beautiful place. Beautiful water of the Ob along the slopes of the Altai – a gorgeous landscape. The only structure on this land was a ranger's hut. Lavrentev himself lived there for a time as he oversaw the beginning and progress of the city to be. As things progressed, a three-storey house was built for Lavrentev and his wife Vera Evgenia, herself a philologist and literature teacher who had met Lavrentev in Paris in the 1920's. She and my wife Elena spent much time together."

Boris Sokolov, interview February 2011

Boris, Elena and family moved to Novosibirsk in the Spring of 1960. But before this, Sokolov had visited many times between 1958 and 1960 and had been able to choose the spot for the family home – he could select the place and design the building he and Elena wanted! Then the construction began. Sokolov was back and forth between Novosibirsk and Leningrad during the construction period – mainly by air but occasionally by train. Finally the Sokolovs were settled in their new quarters, and work began in earnest.

This new academic city was such a breath of fresh air for those scientists posted here – social clubs and cafes sprung up where multidisciplinary teams shared their research results, and just had time to consider new ideas. There was also poetry, art exhibitions, travelling performers – and foreign guests invited in.

Sokolov became the head of a large Department of Paleontology and Stratigraphy – including 6 laboratories. These included many young and talented paleontologists, who later became Boris's pupils. This group soon became globally well-known because of their research on vast new territories – following Khrushchev's dream to study in



Figure 92. A teacher and a student. Boris Sergeevich Sokolov and Kirill Vladimirovich Simakov (1935-2004) on the birthday of B.S. Sokolov at Akademgorodok. April 9,1974. K.V. Simakov was taught by B.S. Sokolov at Leningrad State University. Later he was elected as an Academician of the Russian Academy of Sciences and Director of Nord-Eastern Scientific Centre RAS. (Sokolov Archives)





Figure 93. Trofimuk Institute of Petroleum Geology and Geophysics where Boris worked at Akademgorodok, headed by Academician Trofimuk. (P. Vickers-Rich, 2011)





Figure 94. Boris' office in Akademgorodok in 2011, now looked after by his student Tesakov (on right), Akademgorodok. (P. Vickers-Rich, 2011)



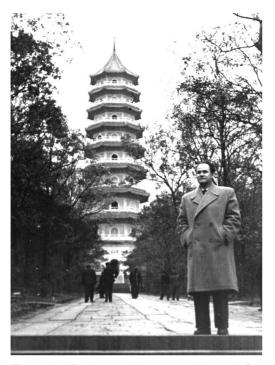


Figure 95. Boris was able to travel abroad after his move to Akademgorodok, here at the Sun Yat-sen tomb in Nanjing, 1959. (Courtesy of Y. Tesakov)

detail the area from the Urals to the Pacific Ocean.

Boris's move from Leningrad saw the staff for whom he was responsible in Akademgorodok grow from 30+ to nearly 100, staff with a broad range of geological expertise. He also took on a broad range of organizational tasks, and his responsibilities expanded even further. Not only was he expected to continue his already existing research programs, but he was also put in charge of setting up and overseeing 6 new laboratories, organizing a variety of field expeditions, building a museum as well as seeing to the construction and outfitting of a major research library. This was pointedly directed at fast-tracking research, managed primarily by research scientists, minimizing bureaucracy. This worked at first, but as time passed things changed.

Alongside the Siberian Branch of the Academy of Sciences in Akademgorodok a University was set up, the concept generated by the very same M. A. Lavrentev who laid the foundation for the science city itself. This idea of a university set beside a research-oriented science city followed



Figure 96. Ton Zhui Tan (Than), one of Sokolov's students, first in Leningrad and later in Novosibirsk. Tan is now a senior geologist in Viet Nam. (Sokolov Archives)



the approach of Peter the Great - the meshing of the Academy and the Gymnasium in St. Petersburg. In Peter the Great's time, academicians were running research groups. On the other hand, Gymnasia only prepared students to go to University. Interfingering these groups had in the past led to significant cooperation, data sharing and most importantly, innovation. the new Novosibirsk University this pattern was followed. Talented students were selected and nurtured in Akademgorodok, and these went on to University associated laboratories. and And more than this, Lavrentev encouraged both academic and industrial groups to share ideas,



Figure 97. Fieldwork on the Sea of Okhotsk near the Kuril Ridge. On deck, D. S. Kharkevich (Leningrad State University) and B. Sokolov, 1965. (Sokolov Archives)

staff and even their laboratories (Jacobson, 1997).

Taking on board this linkage between research institute and university, in addition to his

duties at Akademgorodok, Sokolov founded a Department of Historical Geology and Paleontology at Novosibirsk University, drawing on his experience at Leningrad University before and after the War. knew the steps from student to professor, and so became the head of this new department as well as continued to lecture and mentor young research students. As he has throughout his long life, he assisted many students working towards degrees in this youthful university. Many later became members of the Academy of Sciences and themselves took on senior positions in the scientific community in the Soviet Union and modern Russia. Boris already held the position of Professor in the Department of Paleontology at Leningrad State University, to which he had been elected in March 1958, and so he just continued in this role, but then added to his responsibilities as head of the six laboratories at Akademgorodok!

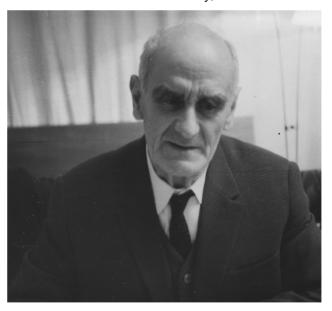


Figure 98. Academician Yuri Orlov, an outstanding vertebrate paleontologist, long time director of the Paleontological Institute of the Russian Academy of Science in Moscow. Photo taken at the 1st Symposium on Precambrian Paleontology, Akademgorodok, 1965. (Archives of B. S. Sokolov).





Figure 99. New Delhi, 1964, 22nd International Geological Congress. Left to right: G. Yu. Krymgol'ts, V. V. Menner and Boris Sokolov. (Sokolov Archives)



Figure 100. Participants in the geological excursion to Samarkand, 1966. From left to right: B.S. Sokolov, A.B. Iwanowsky, (Siberian Division of the Academy of Science of the USSR), A.I. Kim (Tashkent), E.A. Elkin (Novosibirsk). (Sokolov Archives)

Both teaching in Sokolov research and innovative. has been simultaneously has and stressed that alwavs an historical science is continuum. **Innovations** and achievements to him are clearly often based on knowledge of achievements of the past, researchers standing on the shoulders of previous mentors. Boris has always maintained a deep interest in the history of science, and has immense respect for his teachers and their teachers as well as the researchers set against culture of the past. During his time in Novosibirsk, with of his responsibilities both Akademgorodok and Novosibirsk University, he still managed to be an active participant in many commissions. leading some, including one on scientific heritage. And amongst his prolific research involvement, he managed to write, in some detail, about the lives of many of the academics who were critical to the development of science in Russia. His field work continued in

China, Canada, Hungary, North Africa, and a variety of locales in the Soviet Union – the Altai Mountains, the Ukraine, Moldavia, Siberia and the Baikal region. He never lost sight of the importance of meticulous field work – both to expand the data base, as well as refreshment of his soul, amidst all of the management that impacted on his everyday life.

From the beginning of his time in Akademgorodok, Boris maintained his interest in the Vendian. In 1959 he attended *The First All China Stratigraphic Symposium*, where he put forth the idea that the Sinian sequence in South China corresponded well with his Vendian in the Soviet Union. A critical moment came in 1964 when, at the *22nd International*





Figure 101. 1st International Symposium on Fossil Corals held in Akademgorodok, photo taken in House of Science, 1971. B. Sokolov, seated, 10th from right. (Sokolov Archives)

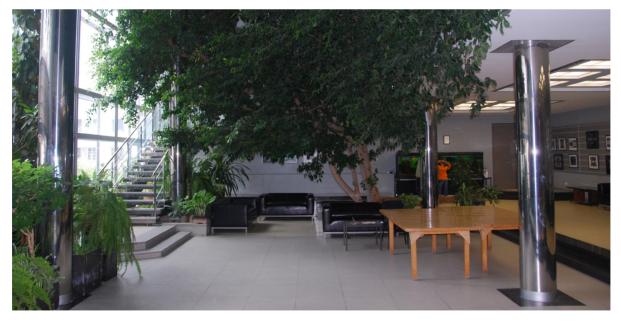


Figure 102. The House of Science in 2011. (P. Vickers-Rich, 2011)





Figure 103. B.S. Sokolov and Elena Polenova with their grandson Andrey Gnilovskoy. Novosibirsk, Akademgorodok, 1970. (Sokolov Archives)



Figure 104. 1st International Symposium on Fossil Corals, Akademgorodok, Zav'yalovo, 1971. Henri and Geneviève Termier. (Sokolov Archives)

Geological Congress in New Delhi, India, he tabled a report proposing the Vendian as a global stratigraphic unit, the youngest in the Precambrian. It was afterwards incorporated into several geological Time Scales.

In 1965 a major international meeting, *The First All Union Symposium on Paleontology of the Precambrian and Early Cambrian Systems*, was held at Akademgorodok, a meeting in which Boris Sergeevich played a major role. He and his Russian colleagues made sure





Figure 105. 3rd International Palynological Congress, Akademgorodok, 1971. Last three on the right of front row, from left to right: B. S. Sokolov, Prof. Zakinskaya Pozltova (USSR), Prof. B. Potzatova (Czech Republic). (Sokolov Archives)

that the attendees were truly international – German, French, Polish, American, even during the Cold War. For many foreigners, this was their first visit to Russia, and some of these were escorted to Novosibirsk by Academician Yuri Orlov and his wife. Amongst them were two French scientists, husband and wife, Henri and Geneviève Termier. A long association and friendship had developed between Sokolov and the Termiers, and they published a number of research papers on the late Neoproterozoic, first in 1960 which used the term "Ediacarian" as a precursor to the Cambrian. Martin Glaessner was supposed to attend this symposium, but was unable. Still, he managed to send moulds and casts of the Australian Flinders Ranges material he was studying at the time, much of it originally collected by Reg Sprigg. Sokolov noted the striking resemblance to the Vendian material he had gathered from the Russian Platform to that from Australia. This intrigued Boris and gave him one of his first chances to compare the Russian and Australian late Precambrian material.

Another meeting which took place in India in 1964, provided contact for Sokolov with another Australian, Barry Webby, whom Boris credits with the first real correlation of the Australian Ediacaran with his Vendian. Boris's impression (interview, February 2011) was that Webby was the first non-Russian to use the term Vendian in his discussions of the Neoproterozoic. Yet another meeting in Akademgorodok in 1973 brought together more specialists on Neoproterozoic paleobiology, Americans Preston Cloud and Bill (J. W.) Schopf, Canadian Hans Hofmann and Hans D. Pflug, a German specialist on the African Nama Fauna, a time equivalent to part of Sokolov's Vendian.

Meetings were not the only activities that drew foreigners to Akademgorodok – there was a real imperative in hosting foreign visitors, to encourage contact with the outside academic community. Preston Cloud and J. W. (Bill) Schopf from the USA, Hans Hofmann



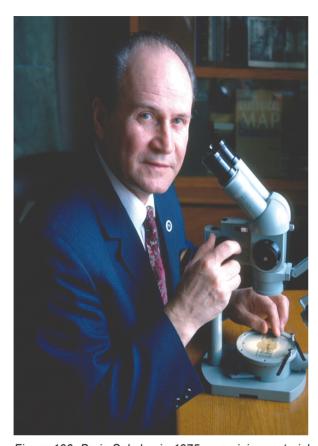


Figure 106. Boris Sokolov in 1975, examining material provided by Professor Bill Schopf from the University of California at Los Angeles, outstanding researcher on the origin and early evolution of life. (J. W. Schopf)

from Canada and H. D. Pflug from Germany, all of whom had worked extensively on the late Precambrian fossils from North America and Africa, amongst other places, visited Novosibirsk and the Science City more than once during Sokolov's time there. And Boris joined many of these colleagues in their field areas - fairly significant visits made to the Avalonian region of Newfoundland, where some of the oldest Vendian-aged fossils had been recovered as well as the Great Lakes region of North America and even Charnwood Forest in England in 1991, where he met Trevor Ford, Helen Boynton and their team, discoverers of sequences and fossils directly related to Sokolov's Vendian assemblage. In his 1972 visit to Canada, Sokolov met with M. M. Anderson in Newfoundland and noted that the Avalon material was very likely of a similar age to the Vendian fossils. His discussions with Trevor Ford were along the same lines. Similar fossils, such as the Charnia-like specimens from one of the deep boreholes near Arkhangel'sk were strikingly similar to forms discovered near Leicester in the UK, so allowing a preliminary dating of the Charnwood assemblage. The date from there of 800 million years did not make sense

to Boris. Too old. When he visited the Charnwood site, he was able to obtain a cast of one of the fossils from the Leicester Museum, and this is what truly convinced him that the material had to be younger than supposed.

Because the spirit of Akademgorodok was important in the internationalization of Russian science, Sokolov was also able to attend a number of international symposia *outside* of Russia. An important meeting for him was that with W. Brian Harland at the *23rd International Geological Congress* in Czechoslovakia, as well as the *General Assembly of the International Paleontological Union* in 1968. Harland was at those meetings a major player in the development of the *Geological Time Scale* (Harland, *et al.*, 1982). This opportunity allowed Sokolov to provide input into the concepts underlying this important standard for the geological sciences. This meeting, however, hardly had begun when tragedy struck – Russian tanks rolled into Prague, putting a stop to further dialogue, in short order:



"I presented my paper (Sokolov, 1968) the day before the Russian military arrived. Elena was to give her talk the next day. This made things complicated, to say the least. Her lecture was on Devonian ostracods, and she gave it in the morning session. But at the end of the day, the whole conference was cancelled. Everyone was trying to leave – the Prague airport was occupied by Bulgarian paratroopers. Some participants drove to the open border with Austria. But we Russians were in a bit of a spot. Fortunately, a most capable geologist, Yarmolyuk, managed to get a call through to Warsaw and a special plane was sent to pick the Russian delegates up. It was most unpleasant. Though this was none of our doing, people's attitudes towards us changed overnight. And the situation was tense. We were billeted in the offices next to the Czech equivalent of Pravda. Out of our windows, which we did not approach too closely, bullets were flying. We got on our knees, but kept watching. I guess it was a matter of curiosity as well as self-preservation. On day 3 or 4 we managed to get out. The sad thing about all this was that on the morning of the day after the invasion, not many of our foreign geological colleagues would even speak to us."

Boris Sokolov, interview February 2011

A much more significant international meeting took place in 1969, a special gathering sponsored by UNESCO and of the International Union of Geological Sciences (IUGS) for the purpose of standardizing the database for geological correlation – important because it was the first meeting Boris had with Martin Glaessner. discussed setting up a project on defining the Cambrian-Precambrian boundary. This was, indeed, a much better outcome than the 23rd IGC!



Figure 107. L - R: Hans Hofmann (Canada), Marina Gnilovskaya and V. V. Khomentovsky, Akademgorodok, 1973. (Sokolov Archives)

Not long after this meeting in 1969, the Australians in particular pushed for and succeeded in establishing the International Geological Correlation Program (IGCP), finally formalized in 1971, for which Sokolov was the Soviet leader. But times were changing, and with the invasion of Czechoslovakia and the outcome of the case of dissident Aleksandr Ginzburg, several members of the Academy of Science and even some Party Members signed a letter of complaint. The result was that academic freedom at Akademgorodok was sharply curtailed. But amidst this, Sokolov and his colleagues persisted with their research, somehow.

Sokolov's presentations at other international meetings continued to flesh out and bring the Vendian sequence to the attention of research colleagues around the World. In





Figure 108. Conversation between B.S. Sokolov and a hero of the USSR, Major General Georgy Nefeodovich Zakharov on Krasny Prospect in Novosibirsk, September 1974. Photo by journalist A.P. Sokolov for the "Nouvelles de Moscou" newspaper. During WW II, Zakharov commanded many divisions, including the "Normandia-Neman" squadron, a French/Russian air command that operated on the Eastern Front during the war. (Sokolov Archives)



Figure 109. Martin Glaessner, Budapest, 1969, the first meeting with Sokolov. Later in 1971/72 the two met again in Adelaide. (Sokolov Archives)

Newfoundland, where he examined a sequence he thought related to his late Precambrian clays and sands in the Soviet Union. Later, in 1975 Boris was also most fortunate to have a lengthy visit to Australia where he met with senior geologist Norman Fisher and had a chance to examine sections in Central Australia and the Flinders Ranges of Australia as well as collections in the South Australian Museum. And there, of course, he had time to spend with Australian Ediacaran expert, Martin Glassner.





Figure 110. J. William 'Bill' Schopf, Novosibirsk, 1975. (J. W. Schopf)



Figure 111. 26th International Geological Congress, Paris, 1980. A group of scientists suggesting to B.S. Sokolov that he become President of the International Paleontological Association. From left to right: Academician D.L. Kaljo (Estonia), B.S. Sokolov, E.N. Polenova (USSR), Doctor J.-B. Vay (Italy), Professor O.H. Vallizer (Germany) and Professor B.D. Webby (Australia). (Photo by the press corps of the IGC in the Sokolov Archives)



Figure 112. Sokolov and Marina Gnilovskaya visiting Charnwood Forest, Memorial Crag, in the UK in 1991. (Sokolov Archives)



"It was late August of 1969 when I met Glaessner in Budapest, after the IGC. He and I came up with the idea together about better constraining the Cambrian/Precambrian boundary, and Glaessner asked which one of us will begin this discussion. I said he should, and Glaessner said no, that I should – because I had already proposed the Vendian. That moment was, as far as I was concerned, the beginning of serious discussion about this boundary. "

Boris Sokolov, interview February 2011

1971, his attendance at the *International Symposium on Geology of the Arctic* was the first discussion of the Vendian in North America, and in 1972 the *24th Session of the International Geological Congress* in Montreal gave further exposure to the Vendian. As noted before, Boris was able to take part in a field trip associated with this conference to the Avalon Peninsula in

1974 to 1976 were important years for meetings that led to a more in-depth definition of Sokolov's Vendian. A Paris gathering of global experts on the Geological Time Scale, in particular with regard to the Cambrian/Precambrian boundary - included Brian Harland from the UK, principal organizer of several official time scales, along with experts from many other countries (France, the US, Germany, Russia, etc.).

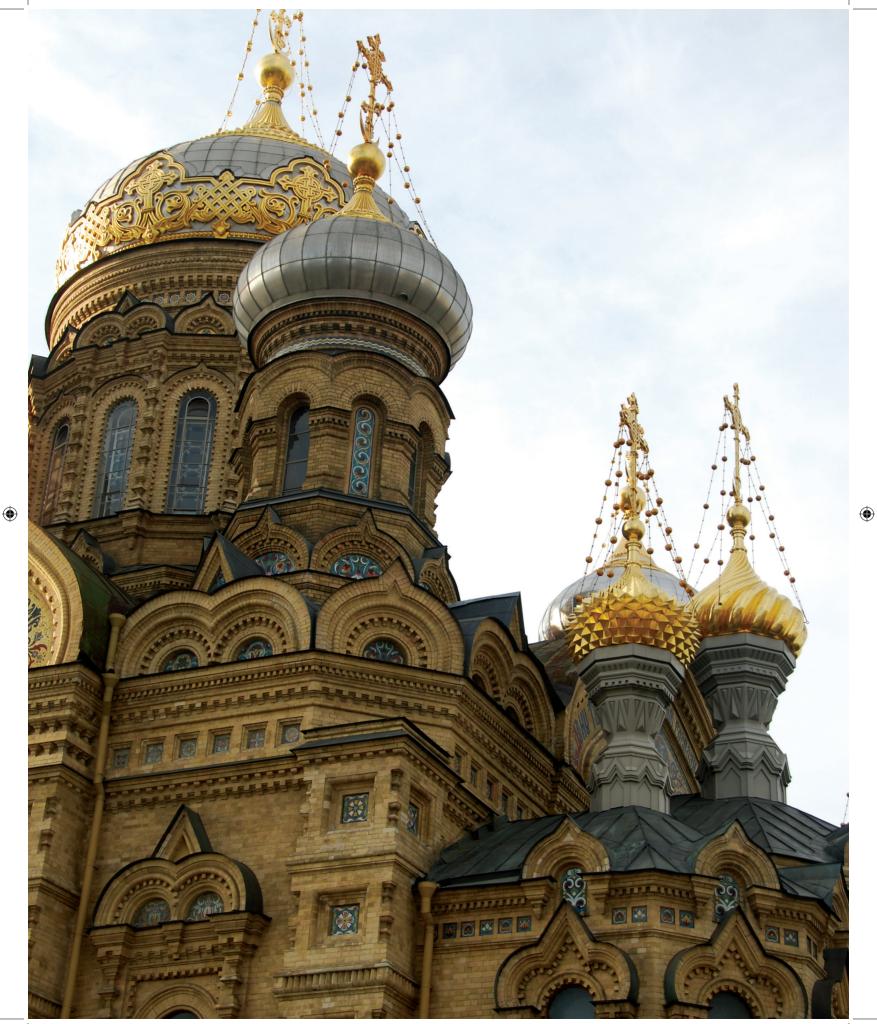
In 1976, Boris presented a paper that dealt with his ideas on The Cambrian/ Precambrian boundary and the early evolution of the Metazoa at the *25th Session of the International Geological Congress* in Sydney, also published as a full text in Russian and English in the *Paleontological Journal* (Sokolov, 1976).

In sum, the Akademgorodok experiment allowed interdisciplinary scientific thinking to flower, bringing together a critical mass of bright and innovative minds. It gave researchers unencumbered funding, minimized outside control, encouraged cooperation and sharing of information, and involved international connections. Besides the research results, this landscape enhanced in depth studies and development of the Siberian natural resources. It enhanced economics of the region – and even spawned a nascent Soviet environmental movement to preserve Lake Baikal, eventually derailing the project to divert flow of Siberian rivers to Central Asia (Jacobson, 1997). Boris Sergeevich Sokolov was part of this effort which has led, years later, to the protection of this beautiful natural treasure, the largest freshwater lake in the world.

Figure 113. (opposite page) St. Petersburg, 2011. During his time in Akademgorodok, Sokolov maintained contact with the beautiful city from whence he had come. (P. Vickers-Rich)











①

Chapter 6: The Russian Academy of Sciences and the Move to Moscow, 1975 to Present







Figure 115. Imaginary Yorgia (a Vendian animal) rising over Cliffs of Zimnii Bereg, White Sea coast, northern Russia, where rich collections of Vendian animals have been recovered by Sokolov and his teams. (artist Peter Trusler)



The Russian Academy of Sciences and the Move to Moscow, 1975 to Present

Although settled and active in the science city of Akademgorodok, Boris was approached in the early 1970's, several times, for another "opportunity" – three approaches to be exact! The "ask" from on high was for him to move to Moscow, from his near ideal life in Novosibirsk, from his purpose-built home and from the laboratories and scientific group that he had built. It was a big ask. But perhaps, with the changing policies in Akademgorodok, it seems, more in hindsight, to have been worth considering.

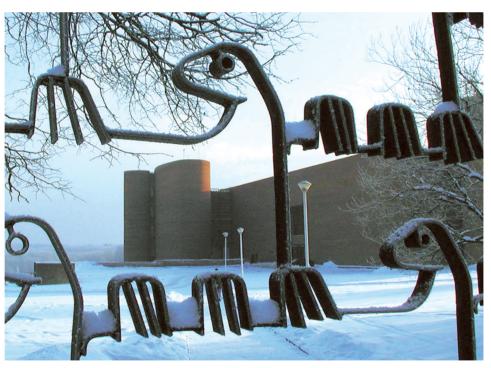


Figure 116. Entrance gate to the newly opened building of the Paleontological Institute of the Russian Academy of Sciences on Profsoyuznaya Street, Moscow, 1982. (Sokolov Archives)



АКАДЕМИК Б.С. СОКОЛОВ

Figure 117. Door sign to Sokolov's office at the Paleontological Institute, Moscow. (P. Vickers-Rich).

АКАДЕМИК

СОКОЛОВ

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Figure 118. Letterhead for Precambrian Laboratory, Paleontological Institute, Russian Academy of Sciences, late 1970's.



Figure 119. The early years of the Precambrian Laboratory, Paleontological Institute, Russian Academy of Sciences, 1982. From left to right, Mikhail Burzin, Tatiana Suvorova, Andrei Iwanowski, Alla Ragozina, Igor Babkin, Mikhail Fedonkin (current head), Larisa Voronova, Nadezhda Kireeva, Svetlana Solov'eva, Natal'ya (Natasha) Bochkareva and Boris Sokolov. (M. Fedonkin)



Sokolov's first response was to say no. The Academy wanted him to take up the position of Academic Secretary in the Department of Geology, Geophysics and Geochemistry of the Russian Academy of Sciences, a senior position in the Academy. He received the first request from Keldysh – who said the Academy needed him back in Moscow. After making it clear that he did not want to return, he received two more calls, the 2nd from an official in charge of high level appointments within the Academy. Still "No." The third call was from Academician Sidorenko, at the time the Minister of Geology. Still "No." And finally Vinogradev asked Boris to give a lecture at the 250th Anniversary of the Academy of Sciences, which he delivered – *The Organic World of the Earth on the Way to the Phanerozoic*. At this meeting Vinogradev suggested it would be a very good idea if Sokolov did come back to Moscow, for otherwise he might be forced, rather than asked, to return. The Academy truly needed the wisdom and management skills that Boris possessed – and so came his third "zigzag."

Sokolov's tenure in this bureaucratic position was to last more than 15 years, and in the memory of Academician Mikhail Fedonkin, possibly the longest time any academician has held this job, with full membership beginning in 1968. The importance of this group cannot be overstated – for it was the one in charge of that assessing and approving funding for the scientific institutes across the entire Soviet Union.

Social and administrative duties for Boris further expanded with this new position, as did the coverage of the funding that he was to look after - for he promoted the incorporation of applied sciences into the fold. Quite strikingly, even with these new responsibilities, he continued to churn out research. And that research became centred in a new laboratory that he set up, not in the Geological Institute, but instead at the Paleontological Institute, then on Leninsky Prospect, an institution that Academician Yuri Orlov had created.

Orlov's interests lay with the vertebrates, and Sokolov's



Figure 120. President of the Russian Academy of Sciences Academician A.P. Alexandrov and Academician B.S. Sokolov at Akademgorodok, Novosibirsk, 1977. Taken after their trip to the oil fields of Western Siberia. (Photo by V.T. Novikov from the Sokolov Archives)





Figure 121. from left to right: Alexei Rozanov, Boris Sokolov, and A. M. Obut, longtime colleagues, in Moscow,1980's. Rozanov long served as Director of The Paleontological Institute, asking Sokolov to occupy this position several times, but Boris refused. (Sokolov Archives)



Figure 123. B.S. Sokolov with his grandson Andrey Yu. Gnilovskoy on the way to the White Sea to study Vendian deposits at Zimnii Bereg, Petrozavodsk, 1978. (Photo by A.F. Stankovsky from the Sokolov Archives)



Figure 122. Yu. I. Tesakov and Sokolov in Boris' study in Akademgorodok, which became 'home' to Yuri when Boris moved to Moscow, 1984. (Sokolov Archives)





Figure 124. Akademgorodok, 1978. Academic group meeting, Institute of Geology and Geophysics, Siberian Branch of the Russian Academy of Sciences, Director A. A. Trofimuk. From right to left and counter clockwise: A. A. Trofimuk, V. A. Kuznetsov, Yu. A. Kuznetsov, B. S. Sokolov, I. V. Luchitsky, N. N. Puzyreov, E. E. Fotiadi, A. L. Yanshin, V. N. Saks and V. N. Sobolev. (Sokolov Archives)

with invertebrates, more specifically with the enigmatic animals of the Vendian, and thus came the naming of the Precambrian Laboratory. Sokolov firmly felt that he must not only use his skills in the management of science, but needed to continue as an active research scientist. And while he was in Novosibirsk he had toyed with the idea of setting up a laboratory dedicated to the Vendian, but it had not been possible. Moscow gave him this opportunity. And there was another good reason for the establishment of this lab - in a way it gave him reason NOT to accept several offers to become Director. first of the Institute of Lithosphere/Biosphere and later of the Paleontological Institute, which Sidorenko first, then Orlov, then Tatarinov and later still Alexei Rozanov asked him to become. When he refused all of these offers, Tatarinov asked Boris to establish a lab within the Paleontological Institute - and so he did just that. But his connections with Akademgorodok continued.

With the setting up of the Precambrian Laboratory, under the aegis of the Biological Division of the Academy of Sciences, not the Geological, Sokolov immediately began



Figure 125. Academicians B.S. Sokolov and M.A. Styrikovich talking in front of the Presidium of Academy of Sciences of the USSR, Moscow, 1989. (Photo by TASS [Soviet Union Telegraph Agency])



"I liked this idea (setting up the Precambrian Laboratory). I simply had no desire to become a Director. I have no taste for politics or routine. By the nature of my personality, I am not a boss, but rather a researcher. A director's job is 'dog's duty' – directors are expected to find money to buy equipment, fund salaries, and the bureaucrats are constantly putting their noses into everything. There are so many duties that are not directed at science."

inviting young researchers to join his lab. He first invited Mikhail Alexandrovich Fedonkin, who was at that time based in the Geological Institute, with an interest in biostratigraphy. Boris wanted Fedonkin to study oncolites and cartography. Mikhail, to Sokolov's great delight, accepted and became a real strength within the Precambrian Lab, only recently to return to the Geological Institute as its Director.

Sokolov was able to found his lab and was given salaries for 10 positions in his new facility. This was as a result of taking on the responsibilities of Secretary in the Academy of



Figure 126. INQUA (International Quaternary Association) Congress held in Moscow in 1982, one of the many with which Sokolov was involved in the organization and nurturing. This is the first time that Sokolov and Vickers-Rich's paths crossed, but they never met during this conference. (Sokolov Archives)



Sciences. And his attitude as the Head of this new lab was to let "nature itself dictate where to go." Accordingly, work fanned out to Podolia, the Ukraine, the White Sea and Siberia (Fedonkin, *et al.*, 2007). Many of his students and colleagues from Novosibirsk continued to work with him in a variety of places, and his Precambrian Laboratory grew and prospered.

In 1975 Boris travelled to Australia with the idea in mind to set up a cooperative effort with researchers working on the Vendian equivalents there, the Ediacaran. He met with Martin Glaessner and Norman Fisher. Glaessner took him in the field to show him Precambrian tillites. Sokolov was able to examine the collections of Precambrian metazoans in Adelaide – and he had a "new world" opened to him. Many of the forms he saw were new to him, but many were similar to those he knew so well from Russia – *Cyclomedusa* for one. Sokolov was able to see the unusual preservation (such as that later described as 'death mask' preservation by Jim Gehling (1999), and was impressed by the richness of the material preserved in some layers. He was able to spend nearly 4 weeks in Australia, and besides Glaessner and Fisher, he also crossed paths with another player in the Flinders fossil field, Brian Daley. He did not have a chance to meet Richard Jenkins or Mary Wade, both based in Adelaide and active in Ediacaran research.

Norman Fisher accompanied him to many parts of Australia, ranging from the oil platforms in Bass Strait to the crocodile-

platforms in Bass Strait to the crocodile-infested waters of the north by using light aircraft in the north and 4 wheel drive vehicles from Alice Springs south. Sokolov remembers being treated so well that he felt guilty he was taking up so much of Fisher's time. It was needless concern, however, for when Fisher, years later met him in Vienna, he told Boris he had never met such a passionate geologist, and their time together in Australia was most enjoyable and inspiring!

During this period of his career Sokolov seemed able to continue most of his trips abroad and maintain his connections with global research colleagues. The Russian Academy of Science was interested in encouraging international connections. Boris never remembers during the Kosygin and Brezhnev years of having any restriction put on his contacting foreign colleagues. When he needed to go abroad generally there were no barriers put up. But there had been barriers in the past, perhaps. He was refused exit permission to attend symposia (because of his stand on protecting Lake



Figure 127. B.S. Sokolov meeting a kangaroo at the Adelaide Zoo, South Australia, 1975. (Sokolov Archives)





Figure 128. Having a rest on a slope, B.S. Sokolov and Professor M.A. Rzhosnitskaya during an expedition to the southwest margins of Zeravshan Ridge in the Tien Shan Mountains, Uzbekistan, 1979. (Sokolov Archives)

Baikal from pollution and its partial draining) in Mexico in 1956 and again in 1960 to attend meetings in Copenhagen, where he had prepared a special report on correlation of the Ordovician in the Soviet Union to be presented at the 21st International Geological Congress. Regardless, he submitted his paper, although he was unable to personally present it.

Sokolov's support and documentation of the Vendian as a specific period of the International Geological Time Scale continued. In 1980 he presented a report at the 26th International Geological Congress in Paris and, from 1980 to 1990, he was the head of a subproject of the International Geological Correlation Program on the Terminal System of the Precambrian. He presented another lecture at the 27th International Geological Congress in Moscow in 1984 on his work championing of the Vendian continued as a part of the Subcommission on the Terminal Precambrian System.

Importantly, he edited and wrote, along with Mikhail Fedonkin and Andrey



Figure 129. Expedition team of B.S. Sokolov in White Sea region, near the Zolotitsa River, 1978. Boris is the only one without a mosquito net! (Photo by A.F. Stankovsky, Sokolov Archives)





Figure 130. Yu. I. Tesakov and B.S. Sokolov near the boxes holding cores from the deep drilling program in Lithuania, near Vilnius, 1980. (Sokolov Archives)



Figure 131. Examining paleontological material, southeastern China, Yunnan Province, 1987. From left to right Liu Ming Tuan (in side view, far left), M.B. Gnilovskaya, B.S. Sokolov. (Sokolov Archives)



Iwanowsky *The Vendian System*, Volumes 1 and 2, which appeared in a Russian edition (1985) and an English edition (1990). These two volumes brought together the ideas developed by Sokolov and his colleagues over decades. A large part of his life from the 1940's until the 1960's had been primarily devoted to the study of Paleozoic corals and compiling 15 volumes



Figure 132. Sokolov on field expedition in Yunnan, China, 1987. (Sokolov Archives)



Figure 133. B.S. Sokolov and then Corresponding Member RAS M.A. Fedonkin in B.S. Sokolov's office at the Paleontological institute, Moscow, end of the 1990's. (Sokolov Archives)



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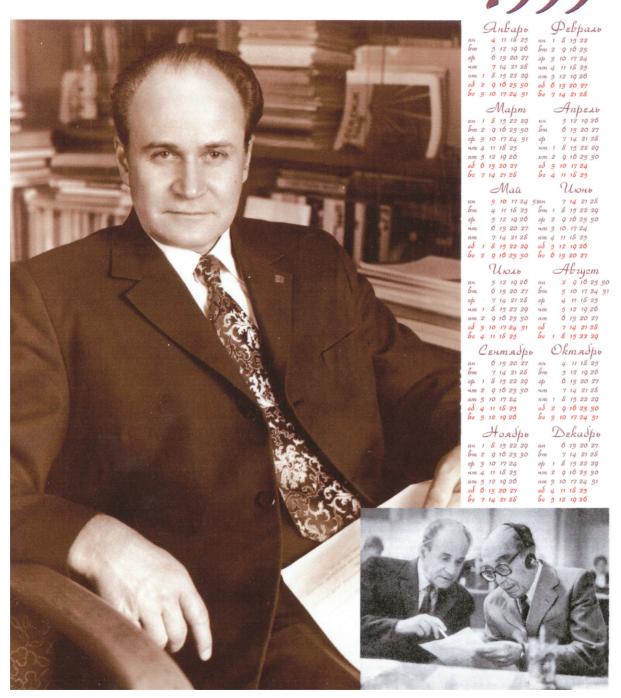


Figure 134. Calendar for 1999 celebrating Boris' 85th Birthday. (Sokolov Archives)



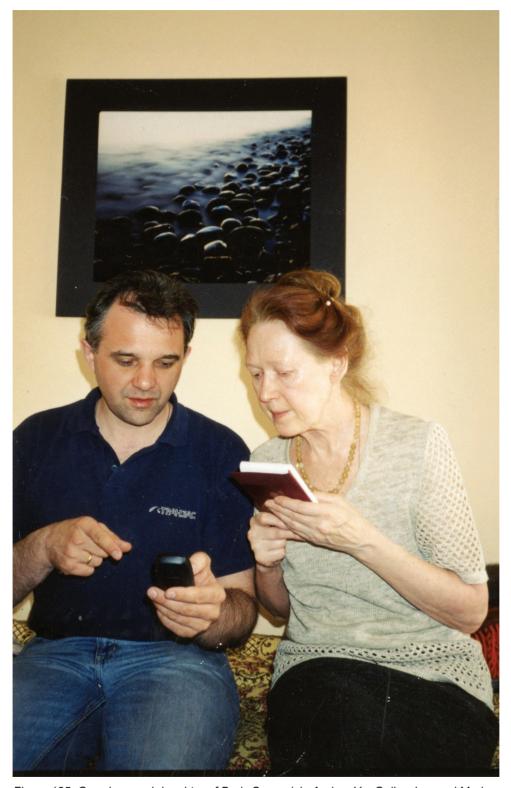


Figure 135. Grandson and daughter of Boris Sergeeich, Andrey Yu. Gnilovskoy and Marina Gnilovskaya at home in Moscow with rock painting behind by Andrei Bronnikov, 2000. (Sokolov Archives)





Figure 136. Editorial board of the magazine Stratigraphy and Geological Correlation on the 10th anniversary of the magazine, Moscow, 2003. From left to right: editorial manager T.V. Trishkina, senior editor B.S. Sokolov, senior editor A.S. Tarabanova. The magazine is published in Russian and English, in Moscow and New York. (Photo by the deputy senior editor, Academician M.A. Semikhatov, Sokolov Archives)

on the foundations of paleontology in the Soviet Union. But afterwards the documentation and understanding of the environments and climates that had facilitated the origin and radiation of the Earth's first animals became Boris' passion. And *The Vendian System* volumes were the crowning result.

Sokolov continued to have a broad range of interests. Not only did he set up the new Precambrian Laboratory and work hand in glove with his staff there, as well as manage his substantial duties within the Academy, but he initiated the establishment of the first government-protected geological park in Kitab, in the Tien Shan region of Uzbekistan. He was active in seven International Geological Congress sessions, led a number of international scientific programs, served (and still does) on a number of editorial and publishing boards, including popular magazines, in both Russia and the United States, was a major editor for Stratigraphy and Correlation published in both Russian and English.



Figure 137. Marina Gnilovskaya and student of B.S. Sokolov, Dima Grazhdankin, at Berezki, 2001. (B. S. Sokolov)



Sokolov's defence of the importance of science in the USSR, in particular the value and proper use of natural resources, was and continues to be a substantial endeavor during this period, and his status in the academic community, his success in the discovery of needed resources during WWII and during the post-war years, gave him the tools to effectively lobby the government, even during some difficult times in Russian history. He has been determined to continue all this even late in life, for example writing lectures for the All Union Paleontological Society annual meetings — and even when he could no longer deliver them himself, promoting the usefulness of science in society and of the understanding of history for making intelligent and measured plans for the future!

Sokolov officially retired in 1990, at which time Mikhail Fedonkin took over the leadership of the Laboratory of Precambrian Organisms. But, it really was impossible for Boris to retire, and he continues as a consultant to the Lab and to this day turns out reports for the Academy as well as writes research notes and papers, in particular with regard to the Vendian, which he still supports as a major part of the Geological Time Scale. His interests, as in the past, continue to centre on Precambrian paleobiology and environmental change, ancient corals and reef systems, the global evolution of ecosystems and the history of geology and hemaintains a close connection to the Roerich legacy, firmly tied to his childhood home in the Berezki region.

With all this responsibility, honours and truly substantial influence, Boris has always remained true to his basic nature, evident from childhood – he was and is easily approachable by students, top academicians, foreign colleagues – basically everyone. He has always had real interest in them, in science and maintained good relations with a wide variety of researchers and the public. His childlike curiosity survives today in his 98th year, and he has, throughout his life, respected his teachers and his young students alike, and never strived for awards or recognition – these just came on their own. Later in his life he has taken a specific interest in the culture of local areas, in his case that of his own home region, Vyshny Volochyok. In an article that he wrote on regional history he noted:

"Large cities and capital centers, in the past, have served primarily as a place for exchange of ideas, opinions and trends – by encouraging groups to get together. This has included social activities where people can come together during winter and summer in dachas – outside the cities. Now I am beginning to realize the exclusive role of local history in the perception and understanding of our complex history and the place local history plays in our education and the formation of our national heritage." "You own a small Motherland (Rodinia, the Mother) – your home beginnings – it is each of our Motherlands – because it is she who is part of your soul from the beginning of your childhood, and as a rule, only through her early images can we later feel the connection to the bigger Motherland (Bolshoi Rodinia, the Great Mother) or the country in which you were born. To the Big Country, one can have different feelings, like pride, gratitude, devotion and in some cases sympathy or even bitterness. However, the most intimate feeling of Motherland is born of childhood. This in my opinion is the real feeling of Motherland. This is a feeling that lacks the overlays and perhaps conflictual layers of life that come later."

Boris Sokolov, interviews





Sokolov strongly supports the importance of knowing the history of a discipline, and this is evident in many of his written works. From this comes his advice to the generation of young researchers entering into the geological (or for that matter really any scientific) disciplines:

"I would recommend to those who would devote their lives to science to continue to seek an understanding of the past history of your science – there is great strength in such. I feel truly disappointed with some young (and certainly older) scientists who begin history with today and only from themselves and their close colleagues. One needs to learn from history, deep history, and not simply the present. Get the personal out of the scientific discussion and be respectful of each other. I point to the exemplary attitudes as those of Conway-Morris, who has been an excellent observer, and never unable to think that he could be wrong. He is one who will always question his ideas and carefully inspect those of others to see if they successfully invalidate his own. Self-inspection, healthy doubt and curiosity are the guiding lights of innovation and new discovery."

Boris Sokolov, interview February 2011

Members, past and present, of the Precambrian Laboratory, Paleontological Institute, Moscow (1976-2011)

Boris Sergeevich Sokolov, Founder Mikhail Alexandrovich Fedonkin. **Current Head Igor Babkin** Natasha (Natal'ya) Bochkareva Mikhail B. Burzin Mikhail Yur'evich Chudetsky Marina Gnilovskava Dima Grazhdankin Andrei Borisovich Iwanowski **Andrey Ivantsov** Nadezhda Kireeva Alexei Krayushkin Anton V. Leguta **Maxim Leonov** Alla Ragozina Ekaterina Serezhnikova Svetlana Solov'eva Tat'yana Suvorova Patricia Vickers-Rich Larisa Voronova Mariya Zakrevskaya

Elena Zlokazova



Figure 138. Window to the outside world in Sokolov's office at the Paleontological Institute, Moscow, 2010. (P. Vickers-Rich)



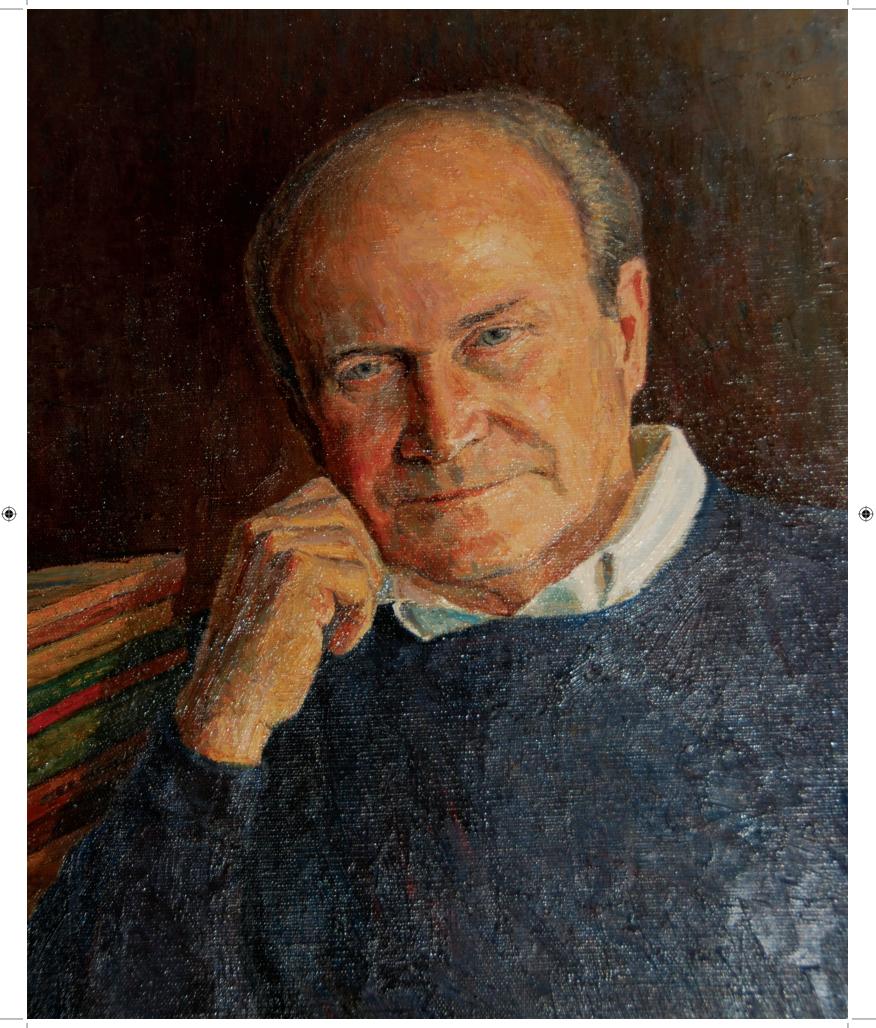






Figure 140. Andrei Ivantsov (in front) and Maxim Leonov curating the Vendian collections at the Paleontological Institute in Moscow. The cabinetry and development of the collection room they are working in, as well as recent organization and curation of this collection, was funded by activities of UNESCO International Geological Correlation IGCP493 (www.geosci.monash.edu.au/precsite), private donations by the Hunt family, represented by Nathan Hunt, P. Vickers-Rich and Thomas H. Rich, and the Monash Science Centre, Monash University, Australia.

Figure 139. (opposite page) Portrait of Boris Sokolov at 90. (Artist Evgeny E. Shirlaev)





Figure 141. Members of the Precambrian Laboratory at Sokolov's 90th birthday celebrations at the Paleontological Institute, Moscow. Left to right standing: Aleksandr ("Sasha") Mazin, Andrey Ivantsov, Natasha Bochkareva, Ekaterina Serezhnikova, Maxim Leonov, Mikhail Fedonkin. Seated: Patricia Vickers-Rich, Boris Sokolov, Alla Ragozina, Marina Gnilovskaya. (Courtesy of The Paleontological Institute, Moscow)





Figure 142. Current members of the Precambrian Laboratory founded by Sokolov. L — R: Mariya Zakrevskaya, Andrey Ivantsov, Ekaterina Serezhnikova, Mikhail Fedonkin, Alla Ragozina, Maxim Leonov, Natasha Bochkareva and Alexei Krayushkin. (Courtesy of The Precambrian Laboratory, Paleontological Institute, Moscow, 2010)



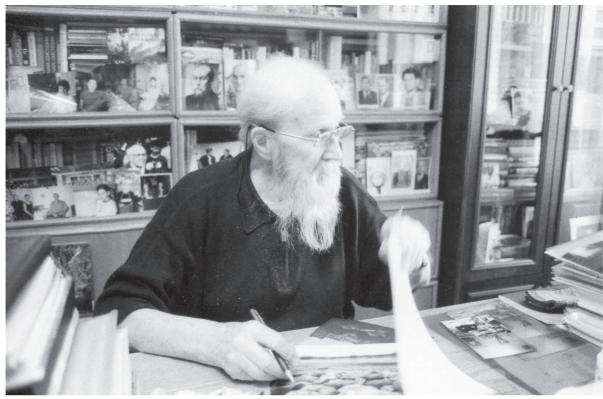


Figure 143. Boris Sergeevich Sokolov, still at work in his 90's, Moscow apartment, 2007. (Sokolov Archives, photo by Darya Kruzkova, granddaughter of Boris)

One question still remains in Boris's mind that is yet unresolved, which he referred to in his Lecture for the 250th Anniversary of the Academic of Sciences in 1975:

"What is older - the Earth or life?"





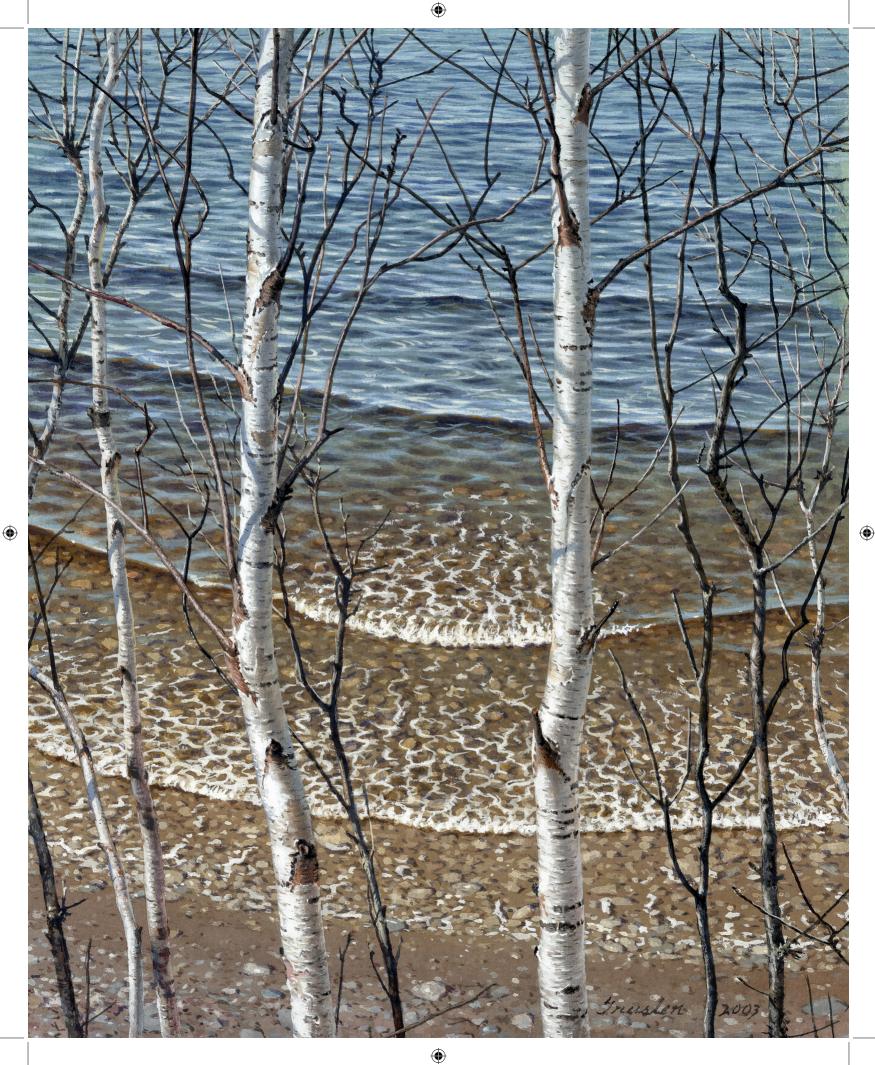
Summation of Boris Sokolov by Valentin A. Krasilov:

"Paleontology needs a person like you – like the creatures which populated the Vendian – and whose genes live on in us today. Sokolov, you are: strong, but soft; social, but solitary; easy going, yet demanding; modest, yet powerful; contradictory and enigmatic. Just like the Vendians!"

Translation from a letter during interview with Sokolov, Febuary 2011













THOUGHTS 2011

From Alexander Blok, one of Boris' favourite poets

Life has no end and no beginning. Chance waits in ambush for us all.

There is nothing else left for us to marvel at
The Creation of Creator
To me the Creator is Nature
She is the Goddess
The role of God is that He breathed a Soul and
Creative Mind into the brain of advanced primates
But I am not sure that He was able to suggest an idea
to anthropoid apes about how to use this instrument correctly.

Boris Sokolov

Figure 144 (opposite page) Birch trees along the White Sea coast, northern Russia. (artist, Peter Trusler)





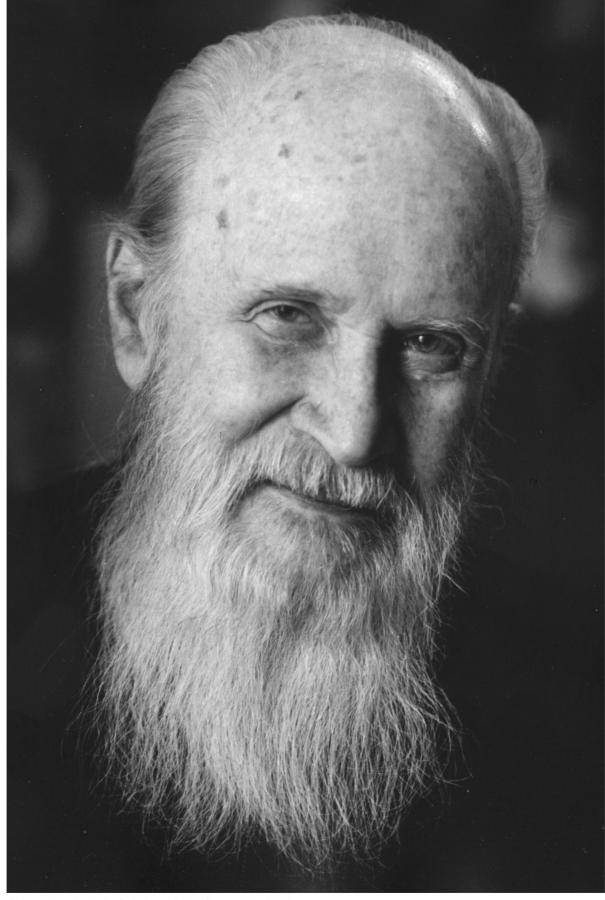


Figure 145. Boris S. Sokolov, 2010. (Sergey Novikov)





Sokolov's Current Research

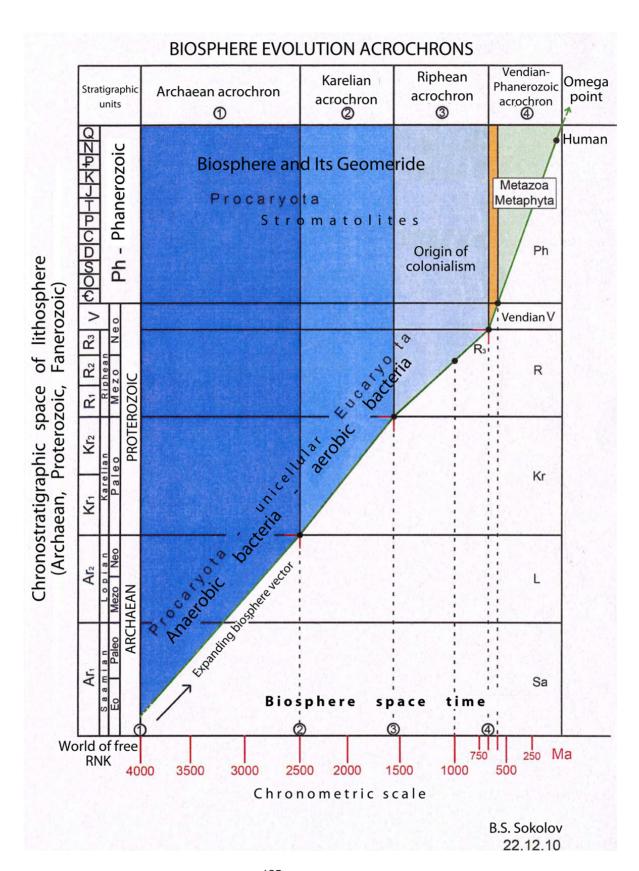


Boris Sergeevich, at 98, is still an active researcher - writing every day. These diagrams encapsulate his current thinking about not only the Vendian but also about events on planet Earth throughout its history. His notes and charts summarize his understanding of the Vendian over the years since the 1950's to present, and his handwritten inscriptions make these charts quite specifically his.



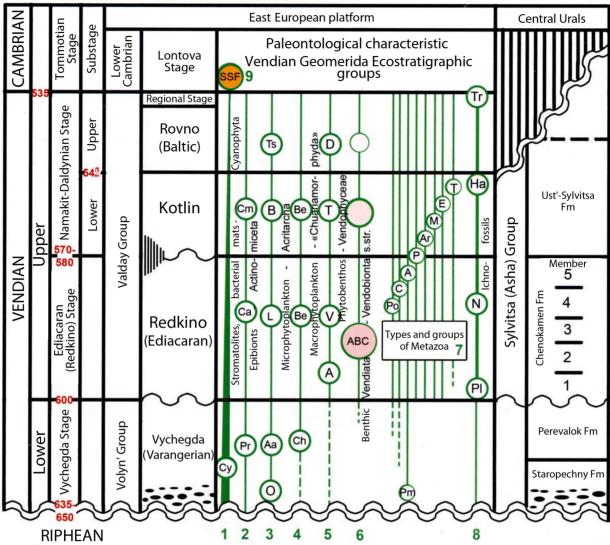








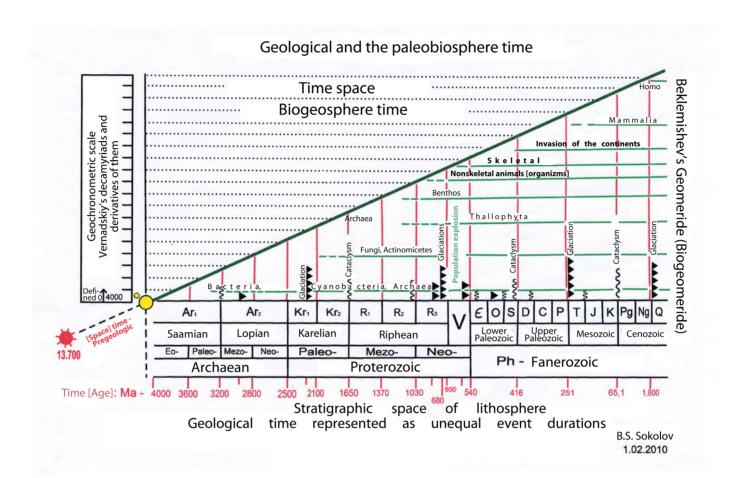
Vendian Stratigraphic Region



B. S. Sokolov, 2010











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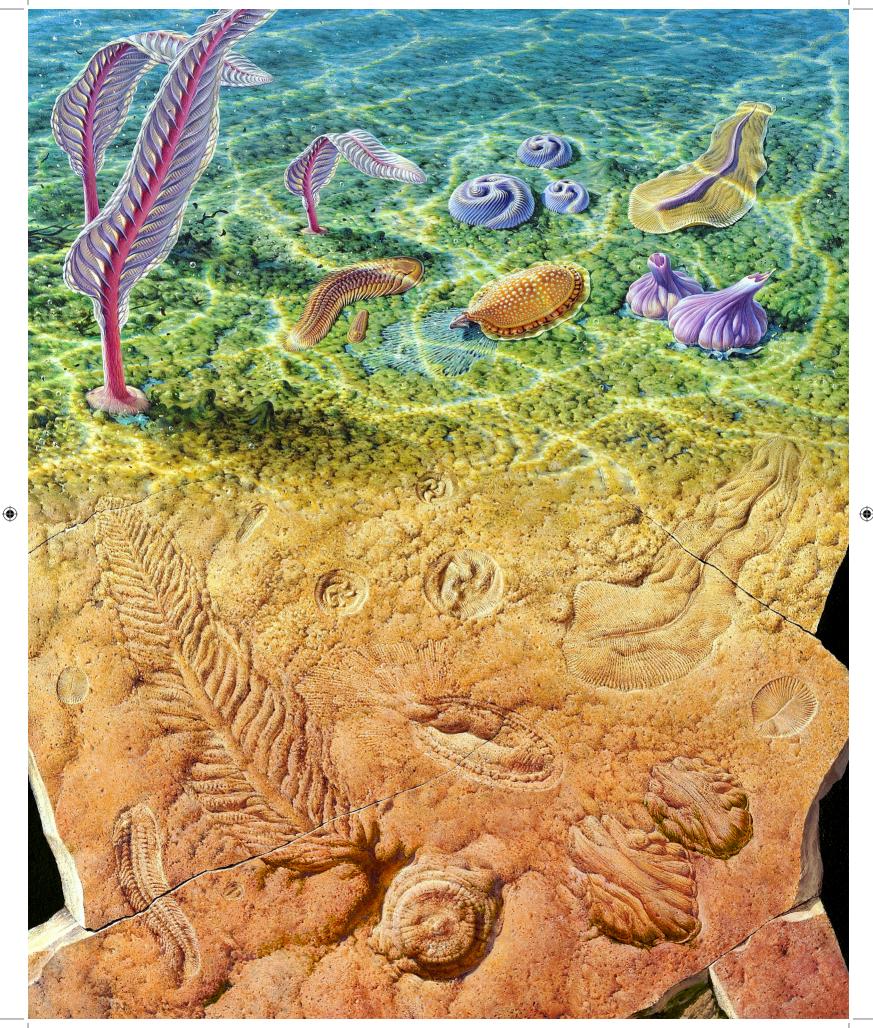


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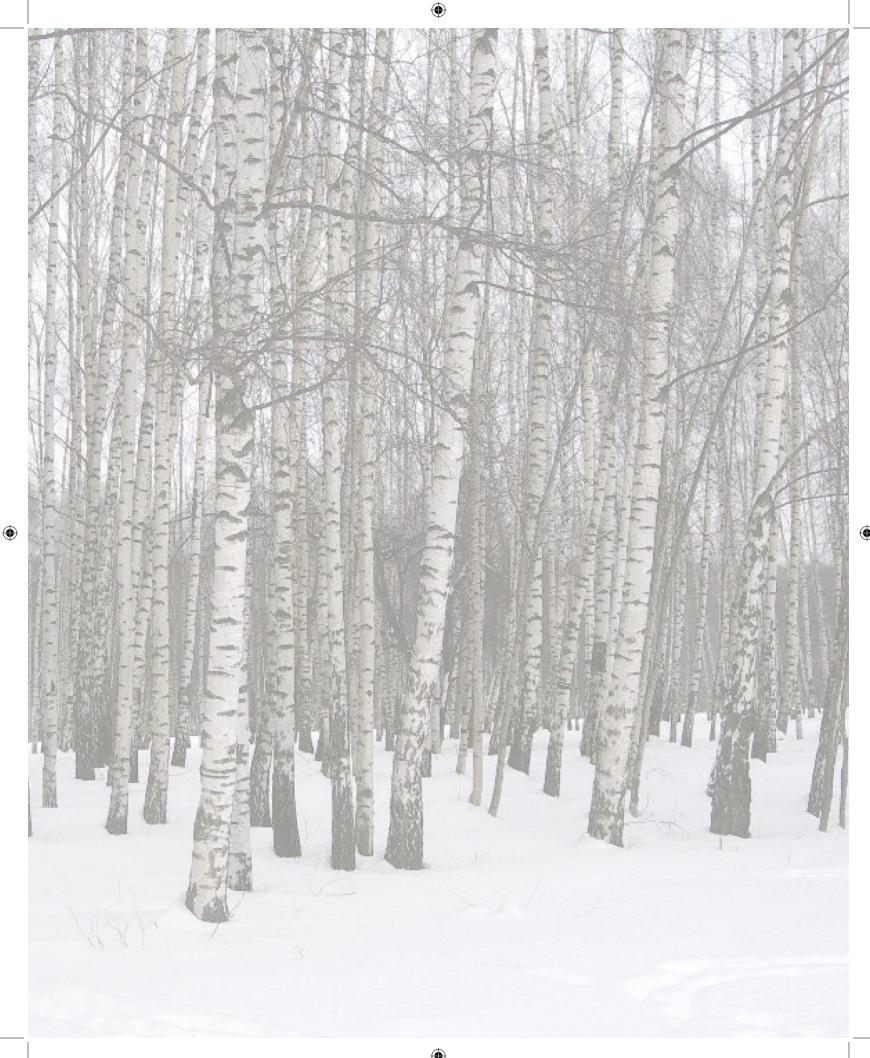








Sequence of events/accomplishments in Sokolov's life







Sequence of events/
accomplishments in Sokolov's life

A. Berezki 1914 to 1931

Vyshny Volochyok-Berezki. Home: Mother & Father; V.E. Voskrenesky; "eternal student", Nature. School: Teacher A V. Vessky (natural history, geography, chemistry, biology, geology).

1914 - 1919

Boris Sergeevich Sokolov was born 9th of April 1914 in Vyshny Volochyok, Tver District. Spent much of childhood in Berezki, a land of lakes and forests. Father (Sergei Borisovich Sokolov) a family doctor, Mother Dar'ya Andreevna Skurlova. Six children in family.

1914 - 1918 - World War I. 1917 - 1918 Russian Revolution, shortage of everything – food, clothes.

Sokolov fortunate to be in countryside.

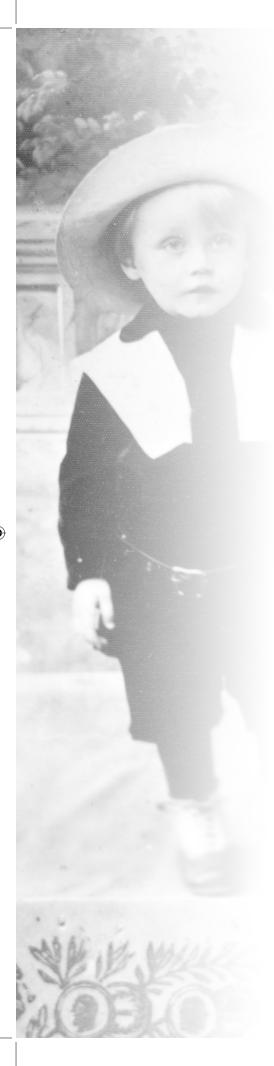
1918 - 1922 - Russian Civil War.

Woodcut from Life As It Is, poetry of Lydia Dinulova, Berezki.









1919 - 1925

First Memories: Nature, found fossils, noted how fast mushrooms grew. Educated in a village school in Berezki, a peasant school.

1921 - 1928

NEP – New Economic Policy emplaced by Government.

1928 - 1929

Enforced collectivised agriculture, major industrialization, ideals were to end private ownership, end profit, end free market, and set up centrally controlled economy; removal of the Kulaks as a group. First 5 - Year Plan.

1930's

Setting up of the Gulag and repeated famines, particularly in 1932-1933 in the Volga and Ukraine.

1931

Stalin's support for elite higher education for "promising elements".

1925/26 - 1931

1931

Graduated from the nine-year secondary school (Vyshny Volochyok).

Worked as a log transporter immediately after high school – with "rough guys" (Boris Sokolov).

Entered a polytechnical school, the United Labour School No. 1 in Vyshny Volochyok, a "Real" School, not a gymnasium, graduated with an electrician diploma, but also trained as a technical draftsman. Electrician at the radio centre Elektrotok (Lenenergo) – a state company, for about one year (1931-1932).

Boris Sokolov as child. 1916

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B. Leningrad 1932 to 1941

1932

Major Event

Accepted as a student of the Faculty of Geology–Soil and Geography (evening education) of Leningrad State University (Geomorphology). Studied at night and worked during day as there was no stipend for evening students.

Leningrad State University, Department of Paleontology: M. E. Yanishevski, A. N. Krishtofovich, Yu. A. Orlov, Ya. S. Edel'shtein, N. M. Sinitsyn, and Department of Biology. (Paleontology, Stratigraphy, Regional Geology).

1934 - 1939

Day Student at the Faculties of Geology and Biology at Leningrad State University. Specialised in Paleontology. Studied broadly and earned the nickname "Flyer" because he crossed disciplines. M. E. Yanishevski, Head of Paleontology Department, had profound influence.

1934

N. Khrushchev put in charge of building the Moscow Metro; liberal Party Member Kirov assassinated in Leningrad (1 December).

1934-35

Breathing spell for populace of Russia, a mini-NEP (New Economic Policy) put in place.

1934

Major Event

First field work in Sablino. Transferred to Paleontology Department (Geology Faculty), working on the impact of life on sedimentation, especially in marine environments.

Boris Sokolov as a young university student, atop boulder, 1935.





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1935

Beginning of work on corals in Moscow Syneclese (Carboniferous).

1935 - 1939
Political purge and consolidation in Russia
– the Great Terror.

1936 - 1938

Major Event

Participated in Geological Survey of Tien Shan (State Geological Map, scale 1:500 000). Group led by Nikolai Sinitsyn, a major project of Leningrad State University before and after WWII.

1937

Graduated with honours from the Geology Faculty of Leningrad State University.

Elected as a member All Union Palaeontology Society.

1937 - 1941

Lecturer, Department of Paleontology at Leningrad State University; presented lectures in historical geology and introductory paleontology.

1938

Participated in the geological survey of Tien Shan Mountains, producing the State geological map, scale 1:500 000.

C. China 1941 to 1945

Work in Western China and Middle Asia (Tien Shan):
A.V. Peive — recommendation to Narkomtsvetmet
(Commissariat of the Non-Ferrous Metal Resources); M.
Lozhechkin, D.I. Neretin — transition to the Narkomneft
(Commission of the Oil Resources); A.V. Kuchapin —
special oil expedition in the Middle Asia. Regional and Oil
Geology.

China in 1941-1942.

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1941 - 1943 Major Event

Chief Geologist (Narkomtsvetmet USSR and Narcomneft USSR) (Western China, Xinjiang). Geological Expedition to Central Asia (Eastern Tien Shan, Djungar, Ili, Turfan and Tarim basins). Sent to this area on the "eve of the Great Patriotic War" (WWII). Part of the VNIGRI – All Russian Institute for Oil Exploration project. Flew to Alma Ata by plane – in a McDonnell Douglas aircraft (US made) with wife Elena and daughter Marina (only 1 year old).

1943

Geologist on the first Xinjiang Oil Deposit Expedition in the Tushantszy, Urumqi area. Beginning of the investigation for oil and gas resources in the Mesozoic - Cenozoic-aged depressions of Central China.

Elected Member, *Geological Society of China*. Received *Medal of the Geological Society* in 1953 in Beijing, presented by President of the Society, Prof. Li Xiguan (Syguan).

1943 - 1945

Chief of the Geological Expedition to Central Asia of the All Union Oil Scientific-Research Geological Prospecting Institute of the USSR (Narkomneft); investigated younger depressions of Tien Shan Mountains.

1945 - 1958

Head Scientific Researcher at Leningrad State University; from 1953, Reader.

1945 - 1960

Head Geologist, Chief of the Paleontology Laboratory of the All-Union Oil Scientific Research and Geological Prospecting Institute (VNIGRI), Ministry of Geology of the USSR, based in Leningrad Faculties. Carried out field work annually in such districts of the USSR: Baltic region, Belorussia, the Ukraine, central and northern districts of European Russia, the Urals, western and northern districts of Siberia. At same time continued research on Paleozoic corals of the USSR and proposed a new taxonomy system for the Tabulata.







D. Leningrad VNIGRI 1946 to 1958/1960

Leningrad, VNIGRI, Leningrad State University: staff - F.A. Alexeev, D.V. Nalivkin, A.P. Bystrov. Emphasis: Stratigraphy, Paleogeography, Paleontology.

1947

Degree of Candidate of Science conferred on Sokolov for his Chaetetidae of the Carboniferous of North-east of the Ukraine and Contiguous Districts. Decorated with Medal For Valiant Labour during the Great Patriotic War 1941-1945.

1949

First expedition to Podolia to explore the Late Precambrian and Early Paleozoic deposits on the river Dneister. Beginning of Sokolov's recognition of the Vendian System, proposed later.

1949

Chairman Mao visits Moscow to celebrate J. Stalin's 70th birthday. NATO established. Soviet Union sets off its first atomic bomb.

1950

Sokolov recognized the Vendian complex.

1950 - 1955

Published two major works: *The Palaeozoic Tabulata of the Eastern USSR* (5 volumes) and *Chaetetidae of the Carboniferous* (1 volume).

1951

Decorated with the Medal for Labour Valour.

1952

The Atlas of Lithostratigraphic Maps – phase maps of the Russian Platform (part I Palaeozoic 1:3,000,000) published, the first cartographical recording of the Vendian complex.

Boris Sokolov near Leningrad, 1955



5 March 1953 Death of Joseph Stalin

1953

Received Medal of Geological Society of China.

1953

Soviet Union sets off its first hydrogen bomb.

1953 - 1964 Nikita Khruschev period.

1953 - 1954

Sent on a mission to China for scientific and technical aid, facilitating international cooperation. Participated in field expeditions in central, southern and eastern China.

1953 - 1957

Deputy of Dzerzhinsky Soviet of Deputies.

1954

Received the *Badge of Honour* for scientific research.

1954

Khruschev begins program of agricultural reform, which leads to reorganization of collective farms between 1957-1958.

1955

Received Doctorate Degree for his *Palaeozoic Tabulata* of *European USSR*.

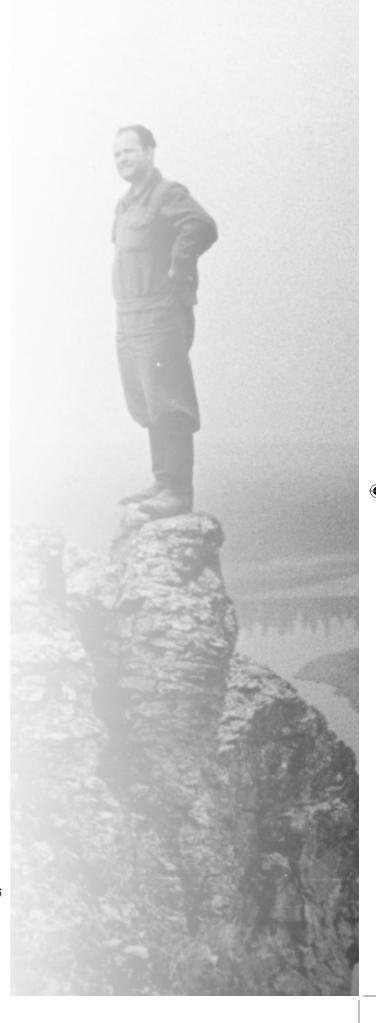
Elected Member of the All Union Scientific Engineering and Technical Society of Oil Geologists (USSR).

1955 - 1960

Elected Member of Academic Council, All Union Oil Scientific Research and Geological Prospecting Institute.

Boris Sokolov, E. Siberia, 1956











1955 - present

Member of the Bureau, *Interdepartmental Stratigraphy Committee (MCK) USSR*; from 1971, Deputy Chairman: from 1975, Honorary Chairman from 1989 to present.

1955

Chairman, *Stratigraphy Commission for Ordovician and Silurian Systems*. Member, Bureau of the Commission for Late Pre-Cambrian Stratigraphy Classification, Terminology and Nomenclature.

1955

Khruschev attends Geneva Summit: Present also were Eisenhower (USA), Bulganin (Premier, Soviet Union), Eden (UK), Faure (France) and their foreign ministers.

1956

Expeditions in East Siberia: Anabar, Olenek, Lena, and Lake Baikal regions.

1956

N. Khruschev's "Secret Speech" at the 20th Communist Party Congress, condemning the cult of Stalin, his crimes against the Russian people and introducing a less repressive era in the Soviet Union.

1957 - 1958

Presented report *The Problem of Lower Boundary of Paleozoic and Oldest Deposits Pre-Sinian Platform Eurasia* (Paris).

1957

Publication abroad of Boris Pasternak's novel Doctor Zhivago, for which he received the Nobel Prize in 1958. Soviet Government requested Pasternak to decline. First published officially in Russia in 1957

Sokolov's home, Akademgorok





1957 Sputnik, first ever artifical satellite, put into space by the Soviet Union.

1958

Took part in the *First Symposium on Silurian-Devonian Boundary*, Prague. Excursion to the Barrandian.

Elected Corresponding Member, Academy of Sciences of the USSR (March 1958).

E. Academgorodok 1958/1960 to 1975

Novosibirsk, Academgorodok, Siberian Department of the USSR Academy of Sciences: Colleagues included A.F. Trofimuk, Yu.A. Orlov, M.A. Lavrent'ev. The Department of Paleontology and Stratigraphy of the Institute of the Geology and Geophysics of the Academy of Science of the USSR. Lavrent'ev's vision to set up this science city meshed with Khruschev's desire to develop Siberia's resources.

1958

Major Event

Took up Headship of Department of Paleontology and Stratigraphy, Akademgorodok (near Novosibirsk), Kruschev's innovation to intensively study the area from the Urals to the Pacific Ocean, offering great opportunity for field work, free thinking and little administration.

Set up Department of Historical Geology and Paleontology, Novisibirsk University.

Elected Professor, Department of Paleontology, Leningrad State University (March 1958).

Led expedition to the peninsulas of Rybachy and Sredny, Kildin Island, and the Barents Sea (June1958).

Boris Sokolov, Novosibirsk, 1958









Sent on a mission to Czechoslovakia and DDR to the First International Conference on Stratigraphy of Silurian and Devonian Systems. Presented lecture Stratigraphic Boundaries of Lower Palaeozoic Systems of the Russian Platform (Prague). Participated in field excursions in Barrandiene, Saxonia, Turingia, Gartse (August 1958).

Member, Academic Council of Sciences of Earth, Siberian Department of the Academy of Sciences of the USSR.

Member, Editorial Board of *Palaeontology Magazine*.

Member, *National Committee of Geologists of the Soviet Union*; from 1978, Member of Bureau of this Committee.

1958 - 1972

Member, International Committee on the Silurian-Devonian Boundary.

1958 - 1960

Member, International Committee on Stratigraphy and Nomenclature of Cambrian and Devonian Systems.

1959

Sent on a mission to People's Republic of China to an international congress on stratigraphy; presented lecture Some Questions on Stratigraphy of Deposits of Late Pre-Cambrian and Early Palaeozoic of the USSR. Participated in field excursions in China. Worked with Li Xi Guan from China and Russian colleague Nalivkin.

12 April 1959

Soviet Union lands unmanned satellite on Moon.

1959

Chilling of relations between USSR and China.

1959 - 1964

Deputy Editor for series *Fundamentals of Palaeontology* (15 v.) (USSR).

Boris Sokolov, Akademgorodok with daughter Kseniya, 1963





1959 - present

Member, Editorial Board and Editorial Council of the *Journal of Geology and Geophysics* (USSR, Russian Federation).

1960

Sent on mission to Poland for the International *Meeting* of Fossil Coral Research. Presented a lecture Some Results of Research on Palaeozoic Corals. Also presented a lecture in Denmark on this trip Stratigraphy of the Ordovician deposits of the USSR at the 21st session of the International Geological Congress (Copenhagen).

The Atlas of Lithological and Palaeographical Maps of the Russian Platform and Its Geosynclinal Setting was published to which Sokolov had significant input. (15 maps in scale 1:5,000,000)

1960 - 1962

Chairman, Organizating Committee for the All- Union Meeting of Stratigraphy of Russian Platform (Leningrad)

Expeditions in Podolia, Baltic area.

1960 - 1972

Member, International Committee on the Silurian-Devonian Boundary for the International Stratigraphic Commission, International Union of Geological Sciences (IUGS).

1961 - 1962

Chairman, Organizating Committee for the First All-Union Meeting of Stratigraphy of Late Precambrian Deposits from Siberia and Far East (Novosibirsk).

1961 Soviet Union puts the first man in space – Iurii Gagarin.

1961 - 1972

Professor, Department of General Geology; from 1965,

Boris Sokolov and Kirill Simakov, 1974







Foundation Head, Department of Historical Geology and Paleontology, Novosibirsk State University.

Member, *Academic Council, Novosibirsk State University* and academic in the Geological-Geophysics Department.

1962 - 1973

Vice president, *All Union Paleontology Society*.
Chairman of Organizing Committee, *First All-Union Symposium on Fossil Coral Research* (Novosibirsk).
Member, Expeditions to eastern Kazakhstan and Podolia.

1962

Solzhenitsyn's One Day in the Life of Ivan Denisovich published.

1962

Cuban Missile Crisis nearly brought the USSR and the USA into nuclear war.

1963 - now

Deputy Editor-In-Chief and then from 1982 the Editor-In-Chief for several volumes of *Stratigraphy of the USSR*. Chairman of the *Coelenterata Commission of the Scientific Council*, Academy of Sciences of the USSR concerning "Ways and regularities of historical development of animals and plants."

1963 - 1968

Member, Bureau of the Scientific Council.

1964

Achieved academic rank of Professor, Department of Geology, Novosibirsk State University. Elected Member, International Palaeontology Union.

Sent on a mission to India to 22nd International Geological Congress (Delhi). Presented report on Vendian and the problem of the boundary between Precambrian and Cambrian. Publication of this document in English and Russian languages in 1964 now considered as the date of inclusion of the Vendian System into the Stratigraphic Code of the USSR.

Elena Polenova, 1963





Leader of geological excursions to the Yenisei Basin, the Salair Ridge, the Altai Mountains and Gornaya Shoria.

1964-1982

N. Khruschev retires in October. Leonid Brezhnev takes over as General Secretary of the Soviet Union for the next 18 years.

1964 - 1968

Vice President, Asian Branch of the International Paleontology Union.

1965

Awarded *Breastplate of The Excellent Prospector* by the Ministry of Geology of the USSR for outstanding practical contributions to the stratigraphy of the USSR.

Took part in *The Science Session Concerning the Earth* organized by the Academy of Sciences of the USSR, with field excursions to the Kuril Islands and the South Sakhalin.

Organized and conducted the First All-Union Symposium on Paleontology of the Precambrian and Early Cambrian Systems (involving western European scientists) (Novosibirsk). An important meeting with Professor H. Termier, G. Termier, N.N. Menchikoff, Yuri Orlov and others. Glaessner sent latex casts of some Australian Ediacaran material.

Suggested that the Lower Cambrian Pre-Trilobitic Strata in the Baltic succession should be recognized as a distinct interval.

Discovered the oldest sabelliditids in Vendian of Siberia and proposed that these forms were a type of Pogonophora.

1966

Awarded *Breastplate of the Excellent Prospector* by the Ministry of Geology of the USSR for outstanding research

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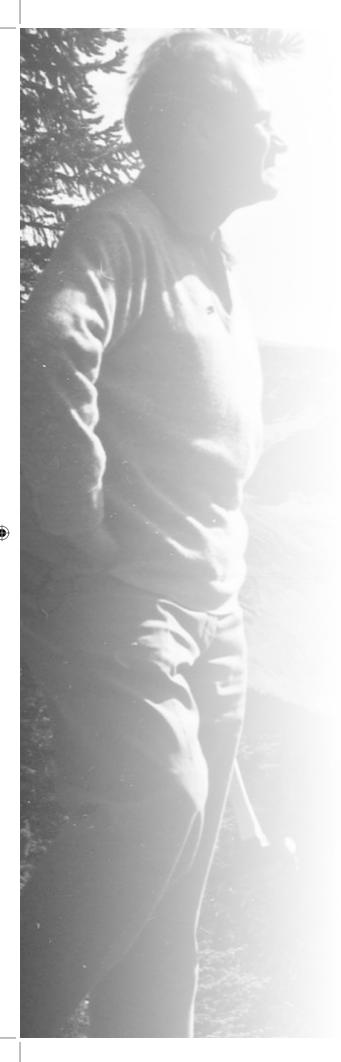
Boris Sokolov and Elena Polenova, Akademgorodok, 1963











in preparation for the publication of *Fundamentals of Paleontology* (15 v.).

Organized and oversaw the First Session of the *International Stratigraphic Committee* dealing with the stratigraphy of Central Siberia.

Assisted in preparations for the *International Oceanographical Congress* (Moscow).

Took part in expeditions to Central Asia and the Pamir Mountains.

Proposed organization of joint stratigraphy commissions.

1967

Presented with the *Order of Lenin* for playing a significant role in the setting up of a scientific centre, Siberian Department of the Academy of Sciences of the USSR. Awarded on the eve of the Soviet State's 50th anniversary.

Received the *Lenin Prize* for *Fundamentals of Paleontology* (15 volumes), published in 1959-1964. Work involved a large team of authors under the direction of the Editor-In-Chief, Yu. A. Orlov and his deputies, one of whom was B. S. Sokolov.

Member of a mission to Canada to the *First International Symposium on the Devonian System*. Presented a lecture concerning the Devonian oil. Took part in a trip to the Rocky Mountains (Banff, Jasper) organised by Dr D. McLaren and O. Walliser.

1968

Elected as a Member, Academy of Sciences of the USSR.

Elected Honorary Member, Swedish Geological Society.

Sent on a mission to Czechoslovakia to 23rd International Geological Congress and the General Assembly of the International Palaeontological Union; presented lectures entitled: Stratigraphic Boundaries of Lower Palaeozoic Systems and Early Cambrian Sabelliditida (Pogonophora) of the USSR. Important meeting with W.B. Harland

Sokolov in Canada, 1967



(due to future impact on the Geological Time Scale). Russian invasion of Czechoslovakia disrupted this meeting.

Led organization for the *International Symposium on* the *Silurian-Devonian Boundary* and the accompanying geological excursions.

Presented lecture *The Current Knowledge of the Silurian-Devonian Boundary* (Leningrad).

1968

Member (and Chairman from 1976) of the *Committee* on the *Precambrian and Lower Paleozoic Siberian* Regional Stratigraphic Commission of the *International Stratigraphic Committee* of the USSR/ Russian Federation.

1969

Sent on a mission to Czechoslovakia for a meeting of the Committee of the *International Palaeontological Union* and an International Colloquium dedicated to Joaquim Barrande. Took part in a field excursion in Central Czechia.

Sent on a mission to Hungary (Budapest) for a special session of UNESCO and International Union of Geological Sciences (IUGS), dedicated to the organization of research for the *International Geological Correlation Program (IGCP)*.

Took part in several field trips in Hungary. First meeting with Martin Glaessner and idea hatched of the IUGS project: *Precambrian-Cambrian Boundary and Determination of the Position of the Vendian*.

1969 - 1971

Chairman of the Organizing Committee for the *First International Symposium on Fossil Corals* (Novosibirsk).

1969 - 1972

Deputy of the Novosibirsk District Soviet of Deputies.

Sokolov with plans for Paleontological Museum, Moscow, 1970









Vice President, later President, of the *International Paleontological Union* (Soviet Department).

Member of the International Working Group of the Precambrian-Cambrian Boundary for the International Geological Correlation Programme (UNESCO IGCP).

1969 - 1970

Member of the Academic Council of the Paleontology Institute of the Academy of Sciences of the USSR/Russian Federation.

Received *Medal for Valiant Labour* to mark the occasion of the 100th anniversary of the birth of V. I. Lenin.

1970 - 1981

Chairman, and from 1976 Deputy Chairman, of the Special Academic Council for Conferment of Degrees in the Institute of Geology and Geophysics, Siberian Department of the Academy of Sciences of the USSR.

1971

UNESCO International Geological Correlation Program (IGCP) established; Sokolov founded and led the Soviet group.

Elected Member of the All Union Society of Knowledge.

Sent on a mission to USA for the Second Symposium on the Geology of the Arctic. Presented lecture entitled The Vendian of Northern Eurasia. Took part in the field expedition from San Francisco to Los Angeles.

Sent on a mission to Morocco to participate in work related to Silurian-Devonian boundary, for the *International Union of Geological Sciences (IUGS)*. Took part in the excursion to fossil locales in the Sahara. Presented a lecture and suggested a new ecostratigraphical project in Rabat.

Vice-President of the *3rd International Palynological Conference* (Novosibirsk).

An important boundary between the Silurian and Devonian, near Rabat, Morocco, 1971



1971 - 1983

Vice-President of *International Association for Research* on Fossil Corals.

1972

Awarded with Jubilee Medal "50 years of the USSR," 1922-1972.

Conducted field investigations of the Vendian sequences in the Ukraine, Moldavia, Western Baikal and examined borehole cores from Siberia.

Presented a lecture *The Precambrian Biosphere in Light of Paleontological Data* at the Institute of Geochemistry and Analytical Chemistry named after V. I. Vernadsky in the Academy of Sciences of the USSR (Moscow).

Sent on mission to Montreal, Canada for 24th International Geological Congress and the General Assembly of the International Paleontological Union. Presented lectures entitled The Vendian Period in the History of the Earth and The Precambrian-Cambrian Boundary.

Visited field sites in Newfoundland and the Great Lakes District of northeastern North America. First introduction to the Avalonian biota of Newfoundland and its interpretation as Vendian in discussions with Prof. M.M. Anderson. Also met with Hans Hofmann and Preston Cloud.

1972 - 1976

Member, International Subcommittee on Stratigraphy of the Cambrian System, International Stratigraphic Commission of the International Union of Geological Sciences (IUGS).

1972 - 1980

Vice President, International Subcommittee on Stratigraphy of the Silurian System, International Stratigraphic Commission of the International Union of Geological Sciences (IUGS).

Boris Sokolov, 1975









Meeting with P. Cloud, H. D. Pflug, H. Hofmann and J.W. Schopf in Academgorodok.

Participated in field excursion and discussion concerning the boundary between Precambrian and Cambrian in Siberia (a journey on ship along Aldan River).

Published translation of book: Fundamentals of Paleontology: Porifera, Archaeocyatha, Coeloenterata, Vermes - Jerusalem: IPST, 1973, 660 pp.

1973-1975

Solzhenitsyn's The Gulag Archipelago published abroad, but only released in Russia in 1990.

1974

Awarded the *Order of the Red Banner of Labour* for service in the development of geological sciences and training of scientific personnel on the occasion of his 60th birthday.

Participated in an international seminar on the origin of life (Moscow).

Took part in a meeting of scientific intelligentsia and active members of the Party Organization for Siberia and the Far East in connection with preparation for the 250th Anniversary of the Academy of Science of the USSR; presened a critical assessment of the state's utilization of Lake Baikal and about the threat to the ecosystems in this unique lacustrine system (Novosibirsk).

Sent on a mission to France for the *International* Symposium on Stratigraphy of Precambrian Deposits; presented reports *Life in the Vendian* and *The Precambrian-Cambrian Boundary in the USSR* (Paris).

Attended a conference in Poland on national paleontological organisations of the socialist countries of Central and Eastern Europe; presented a report concerning connections between the paleontological organisations of Central and Eastern Europe with the International Paleontological Union.

Boris Sokolov and friend in Australia, 1975



1974 - 1977

Member of the Bureau of the Consultative Paleontological Commission for Socialist Countries of Central and Eastern Europe.

1974 - 1978

Vice President of the *International Working Group on Ecostratigraphic Project* for the *International Geological Correlation Programme* (IGCP).

1974 - present

President, All Union (Russia) Paleontological Society.

F. Moscow 1975/1976 to 2012

Moscow, Presidium of the Academy of Sciences, Paleontological Institute: colleagues A.P. Vinogradov, M.V. Keldysh (Department of Earth Sciences), participation in *International Stratigraphic Commission*, *Paleontological Society.*

1975 - 1990

Major Event

Founded and remained Head of the Laboratory of Precambrian Paleobiology, Paleontological Institute, Russian Academy of Sciences (Moscow).

1975

Initiated the establishment of the first State-Protected Geologic Park, in the Kitab region of Uzbekistan.

1975

Chief, from 1975 – onwards, Scientific Consultant for the Department of Paleontology and Stratigraphy of the Institute of Geology and Geophysics of the Siberian Section of the Academy of Sciences, of the USSR/ Russian Federation.

Awarded Jubilee Medal Thirty Years since the Victory in the Great Patriotic War 1941-1945.

Awarded Memorial Medal of the Siberian Division of the Academy of Sciences of the USSR on occasion 250th Anniversary of the Academy of Sciences in Russia.

Boris Sokolov, Akademgorodok, 1977









Presented report on *The Organic World of the Earth During the Phanerozoic Radiation* at a special session of the USSR Academy of Science on the occasion of the 250th Anniversary of the Russian Academy of Sciences.

Participated in the organization and implementation of the *International Congress on Geology and Stratigraphy of the Carboniferous* (Moscow).

Participated in *International Symposium on Precambrian Correlation* (Moscow); presented lecture: *Stages of Development of the Precambrian Biosphere Based on Palaeontological Data.*

Delegation Leader, mission to Australia of the Russian Academy of Sciences to initiate discussions on long-term cooperation with Australian scientific institutions in the earth sciences. Presented lectures on Russian paleontology in Sydney, Adelaide, and Canberra. Visited Melbourne and travelled with senior geologist Norman Fisher to many sites around Australia, including mines in northern Australia (Mt Isa) and Ordovician sequences around Alice Springs.

Sent on mission to Poland invited by the Polish Paleontological Society and gave a lecture entitled *Ecostratigraphy*.

1975 - 1990

Elected Academic Secretary, *Division of Geology*, Geophysics and Geochemistry, *USSR Academy of* Sciences and Member, *Presidium*, *Academy of Sciences* of the *USSR*.

1975 - 2011

Member, Bureau of the Soviet Committee of the International Geological Correlation Programme (now the National Committee).

1976

Attended 25th International Geological Congress, Sydney; presented paper on Metazoa of the Precambrian and Cambrian/Precambrian Boundary.

Sokolov in field, Uzbekistan, 1979





Sent on mission to Bulgaria for 3rd Conference of the Consultative Paleontological Commission of Socialist Countries of Central and Eastern Europe; presented a report and a lecture at Sofia University and participated in geological field excursions.

Sent on mission to Kazakhstan for familiarization with the work of the Kazakhstan Academy of Science and participation in the field trip to Kara-Taw.

1976 - 1981

Scientific Consultant for the Comprehensive Edition of the Soviet Encyclopaedia (Geology Section).

1976 - 1991

Member, Soviet for Coordination of Scientific Activities of the Academies of Sciences in the Republics of the USSR, Presidium, Academy of Sciences, USSR.

1976-1988

Chairman, *Interdepartmental Stratigraphic Commission of the USSR*. From 1988 onwards, served as the Honorary Chairman.

1976 - present

Member, *Commission of Experts*, Presidium, Academy of Sciences of the USSR, *for the A. P. Vinogradov Award*.

1977

Awarded *Jubilee Medal* on the occasion of the 60th anniversary of the Great October Revolution.

Elected Honorary Member of the *Bulgarian Geological Society*.

Elected Member of the *International Society for the Study of the Origin of Life (ISSOL)*.

Attended 5th International Conference on Origin of Life in Japan; presented a lecture entitled Precambrian Palaeontology Research in the USSR.

Boris Sokolov, in field, Zolotitsa, White Sea region, 1978









Attended the 1st International Symposium on Graptolites where Sokolov proposed that an organization of researchers on graptolites should be founded (Poland).

Sent on mission to Ufa to gain understanding of the activities of the *Bashkir Branch of the Academy of Sciences of the USSR*; presented a report entitled *The Vendian: Principles of Substantiation, Boundaries and Position in the Stratigraphic Time Scale.* Took part in a helicopter trip with the President of Academy of Science of the USSR, Academician A. P. Aleksandrov, to survey oil deposits of Western Siberia.

Chairman of the First International Consultative Conference on the General Questions of Stratigraphy held in Alma-Ata.

1977 - 1982

Deputy Chairman, Subcommission on Natural Resources, Their Traditional Utilization and Environment in the Commission, Academy of Sciences of the USSR program on Technical Progress and its Social and Economic Consequences.

1977 - 1984

Chairman, Commission of Experts of the Presidium of the Academy of Sciences of the USSR for the awarding of the Gold Medal and Prize named in honour of V. I. Vernadsky.

1977 - 1986

Member, Commission for International Scientific Connections (Relations) of the Presidium of the Academy of Sciences of the USSR.

1977 - 2007

Chairman, *Commission of Precambrian Paleontology*, Scientific Council Academy of Sciences of the USSR/Russia.

Member, Editorial Board of many volumes of *The Geological Structure of the USSR and Its Fossil Resources*.

Yu. I. Tesakov, Vilnius, 1980





Leader of Soviet Delegation to England for the International Symposium on Devonian System; presented a lecture Trends of Ecostratigraphy Research and International Connections.

1978 - 1982

Chairman, Organizing Committee for the International Congress of Scientific Leaders of Precambrian Paleontology and Biostratigraphy (Geobiology).

Deputy Chairman, *World Ocean Problems Commission* of the Presidium of the Academy of Sciences of the USSR.

1978 - 2007

Chairman, Editorial Board for the Year Book of the All-Union Paleontological Society.

1979

Received *Karpinsky Gold Medal* from the Presidium of the Academy of Science of the USSR.

Elected Honorary Member, *All-Union Palaeontological Society*.

Participated in the *14th Pacific Science Congress* in Khabarovsk; presented lecture on ecostratigraphy.

Chairman, Organizing Committee, Presidium of the Academy of Sciences of the USSR for the 90th birthday of Academician D.V. Nalivkin.

Sent on mission to England for an *International Geological Correlation Programme* on Ecostratigraphy; presented a lecture on current problems in Silurian stratigraphy.

Leader, Soviet Delegation to Poland for the *3rd International Symposium on Fossil Corals*.

Official visit to the Academy of Science of the USSR Kamchatka for evaluation of research by the Institute

B.S. Sokolov & M.P. Boucout, Estonia, Gotland. (H. Blomberg)









of Volcanology; carried out helicopter survey of the volcanoes in this region.

Official visit to Sverdlovsk conducting session of *All-Union Palaeontological Society*; presented report on current problems in palaeontology and stratigraphy concerning development of mineral resources of the Ural Mountains.

1979 - 1986

Member, Soviet National Committee of the Pacific Science Association.

Chairman, Editorial Board of monthly magazine *Man and Nature*, published by the of All-Union Society *Knowledge*.

Member, *Scientific Council* of the Academy of Science of the USSR on evolutionary biochemistry and origin of life.

1979 - 1991

Chairman, Earth Sciences Section, Commission for Achievement in Science and Engineering, Presidium of the Academy of Sciences of the USSR and the State Scientific–Engineering Committee.

1979 - present

Member, Commission of the Moscow Writers Association for the Literary Heritage of I. A. Efremov.

1980

Deputy Leader of the Soviet Delegation to France for the 26th International Geological Congress and the General Assembly of the International Paleontological Association; presented lectures entitled: Precambrian-Cambrian Boundary: Current Knowledge and The Vendian System of the Precambrian. Took part in conference excursion from Brittany and Normandy to the Mediterranean Sea.

Member of delegation to Spain, representing the Presidium of the Academy of Sciences of the USSR to discuss an agreement on scientific collaboration with Spanish scientific research institutions. Presented lecture at Madrid University and took part in excursions to Catalonia, Andalusia and Toledo.

Boris Sokolov, Moscow, INQUA meeting, 1982





Took part in a mission to Azerbaijan for familiarization of the scientific activities of the Academy of Sciences of Azerbaijan including field trips.

Elected Member, *Moscow Society of Natural Science Researchers*.

1980 - 1982

Chairman, Organizing Committee, Presidium of the Academy of Sciences of the USSR for *Symposium Celebrating the 90th Birthday of Academician N. P. Gorbunov.*

1980 - 1984

Deputy Chairman, Organizing Committee preparing for the 27th International Geological Congress (Moscow).

1980 - 1986

Member, Section on Philosophical Problems of the Natural, Social and Technical Sciences for the Scientific Council of the Academy of Sciences for the USSR.

1980 - 1987

Member, Editorial Board of the series produced by the *Academy of Sciences of the USSR Popular- Scientific Literature*.

1980 - 1989

Member, *Scientific Council* setting up the Kitab State Geological Reserve in the Tien Shan region of Uzbekistan.

1980 - 1990

Convener, International Programme for Correlation of the Terminal System of the Precambrian.

1980 - 2007

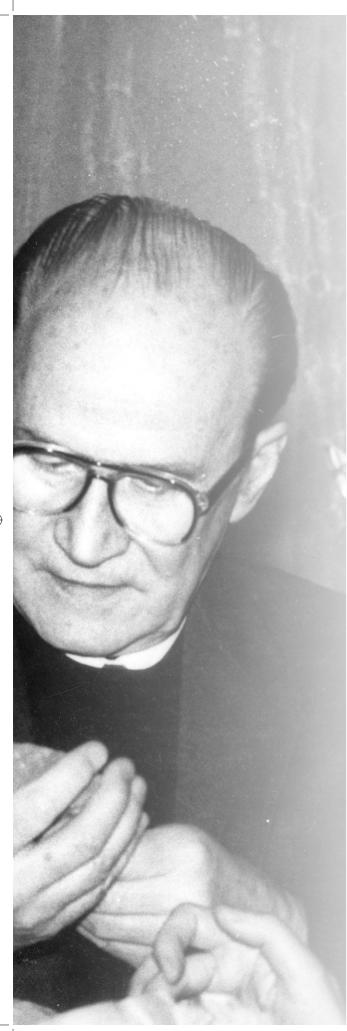
President, and Past President and Member of *Executive Committee of the International Paleontological Association*.











Expedition via helicopter to the Olenek Uplift and Lena River to study Vendian deposits.

1981

Awarded the *Order of Lenin* for achievements under the 10th five-year plan for development of science and technology in the Soviet Union.

Attended the International Symposium *Concepts and Methods in Paleontology* in Spain and presented a lecture entitled: *Vendian Fossil Problems*. Took part in field trips.

Attended the *International Symposium on Silurian System* in Sweden and took part in field trip to Gotland.

1981 - 1986

President, *Paleozoological Section, International Union of Biological Sciences*.

1981 - 1987

Member, Committee for the Study of the Earth's Crust, a program of the Pacific Science Association.

1981 - now

Member, Editorial Board for series on scientific heritage, *Academy of Sciences of the USSR/Russia.*

Consultant to the editorial staff compiling the large *Soviet Encyclopaedia*.

1982

Awarded *Medal, Ministry of Geology of the USSR* for work in prospecting, on the occasion of the 100th Anniversary of the Geological Branch.

Awarded honorary title of *Honoured Veteran of the Siberian Division of the Academy of Sciences of the USSR* for his many years of industrial and social work in Siberia, and his active contribution to scientific research in this region.

Elected, Foreign Member, Czechoslovak Academy of Science.

Boris Sokolov examining fossils, China, 1983





President, 11th International Congress on the Quaternary, International Quaternary Association (INQUA) (Moscow); presented the Welcome Address.

1982-1988

M. Gorbachev becomes head of the Communist Party of the Soviet Union and introduces the concepts of Perestroika and Glasnost.

1982 - 1984

Chairman, Commission for the International Congress on Scientific Connections with Mass Media.

Chairman, Commission of the Academy of Sciences of the USSR Highlighting the Scientific Heritage of Academician D. V. Nalivkin.

1982 - 1987

Member, Investigative Commission on Development of Fundamental Research in the USSR and of the scientific technical and socioeconomic analysis of problems, organized by the Presidium of the Academy of Sciences and Engineering of the USSR.

1983

Awarded Honorary Diploma (No 1) of the All-Union Paleontological Society for his outstanding contribution to the new discipline of geobiology, emphasizing Precambrian Paleontology, fundamental paleontological research, and being a true leader in society.

Elected, Honorary Member of the *Geological Society of America*.

Wrote for newspaper *Pravda* first detailed account of the significance of the scientific works of the Academician V. I. Vernadsky, naturalist and thinker.

Organized a symposium on Vernadsky in Moscow, highlighting the achievements of this great Russian scientist.

Boris Sokolov, Yunnan, China, 1987









Participated in a symposium in the People's Republic of China and took part in field trips examining Late Precambrian geology; presented a paper entitled: *The Vendian System in the USSR*. Visited field areas in the Yangtse Basin, with upwards of 20 participants, which involved travel by boat, car, and "aging Soviet equipment," with the purpose of refining terminology in Precambrian sequences.

Participated in an international working group in the UK, part of an *International Geological Correlation Project 29* on Precambrian-Cambrian boundary; presented several lectures including *The Vendian of the Olenek and Its Importance in the Definiton of the Vendian – Cambrian Boundary on the Aldan, The Vendian of the USSR as a Terminal System of the Precambrian*, and *The Stratigraphic and Paleontologic Interpretation of the Charnwood Fauna of Central England*.

Assisted in organization of meeting and associated field trip for the *International Symposium on the Stratigraphy of the Silurian System* held in Kiev, Podolia.

1983

Elected Honorary President, *International Association of Fossil Coral Research* (Washington, DC).

1983

The Novosibirsk Report of sociologist Tat'yana Zaslavskaya criticized the central control of government as a fetter on production and noted the need for decentralization, incentives and stimulation of individual initiative (Miala, 1994).

1983 - 1981

Chairman, Soviet National Research Group on Comparative Research Concerning Ancient and Modern Reef Systems.

Marina Gnolovskaya, Yunnan, China, 1987





Awarded the title *Hero of Socialist Labour* with investiture of the *Order of Lenin* and *Gold Medal Hammer and Sickle* for outstanding service in geological science and training of scientific personnel, on the occasion of his 70th birthday.

Awarded *Breastplate* from the Ministry of Geology of the USSR of *Honorary Prospector*.

Awarded a *Breastplate* by the *All-Union Society Knowledge* for outstanding work.

Awarded by Ministry of Geology of the USSR an Honorary Diploma and Gold-Numbered Badge at the 27th International Geological Congress.

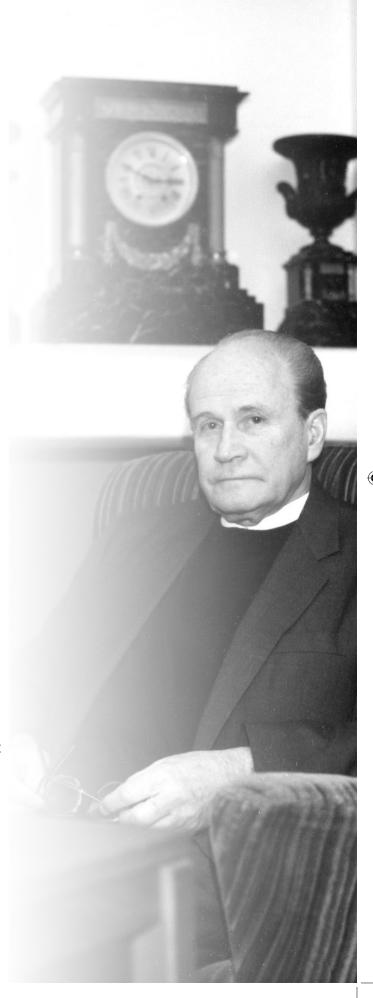
Member, Soviet Organizing Committee for the 27th International Geological Congress on the History of Science to be held in the USA. Participated in 27th International Geological Congress and General Assembly of the International Paleontology Association (Moscow); presented lectures entitled The Vendian System: Its Position in the Stratigraphic Scale and The Organic World of the Vendian Period.

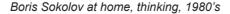
One of initiators of international programme on global events in Earth history.

Sent on mission to Lvov to chair a combined colloquium of paleontological societies within the USSR and the Ukraine; gave a series of lectures.

Prepared a report on geological sciences in China for the *Presidium of the Academy of Sciences of the USSR*.

Chairman, working group for Presidium of Academy of Sciences of the USSR, *International Programme Global Change*, a multidisciplinary geosphere-biosphere project of the *International Soviet of Scientific Unions*.









1984 Rybakov's Children of the Arbat first published.

1985

Elected Honorary Member of the *Geological Society of London*

Member, Organizing Committee of the Academy of Sciences of the USSR for the *Symposium Honouring the* 250th Jubilee of M. V. Lomonosov.

Chairman, *Scientific Council of All-Union People's University of the Biosphere* named after V. I. Vernadsky.

Sent on mission to Armenia and Nakhichevan for familiarization with the work of geological organizations, participated in an excursion to border district with Iran.

Sent on mission to Czechoslovakia at the invitation of the Czechoslovak Academy of Science. Took part in an international commission Geosynclinal Processes and Formation of the Earth's Crust, including associated field excursions.

Major Milestone

Published monograph *The Vendian System. Paleontology and Geology*. In 2 volumes, co-editors A. B. Iwanowsky, M. A. Fedonkin.

1985 - 1988

Gorbachev held a series of meetings with USA President Ronald Reagan – 1985 in Geneva, 1986 in Reykjavik. Russia withdrew from Afghanistan, Angola, Ethiopia, Cuba, and signed the INF (Intermediate-Range Nuclear Forces) Treaty limiting further warhead deployment; end of the Cold War.

1986 Chernobyl atomic power plant disaster.

Boris Sokolov and M. Styrikovich, Moscow, 1989





1985 - now

First Deputy Chairman and (from 2001) Member of the Commission of the Academy of Sciences of the USSR Considering Scientific Contributions of Academician V. I. Vernadsky.

1986

Elected Foreign Member of the Academy of Sciences of the German Democratic Republic (DDR).

Leader of Soviet National Working Group of the International Geological Correlation Program (IGCP) to the German Federal Republic for the Wegener Conference on Global Biological Events in Earth History; and presented a lecture entitled Bio- Events.

Participated in organization and launch of the *Institute* of *Problems of Minerals, Oil and Gas* for the Academy of Sciences of the USSR in cooperation with Ministry of Education.

Wrote protest document to Presidium of the *Academy* of *Sciences of the USSR*, and to the press, condemning the construction of the Neva Dike, the Rzhevsk Dam and the canal of the Volga-Chagry.

Sent on mission to Vladivostok for the inauguration of the Far-Eastern Division of the Academy of Sciences of the USSR.

1987

Elected Honorary Member, Canadian Geological Society of Petroleum Engineers.

Decorated with Veteran of Labour Medal (USSR).

Took part in the organization of the association of *Greenpeace Russia*.

Presentation to the Moscow House of Writers: *I. A. Efremov as a Scientist and a Writer of Science Fiction.*Appointed Editor-in-Chief for the publication *A Practical Guide to the Microfauna of the USSR* (9 volumes).

Russian team at Charnwood Forest, UK, 1991







Sent on a mission to Sverdlovsk, the *Urals Division of the Academy of Science of the USSR*.

Participated in the International Symposium on the Terminal Precambrian System and presented a paper entitled Terminal Precambrian System, a Problem of Selection of the Stratotype. Presented lecture at Peking University (Bei Da) and took part in a field trip on the Yangtze-River and neighbouring mountain terranes with Chinese colleagues including Shen Yu Shen and Sun Wei Guo, the latter from Nanjing.

1987 - 2011

Member, Bureau of the Commission of the Academy of Sciences of the USSR concerned with ecological problems. Leader, Section on Evolution of Biosphere.

1988

Sent on mission to Bulgaria and Czechoslovakia to present lectures on V. I. Vernadsky in connection with preparations for the celebration of the 125th birthday of this famous Russian scientist.

1988 - 1992

Editor-in-Chief, Geological Series of the Proceedings of USSR Academy of Sciences.

1989

Took part in the meetings of the USSR Council of Ministers concerning development of gas deposits on the Yamal Peninsula.

Chairman, Commission of the Academy of Sciences of the USSR for the 100th birthday of Academician D. V. Nalivkin.

Chaired meeting of *Bureau*, *Division of Geology*, *Geophysics*, *Geochemistry*, *and Mining* (GEOHI) and other organizations within the *Academy of Sciences of the USSR* related to the earthquake in Spitak (Armenia). Leader, Soviet Delegation to the *28th International Geological Congress* and General Assembly, Washington, DC, USA.

Karpinsky Award, Moscow, 1992







Assisted in the setting up International *Fund of Roerich* (Moscow) and became Member of the Board of this fund.

1989 - present

Member, National Committee of the Academy of Sciences of the USSR on the International Geosphere/ Biosphere Program.

Member, Board of the magazine *Ekos*.

1989

Fall of the Berlin Wall. Tienamen Square protests in China.

1990

Published English translation of *The Vendian System. Paleontology and Geology* (2 volumes).

Participated in the organization of 1st International Conference on Evolution of Biosphere and in accompanying field trip to the Black Sea (Crimea, Limanchik).

Took part in the Plenary Session of the Stratigraphic Committee of the USSR considering acceptance of the Stratigraphic Codex of the USSR (Leningrad).

Sent on a mission to England and Finland for discussion of *International Geological Correlation Project 216* entitled *Important Biotic Events in Earth History*.

1990 - 1995

Member, *Plenum of the All-Union Certifying Commission* (USSR).

1990 - 2011

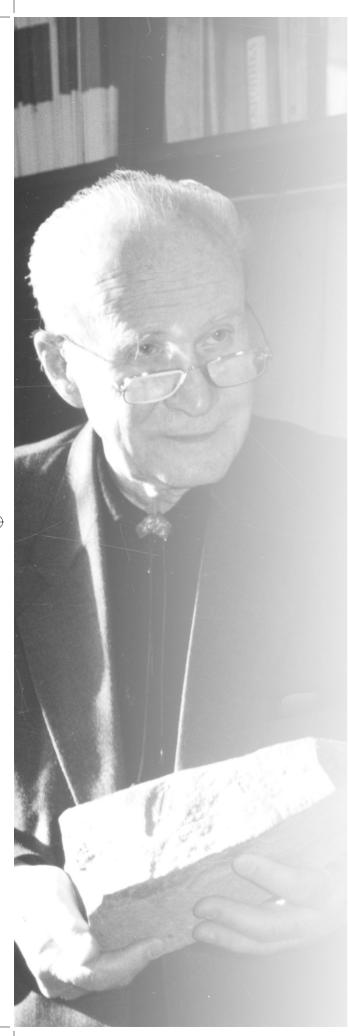
Councillor, *Presidium Russian Academy of Science*. Consultant-Councillor, Paleontological Institute of the Russian Academy of Science.

Dima Grazhdankin, Moscow, 2002









With the disintegration of the USSR, Sokolov suggested to return its original name to the Russian Academy of Sciences, and spoke against the expansion of the Academy and creation of new academies. Became one of the founders of the current Russian Academy of Sciences.

On *Organizing Committee, Presidium of the Academy of Sciences of the USSR* for a meeting dedicated to the 100th Anniversary of Academician O. Yu. Shmidt.

1991 Gorbachev replaced by Boris Yeltsin, 25 December.

1992

Awarded *International Karpinsky-Schweitzer Prize* and *Karpinsky Meda*l by the A.Tepfer Fund (Hamburg).

Awarded *Carl von Ber Medal* for achievements in the natural sciences and organization of scientific investigations by the Presidium of the Estonian Academy of Sciences.

Elected Honorary Member of the *Russian Academy of the Natural Sciences*.

One of the founders of the *Rumyantsev Library Society*, with the Russian State Library (Rossiyskaya Gosudarstvennaya Biblioteka, RGB).

1993 - present

Founder and Editor-in-Chief of the magazine *Stratigraphy* and *Geological Correlation*. Published by Russian Academy of Sciences since 1993 in Russian and English.

Member, Bureau, Division of Sciences of the Earth of the Russian Academy of Sciences.

Member, International Union of Concerned Scientists.

Member, Scientific Council - Problems of Palaeobiology and Evolution of the Organic World.

Boris Sokolov, Precambrian Lab, Moscow, 2003





Department of General Biology, Russian Academy of Science

1994

Presented lecture at the International Conference entitled: *Philosophical and Artistic Heritage of N. K. Roerich and Problems Facing Contemporary Civilization* (St. Petersburg).

Published article entitled *The Russian Academy of Sciences and its Historic Responsibility to its Own People*. This had broad resonance in Russia.

1994 - present

Member, Editorial boards of the Russian Academy of Science series on *Scientific Heritage, Science, World Outlook, Life, Scientists of Russia*

Member, Museum Council, Russian Academy of Sciences.

Member, Scientific Council, Russian Academy of Sciences for the Protection of Cultural and Natural Heritage.

1995

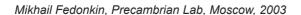
Awarded *Jubilee Medal* on the occasion of 50th anniversary of the Victory in the Great Patriotic War 1941-1945.

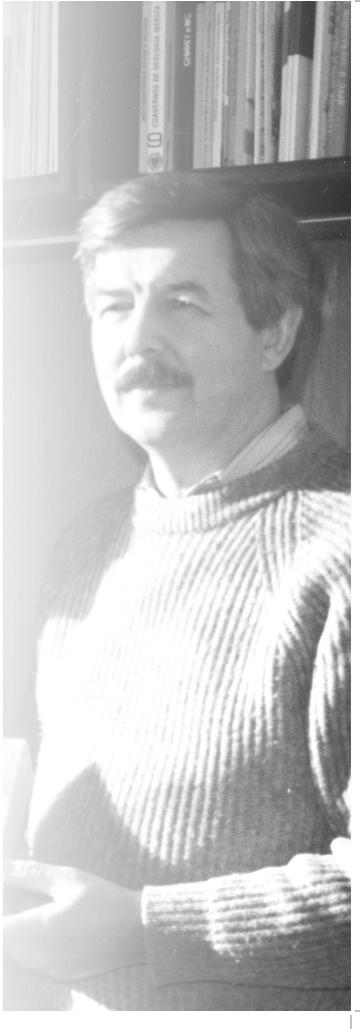
Took part in the international conference dedicated to the 60th anniversary of the Roerich Pact (Moscow) and presented a lecture entitled *Let Us Protect Culture*.

Presented lectures on contributions of M. E. Yanishevsky and A. A. Stukenberg at a scientific conference held at the University of Kazan.

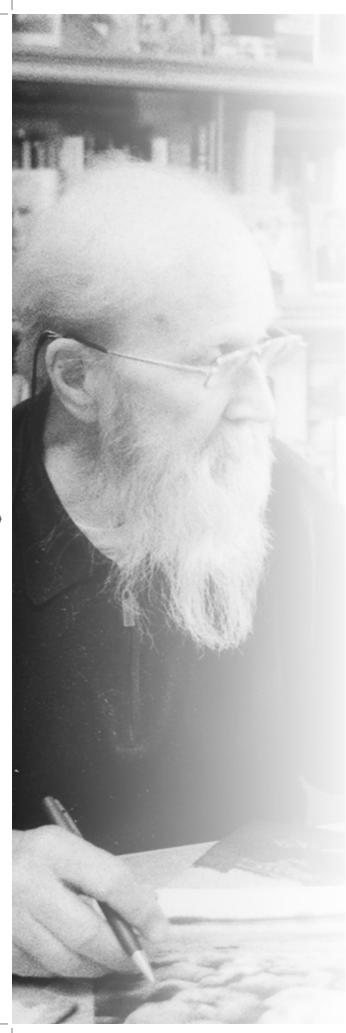
1995 - present

Member, *Academic Council*, *Vernadsky State Geological Museum* (named after V. I. Vernadsky).









Awarded *Memorial Silver Medal of P. L. Kapitsa* by the Russian Academy of Natural Sciences with *Diploma of Russian Academy of Natural Sciences* for discovery of the Vendian System.

Presented speech at meeting of the Presidium of the Russian Academy of Sciences critical of the treatment of the Academy of Sciences by the Russian Government and made some recommendations for the future.

Mayor of Vyshny Volochyok invited Sokolov to take part in the scientific conference dedicated to study of Vyshnevolotsky district, made concluding remarks.

Took part and presented lecture at the *International* Conference on the Spiritual Image of Russia Reflected in the Philosophical and Artistic Heritage of N. K. and E. I. Roerich (Moscow).

1997

Awarded the *M. V. Lomonosov Gold Medal* by the *Russian Academy of Science* for notable achievements in his research on the Earth's earliest biosphere, definition of the Vendian System and his classical work on fossil corals.

Took part in meeting of the *Presidium of the Russian Academy of Sciences* on the state scientific-technical program on *Global Change of Environment and Climate* (Moscow).

1998

Member, Commission of the Russian Academy of Sciences for the Commemoration of the 275th Anniversary of the Founding of the Russian Academy of Sciences.

1998 - present

Member, Commission of the Russian Academy of Sciences to Combat Pseudoscience and Falsification in Scientific Research.

Boris Sokolov at home, Moscow, 2007





Elected Honorary Member of the *Academy of Mines* (Russia).

President of the Russian Federation and President of the Russian Academy of Science officially expressed their appreciation for Sokolov's contributions to science in connection with 275th Anniversary of the founding of the Academy of Sciences.

1999 Vladimir Putin replaced Yeltsin.

1999 - present

Member, Commission for Selection of Recipients of Gold Medals and Prizes Named After Outstanding Scientists awarded by the Russian Academy of Science.

Member, Coordinating Council of the Russian Academy of Sciences for Earth Sciences.

2000

Awarded *Ministry of Industry and Technology of the Russian Federation Silver Medal* on the occasion of the 70th Anniversary of the All-Union Oil Scientific Research of the Geological-Prospecting Institute.

School Leader, Biodiversity of the Neoproterozoic and Early Palaeozoic during Formation of Ancient Ecosystems and Stratigraphy.

2001 - 2011

Member, *Trustee Council of the Charitable Trust of Roerich's Heritage*, based at St. Petersburg State University.

2003

Awarded national *Prize Triumph Laureate in Science* and *Diploma* and *Gold Medal* by the *Independent Charitable Fund Triumph-New Age*.

2004

Elected Honorary Member, *Azerbaijan and Ukranian Paleontological Societies*.

Precambrian Laboratory, PIN, window to outside world, Moscow, 2008









Named Honorary Citizen of the Vyshne Volochyok District.

Received congratulations from the President of the Russian Federation, Vladimir Putin, in connection with his 90th birthday!

First volume of selected works of Sokolov published: *Among the the Earth and Life Sciences*. [in Russian]

2005

Awarded Nikolai Roerich Prize.

Second Edition in the series *Bibliographies of Scientists* of the Russian Academy of Sciences – Boris Sergeevich Sokolov published.

2006

Second volume of selected works, *Sketches About Science and Scientists: Scientific Essays*, published.

Awarded Gold Medal of the Russian Fund for Peacemaking and Philanthropic Activities.

2007

10th International Symposium of Fossil Cnidaria and Porifera held in St. Petersburg was dedicated to B. S. Sokolov.

Participant, International Conference *The Rise and Fall of the Vendian (Ediacaran) Biota. Origin of the Modern Biosphere*, Moscow, Paleontological Institute, Russian Academy of Sciences, *Conference of IGCP Project 493*.

2008

Presented report *Biosphere as a Geomerida, Revival of Concept of V. N. Beklemishev at the Annual Meeting of the Russian Paleontological Society* in St. Petersburg.

Sokolov's 50th anniversary of membership in the *Russian Academy of Sciences* (USSR).

Presented first report on V. I. Vernadsky's Principle of the Eternity of Life and the Age of the Earth.

Birch trees. Moscow. reminder of Berezki, childhood home





Editor-in-Chief of book *Our House on Zvenigorodskaya* Street [Nash dom na Zvenigorodskoi] in the series Materials for the History of Science in the USSR – Russia.

Published report on *200 years of Stratigraphic Paleontology* on the occasion of the 200th anniversary of Charles Darwin's birth – entitled *Biostratigraphy and Biosphere Evolution*.

Awarded *Medal of Academician A. A. Borissyak* for *Progress in Development of Paleontology* and the *VNIGRI* (All Union Petroleum Research Exploration Institute) *Medal* on the occasion of the 80th anniversary of the first petroleum institute in the USSR (St. Petersburg).

2010

Prepared reports on geologic and paleobiospheric time for the *Annual Meeting of the Russian Paleontolgical Society*, St. Petersburg and for the *Symposium on Evolution of Life on Earth* in Tomsk, Russia.

2011

Prepared report for Annual Meeting of the Russian Paleontological Society, Paleontology of the Precambrian and Acro-Chrons of Biospheric Evolution, St. Petersburg.

Prepared report for International Conference on Neoproterozoic Basins, Chronostratigraphic Space in the Lithosphere and the Vendian as a Geohistorical Subdivision of the Neoproterozoic, Novosibirsk, Akademgorodok. Part IGCP Projects 512 and 587.

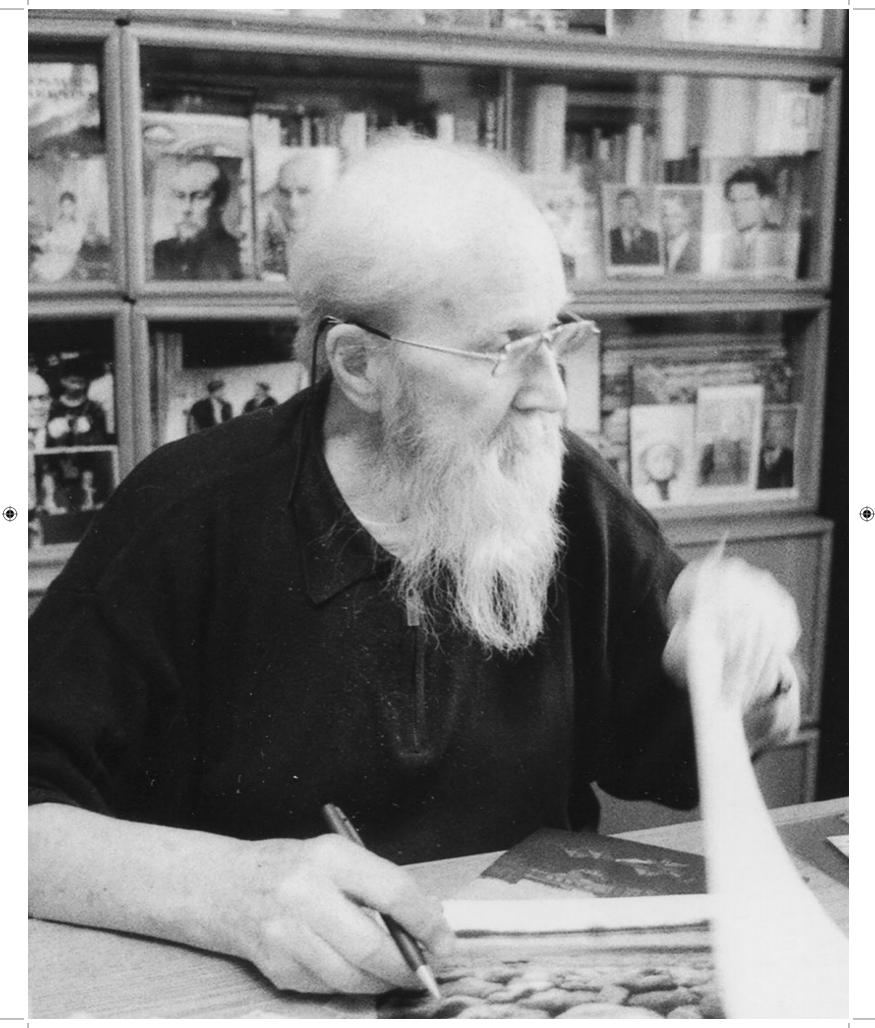
Published paper entitled *The chronostratigraphic space* of the lithosphere and the Vendian as a geohistorical subdivision of the Neoproterozoic.















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(Opposite page) Boris Sergeeich, ongoing research to present (2012).





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Summation of Boris Sokolov by Valentin A. Krasilov:

"Paleontology needs a person like you - like the creatures which populated the Vendian - and whose genes live on in us today. Sokolov, you are: strong, but soft: social, but solitary: easy going, yet demanding: modest, yet powerful: contradictory and enigmatic. Just like the Vendians!"

Translation from a letter during interview with Sokolov, February 2011