

The Beginning

The Childhood

Judging by the date in my passport, I was born on 17 October 1919, but I have a feeling that by mistake I was deprived of thirteen days and in reality it occurred on 4 October. The confusion could have come out of the adoption of the new Gregorian calendar, which happened in the year nineteen hundred and eighteen. My mother told me that I was born on the Jewish holiday of Simchat Torah,¹ the most joyful of celebrations, the conclusion of the annual readings of the book of Torah. Then it is read from the beginning again.

Specifically, for a meticulous reader, who may prefer to double-check dates and facts, I adduce one more “historical” fact. On the day of my birth, the Makhno gangs were entering Ekaterinoslav (the name of the city of Dnepropetrovsk, back then).² My mother grabbed the newborn baby and ran to hide—as it was known that while the bandits could not quite figure out whether they were pro-Whites or pro-Reds,³ from time to time they instituted pogroms, nevertheless.⁴ My mother decided to hide, just in case. And in the turmoil she was carrying me head-down. Probably this very shock played a role in the subsequent development of my mental abilities.

I recall rather vaguely my early childhood; my first clear recollections are already associated with the school. I enrolled into the Ukrainian semirichka, or seven-year school. The official language of this school was Ukrainian. In those days

¹The Jewish celebration of Simchat Torah outside of Israel is on the 23rd of Tishrei. In 1919 (the Jewish year 5680), in the Gregorian calendar, it fell on 17 October.

²Wikipedia currently lists this as 15 October 1919, possibly an error. Anarchist guerrilla bands of Nestor Makhno were independent Ukrainian peasant forces, the so-called Black Army. Here and below the name of the city of Dnepropetrovsk and other Ukrainian locations are given in the Russian transliteration, following the original, unlike Dnipropetrovsk in present day Ukrainian transliteration.

³White Army was mainly comprised of the Russian Tsarist Army headed in Ukraine by General Denikin; Red Army was the Soviet government’s revolutionary forces.

⁴See “The Slaughter of Jews in the Ukraine” by Elias Heifetz, J.U.D., published for the Jewish people’s relief committee of America, Thomas Seltzer, New York, 1921.

most of the schools in our town were Ukrainian schools. The city itself, as I mentioned, was called Ekaterinoslav, and it was renamed into Dnepropetrovsk later, after all-Ukrainian Elder⁵ Petrovsky and not at all after Peter the Great. It has to be mentioned that before the Revolution this Grigory Ivanovich Petrovsky headed the social-democratic faction in Duma,⁶ and then during the Soviet rule he became the Ukrainian equivalent of Kalinin.⁷

Speaking of all-encompassing Ukrainization in those years, we, perhaps, did not feel it at all. If one had to study the Ukrainian language, we studied it. It was not considered to be a disaster, contrary to the present-day way of thinking regarding similar reforms. The Ukrainian language is very sonorous, and it is easy to learn. I studied literature using Ukrainian books. A book by Panas Myrny comes to mind, “Хіба ревуть воли, як ясла повні,”⁸ or, in English, “Do the Oxen Bellow, When Their Mangers Are Full?” I also recall a softcover book about contemporary Ukraine, which was devoted to collectivization⁹ and was entitled “Outposts.” In that book a head of kolkhoz¹⁰ at the end of each speech was addressing his fellow kolkhozniks with words “Tough it out! The plan is real.”¹¹ Since that time, I like this useful expression very much.

In school, I was a bright and zippy boy. Not a hooligan, of course, but zippy. During the lessons, I imagine, I was somewhat bored and was not on my best behavior. Only once in my school years did my mother come to school, and later she told me the following. The teacher said to her that although I was a good boy, I was also a “шкідник.” However, Ukrainian “шкідник” meant pest, saboteur, wrecker,¹² and in those days of 1929 this word was not entirely harmless, as “saboteur” trials were on the rise. Thus, from my youth on up I was reckoned among the saboteur detachment. After that, my mother did not visit the school anymore.

There was a famine in Ukraine in the 1930s. I entered school in 1926, and got my first lesson in hypocrisy already in 1932, when there was Holodomor¹³ in Ukraine.

Imagine a picture of people swollen from hunger, dead and dying, and we, the teens aged thirteen–fourteen, were not only seeing this with our own eyes every day, but, in addition, were not eating as frequently as we would have liked. However, our school lessons in social science were devoted to the advantages of the socialistic

⁵The Head of State.

⁶A Ukrainian parliament with limited powers that existed in the Russian Empire in 1906–1917.

⁷M.I. Kalinin (1875–1946) was a revolutionary and the Head of State of the Soviet Union from 1919 to 1946.

⁸P. Myrny (P. Rudchenko) (1849–1920), a famous Ukrainian writer. The cited book was written ca. 1880.

⁹Soviet collective farming. It shared certain features with Israeli kibbutzim.

¹⁰Head of the collective farm.

¹¹The first word in the original, “Канайте! План реальний,” is a criminal slang.

¹²Similar to “enemy of state,” “enemy of the people,” it was a coined Soviet term, associated with prosecution, exile to labor camps, confiscation of property, etc.

¹³Mass famine in Ukraine when millions died of starvation during peacetime.

system and Soviet way of life. And after each phrase the teacher, addressing hungry children, used to inquire “Are you kids truly filled up?” I had memorized these lessons for life. And until now, when I invite guests, after dinner I sometimes ask “Are you kids truly filled up?”

There was practically nothing to eat until the year 1935. We had a food ration card system. These cards were called “take-away pocket-books.” There was a store, on the corner of our street, in the basement, where one could occasionally get tulka,¹⁴ one kilogram per person, and this was recorded, without fail, in the same very “take-away pocket-book.”

In the year 1935, when Stalin announced that “life had become better and more cheerful,”¹⁵ all the food stores at once received wheat kalaches.¹⁶ That was how it was. I still remember these kalaches: we had not seen such bread until then.

On Social Organizations

Starting from early childhood we were accustomed to socio-political activity. Already in the elementary school I was personally a member of at least three social service organizations and carried their membership cards in my pocket. These were the International Red Aid¹⁷—a red card, which had a label on its cover of a hand extending from behind prison bars, holding a handkerchief. Then it was the Union of Militant Godless.¹⁸ The third one was the society called the Friend of Children.¹⁹ Judging by its name, this organization should have been taking care of kids, but it was confining itself to collecting membership fees from us.

All three organizations were collecting fees. Although they were not under direct government authority, their activity was set up in a very serious manner—every month kopecks²⁰ were steadfastly collected from each of us for all those children and godless ones. Thus, as you can see, the idea of social organizations existed in the Soviet society from the very beginning, and it is not in any way a recent achievement.

As a matter of fact, school education was being continuously reformed in the 1930s. For instance, at one time, the so-called method of team study was introduced.

¹⁴Here raw or slightly salted fish, the so-called Black Sea sprat or sardelle, found in Azov and Black Seas.

¹⁵One of Stalin maxims.

¹⁶East Slavic round wheat breads, traditionally a symbol of prosperity.

¹⁷Russian acronym is M.O.P.R. International political version of Red Cross, which was aiding to the imprisoned captives of capitalism, according to its motto.

¹⁸Russian acronym is S.V.B. A league for combating all religious beliefs, established by the Communist Party.

¹⁹With Russian acronym O.D.D. In 1924–1935, a society aiding to schools, institutions, and organizations in children’s communist education.

²⁰A kopeck is one hundredth of the Russian ruble.

This is what it was. A school class was divided into teams of five to six pupils, and a leader was selected on each team. In my team it was me. The entire team was sitting at one big table. Someone would read out a chapter from the textbook, and subsequently an exam was passed on the covered material. It was the team leader who was taking the exam, but the entire team shared the grade.

The seven-day week did not exist in those days. The educational system and many others were subject to constant reorganizations. At first, there was a five-day week, such that every fifth day was the weekend. Then it was replaced by a six-day one.

I also remember that in the year 1932 the First Rifle Pioneer Battalion was suddenly organized in our elementary school, and most likely, in others too.²¹ All pupils, from the fifth grade on were recruited into this battalion. It was headed by an entrepreneurial young man, apparently sent over from the Komsomol District Committee. Furthermore, the battalion had an instructor from the military. This military instructor unexpectedly appointed me as a chief of staff of this pioneer battalion. It was very strange for me, since I was not at all athletic-looking, but a rather frail and skinny boy, who did not participate in sports and did not take the lead. The instructor's motivation when appointing me back then was unclear to me. Why did he select me out of a hundred children? How did he realize that I had the leadership qualities that at the time I did not suspect about myself? I had never tried to assume any kind of leadership position and, in general, did not put myself out, yet nevertheless at different stages in my life, this way or that, I would find myself in such a position, sometimes unexpectedly for me. That is why it is quite obvious to me that people do not become leaders, i.e., this quality could not be learned. One has to be a born leader. I think that the managerial talent, among other things, consists namely of one's ability to timely recognize these leadership qualities in a person, and only in one person, out of many. Now, situation permitting, one then has to develop these qualities in the needed direction. Or, alternatively, suppress them.

Thus, my leadership abilities already came out in the middle school, which is fairly early. In my subsequent life, I never liked meetings, nor speeches, especially empty and senseless ones. That is why, probably, I have not become a politician. It is hard to imagine politics without such speeches.

I remember some cultural activities conducted in school, such as a "cultural outing" to a bath house, for example. On a weekend day, the entire school would line up by class and proceed to washing in a bath house with drums and banners.²² Luckily, the bath house was not too far away.

Of course these are nothing but details, yet it seems to me that they convey the color of that epoch sufficiently clear. As we now know, it was not only a difficult, but also a fearful time.

²¹The enrollment of third graders into the Young Pioneer organization was mandatory in the Soviet Union.

²²Marching of pioneers in those days usually took place in formations, with drums, bugles, and banners.

At the beginning of the 1930s, the authorities were carrying out the so-called membership purges.²³ It was a major political process, or rather a number of processes. They were described in detail, in all of the newspapers. I was regularly reading the reports of these trials and memorized, in fairly good detail, many of the passages that were attracting my attention.

There were trials and unavoidable arrests. Luckily, there were not too many of them around me, however, I remember that a neighbor, a rather high-ranked military man was arrested in our courtyard. In relation to present-day ranks, he was probably a Lieutenant-Colonel, his epaulets had two stripes.²⁴ I do not remember any particular reaction following that arrest: it was accepted as a fact. We knew that a neighbor was arrested, and that was all. There was no talk about it, challenging the correctness of the actions by authorities was out of the question.

Regarding trials, I also recall the trial of marshals. I especially kept in mind Tukhachevsky,²⁵ who was accused of seditious words, specifically, if he had had three musketeers, he would have captured the Kremlin. This phrase impressed me greatly back then, and I appreciated and memorized it. Nevertheless, in my subsequent life I convinced myself, more than once, that to achieve something serious, it is enough to have just one musketeer instead of three. To tell you the truth, even this single musketeer is rather hard to find, so that Tukhachevsky's demands were strongly overstated. Three musketeers is an impermissible luxury, but if you have even one, great deeds could be accomplished.

I used to search for and find such musketeers for myself, and I will come back again to this topic in my stories. In fact, in academic circles, Yu.B. Khariton²⁶ was one of them. To my understanding, a musketeer is a person who could make it to such places and levels where, for some reason, you do not have access yourself or cannot get to. But if you have a good idea or scenario, the musketeer will carry it there, and with his help one can achieve great results. The main thing is that the musketeer ought to have a good scenario. And, if he is a real musketeer, he will literally accomplish it. That is, he will call a certain place at a certain time, or meet with a specific individual and communicate to him what is needed.

In the Academy of Sciences²⁷ one could do a lot of socially useful things with the aid of such a musketeer. I was always lucky with this. I frequently had many different interesting ideas and I liked to develop the ways of implementing them. My chess skills provided a real help.

²³The so-called Stalin's Great Purge.

²⁴Two "railway ties" or "sleepers", *шпалы* in the original.

²⁵M.N. Tukhachevsky (1883–1937) was a Soviet marshal, chief of the Red Army. See: Victor Alexandrov "The Tukhachevsky Affair." Translated from the French by John Hewish. Prentice-Hall (Englewood Cliffs, NJ), 1964. According to A.N. Orlov, a coup d'état was indeed planned when it was discovered that before 1917, J. Stalin worked in the Tsarist Russia secret service.

²⁶Yu.B. Khariton (1904–1996) was a Soviet theoretical physicist, one of the designers of nuclear weapons.

²⁷Here the Soviet or Russian Academy of Sciences. Unlike in the Western world, this organization is by far more powerful than any research institute or university. The latter always indicate their affiliation with the Academy.

If one were to return to the Stalin Purges and the related question of personality formation . . . Beginning from a certain moment, I would already observe and understand that all these trials are some kind of theater. What I was lacking is the skill and internal courage to evaluate them properly and to condemn them at the time they were occurring.

Even for myself, I could not clearly formulate my attitude toward things happening around me, although by the onset of the War,²⁸ I was quite grown-up and a seemingly intelligent individual. Of course, human beings naturally tend to think. These could be childish and immature thoughts, but in order to become a fully valued personality, it is important, I am convinced, even imperative, for a person to meet his teacher or guru. There are very few people who are themselves capable of making a proper self-assessment. Every person needs a teacher, and who plays role of such teacher in one's life might be completely unimportant. This could be an older family member, a comrade, a lecturer or instructor—it does not matter. I had to meet Landau²⁹ for that. He was the one who gave me my first lessons in self-consciousness. After a month of close association with him and discussions on various topics, including ongoing events, my eyes had literally opened up. I learned to critically perceive and evaluate everything that was happening around me.

It Is Beyond Your Wit

Having graduated from the seven-year school, I wanted to apply to the Institute of Chemical Technology³⁰ but was too young for that. So I decided to apply to the Institute through *Rabfak*.³¹ By the rules during those years, after studying in the *Rabfak* for nine months, I could have applied to a college. But I would have had to have a job, so I got a job as a turner,³² but that did not last long. I applied to *Rabfak* at age fourteen, however, I found out that I was yet too young for that as well. Since I was not admitted to *Rabfak*, my job as a turner was not needed either. In that year, 1933, a ten-year school opened in Dnepropetrovsk, and that is where I ended up.

The teacher of physics at that school stood out in a way . . . In fact, he stood out in many ways. His nickname was “Stomper.” When he was approaching the classroom, his steps were heard from afar, especially if he was late for a class, which was quite often. In those years we were captivated by the books of Perelman³³ and problems for entertainment, and once in a while used to ask Stomper questions from these

²⁸Here and below the author refers to World War II.

²⁹L.D. Landau (1908–1968) was a prominent Soviet theoretical physicist, with major contributions to many branches of physics.

³⁰The author refers to the Dnepropetrovsk Institute of Chemical Technology.

³¹The workers' faculty, an educational facility to prepare workers for colleges.

³²An operator of a turning machine for reshaping cylindrical details.

³³Ya.I. Perelman (1882–1942) was a science writer, an author of many “science for entertainment” books.

books. Most likely, he did not know the answers, but this fact never embarrassed him, because he had a universal answer to such questions: “It is beyond your wit.” This is in general a very good answer, and I would recommend everyone to adopt it. Nevertheless, it might be that this very phrase awoke my interest in physics.

Here is more from my school memories. It was the year 1933. One day we had a chemistry lesson at the high school. Suddenly, the door opened, and another teacher shouted to our teacher, “Fanya Abramovna, the store sells potatoes!” Our teacher collected her books and ran off. This ended the lesson.

The school was easy for me. Nearing the ten-year graduation, it turned out that straight-A students could enter colleges without exams. And there I had a problem. Since I attended a Ukrainian school, my Russian was not very good. But with the help of a textbook of Russian dictations I learned the grammar rules like one learns exact sciences, wrote all dictations, and in half a year obtained the needed A in Russian language. This provided me with the exam-free admission to the University.³⁴

Nevertheless, another environment, not the school one, had a greater influence on me. I attended the House of Young Pioneers³⁵ and played checkers. Soon I became the regional champion in checkers. At the time, Isaac Boleslavsky was the regional chess champion. Together we were leaders of the school chess and checkers team. We attended tournaments and once even participated in all-Soviet school tournament in Moscow. This was the year 1935. Our team from Dnepropetrovsk won a relatively high place at that tournament. Later, I played at the adult tournaments, and the peak of my career was the participation in the 1939 Masters Tournament held in the city of Ivanovo.³⁶ This was a *Spartak*³⁷ championship. There I met a great Russian checker player Vladimir Sokov.³⁸ Of course, I lost to him, but afterwards the game was included in all textbooks on Russian checkers.³⁹ The grand master, Sokov, perished near Leningrad⁴⁰ at the beginning of the war.

Here is more from strong childhood memories, which influenced my choice of a profession. At the same House of Young Pioneers, where I used to loiter and play checkers, I had a meeting with a professor from the Institute of Chemical Technology. I was then a seventh grader, and I remember how this professor, with a highly intellectual face, so drastically different from my school teachers, made a profound impression on me by his personality. I had not seen such a person before that. Within the circles where I lived, people were not particularly educated. The professor, while lecturing on achievements made in science and technology, greatly impressed my imagination, and I decided to become a professor myself, like him.

³⁴The author refers to what is now known as the Dnipropetrovsk National University.

³⁵A place for after-class activities.

³⁶A textile capital of Russia, about 150 miles east of Moscow.

³⁷First and largest of the All-Union Voluntary Sport Societies.

³⁸This author probably means Vassily Alexandrovich Sokov (1912–1944), the author of innovative checker openings. V.A. Sokov was killed in World War II near the Estonian city of Narva, about 100 miles west of Leningrad (St. Petersburg).

³⁹Unlike the international checkers, the Russian checkers are played on the 8 × 8 board.

⁴⁰The former north capital of Russia, St. Petersburg was named Leningrad in 1924–1991.

Mathematical Olympiads played an important role in my education. It began in the 1930s, when I was an eighth grader. I was successful at the regional Olympiads, won first place many times, and became the champion of the province⁴¹ in the tenth grade. This is how I met the University mathematics professors who supervised these Olympiads. One has to say that at that time, a child's success was the major source of a parents' pride. I remember that my success in the Olympiads was reported in the local newspaper "Dawn." While the city was not great, everybody knew me and envied my mother. My mother was very proud of me.

Here is how we lived. We lived on one of the main streets in the city, Lenin Street. It climbed uphill from the major Karl Marx Street. Our house was one story high, with two wings, the main one and the other smaller one. They were connected by an arc of a sort on which it was written, "Not for billet."⁴² General Silchevsky lived here before the Revolution.⁴³ Naturally, I had never seen him. The house was divided into communal flats, and we got the living room, which was big, with three windows to the street. Before the War, my father, mother, my sister Rebecca, and I all lived in this room. One has to say that living in the crowded place did not represent a special problem or inconvenience. Each one was busy in their assigned corner, either working or studying. I only remember that my mother did not like much to stoke the stove, and in the winter I was studying in a sheepskin coat and *valenki*.⁴⁴

My mother's name was Tauba Davydovna, and our acquaintances called her Tatiana. My father's name was Meir Isaakovich.⁴⁵ I knew my relatives from my mother's side. Before the war they also lived in Dnepropetrovsk. My father's relatives lived somewhere in the Kiev province, and I had never seen them. My mother was of proletarian descent, and she had two brothers, Leva and Petya, both very tall men. Uncle Leva worked in a factory named after the same Petrovsky. He was a foreman of the blast-furnace shop. They were evacuated to Ural⁴⁶ at the onset of the war, and subsequently Uncle Leva became a big manager of "Azovstal."⁴⁷ Uncle Petya was also employed at a metallurgical factory and perished at the onset of the war, not far from Dnepropetrovsk.

My mother also had a sister, Sonya. She apparently violated, somewhat, the Jewish family traditions, was frequent in the circles of young Russian men, and married a Russian. He could have been a Ukrainian though, but people used to say "Russian," and it meant the same thing. Sonya was a light blonde and did not look Jewish. They had two children, and when her husband was drafted to the Army, she

⁴¹That is, of Dnepropetrovsk province.

⁴²Not obligated to provide military lodging.

⁴³The October Revolution in Russia.

⁴⁴A kind of high boots made of felt.

⁴⁵It is customary in Russia to add patronymic names.

⁴⁶I.e., Ural Region, after Ural Mountains, which separate Europe from Asia.

⁴⁷A large company producing iron and steel and situated in Mariupol, by Azov Sea.

stayed in the city. She seemed fully assimilated, her husband was Russian, the children were fair-haired, and she hoped to survive. However, when Germans occupied Dnepropetrovsk, the neighbors gave her away, and she perished.

The University

Upon graduation I got a school diploma *з відзначкою*, which means “with excellence,” and then entered the Department of Physics in the University. It was a questionable move, of course, as I already had connections with mathematics, but after some thought, I nevertheless entered the Department of Physics. This was the year 1936. At the time a branch of the Leningrad Institute of Physics and Technology (PTI) was opened in Dnepropetrovsk. It was A.F. Ioffe,⁴⁸ who was then opening these branches in Kharkov, Dnepropetrovsk, and Ural Region. A large group of Leningrad professors came over to the Dnepropetrovsk University. Among them: B.N. Finkelstein,⁴⁹ a friend of Landau, G.V. Kurdyumov,⁵⁰ who later organized the Institute for Solid State Physics in Moscow,⁵¹ V.I. Danilov,⁵²—all first-class physicists from the Leningrad PTI and former students of A.F. Ioffe. They all taught classes at the Dnepropetrovsk University. Later, B.N. Finkelstein was my scientific advisor. I was very lucky in this respect.

Besides that, stories about Landau, who was then teaching in Kharkov, were already circulating in the Department of Physics. This is not that far from Dnepropetrovsk, only a hundred and eighty kilometers.⁵³ And although the Landau–Lifshitz textbooks did not exist back then, manuscript copies of his lectures were circulating among students, and we studied theoretical physics using summaries of Landau lectures. Their beauty greatly impressed me, and I quickly decided to become a theoretical physicist.

I began to attend Finkelstein’s seminars. Mathematics was my first love, I did not forget about it either. At the time, S.M. Nikolsky⁵⁴ lectured on the theory of functions of complex variables. These days he is already an academician, and recently celebrated his one hundredth birthday. Each time we meet he tells me that I am the most prominent of his students. The meetings turn out to be very warm.

⁴⁸A.F. Ioffe (1880–1960) was a famous Russian and Soviet physicist, the director of the Leningrad Physical Technical Institute. Subsequently, The Institute was named after him in 1960.

⁴⁹B.N. Finkelstein (1902–1962) was a theoretical physicist, a former student of N.N. Semenov, A.F. Ioffe and Ya.I. Frenkel, who sent him to Dnepropetrovsk as a “scientific paratrooper.”

⁵⁰G.V. Kurdyumov (1902–1966) was an academician, an experimentalist, also a former student of A.F. Ioffe. See: Zhores I. Alferov et al., “In memory of Georgii Vyacheslavovich Kurdyumov,” *Phys.-Usp.*, v. 40: 441 (1997).

⁵¹The Institute for Solid State Physics is located in Chernogolovka, Moscow province.

⁵²V.I. Danilov (1902–1954) was a Soviet physicist.

⁵³111.8 miles.

⁵⁴S.M. Nikolsky (b. 1905) is Soviet and Russian mathematician.

Mathematics was also very strong at the University, and Sergei Mikhailovich⁵⁵ made a large contribution to it. He kept close contacts with the top Moscow mathematicians, A.N. Kolmogorov,⁵⁶ P.S. Alexandrov,⁵⁷ and V.F. Kagan.⁵⁸ They regularly visited us and lectured, so that the high-level mathematics was spoken at the University.

In those pre-war years there was no nationalism to be found in Ukraine, at least I did not notice it personally. In the house where we lived, in this large communal flat, and in the courtyard, there were Ukrainians, Russians, and Jews, who lived without national strife of any kind, ever. Also, I did not notice any nationalism throughout the years of my study at the University. I spoke Russian with an accent, since I had been accustomed to Ukrainian, but I never had any complications with it. Here is another example. I had a close friend, Alexander Filippovich Timan.⁵⁹ For a long time I was sure that he was Russian. At least, his name was pointing to this. Only much later did I find out that not only he was Jewish, but even attended a Cheder, an Orthodox Jewish elementary school. Somehow, in those days nobody thought much of a person's ethnicity.

In relation to this I recall the following story which took place somewhat later, though. As it is known, Landau had many students, and most of them were Jewish. In general, at the time, most theoretical physicists were Jewish, for some reason, and Kapitsa⁶⁰ used to make fun of Landau on account of it, and even promised a bonus for his first non-Jewish graduate student. When I came over from Dnepropetrovsk to take an examination called "Theoretical Minimum,"⁶¹ Landau decided that this is the occasion, based on how I looked, and on my last name. He did not inquire about my ethnicity directly, since I looked acceptable, given my blond hair. Moreover, my last name, Khalatnikov, sounded quite Russian, and Landau joyfully told Kapitsa that he finally got a Russian graduate student. Later, I heard directly from Kapitsa that he did give the promised bonus to Landau. Kapitsa even told me that subsequently he intended to take it back, as it was unwarranted. Only I do not know whether he accomplished this plan of his or not.

It was only in the Army, in 1944, when I had my first encounter with the explicit manifestation of nationalism. For whatever reason, we did not get along with the

⁵⁵S.M. Nikolsky.

⁵⁶A.N. Kolmogorov (1903–1987) was a Soviet mathematician, one of the key figures in the 20th century mathematics.

⁵⁷P.S. Alexandrov (1896–1982) was a Soviet mathematician with contributions to topology among other fields.

⁵⁸V.F. Kagan (1869–1953) was a Russian mathematician with contributions to Lobachevsky and Riemannian geometry.

⁵⁹A.F. Timan (1920–1988) was a Soviet mathematician. See: Kotlyar, Nikolsky et al., "Alexander Filippovich Timan," *Russian Mathematical Surveys*, v. 44(3): 179 (1989).

⁶⁰P.L. Kapitsa (1894–1984) was a Russian and Soviet physicist, Nobel laureate of 1978, and Landau's superior at the time (see below).

⁶¹A comprehensive exam in mathematics and theoretical physics developed by Landau for his prospective graduate students.

*partorg*⁶² of our Regiment, where I served as a chief of staff at the time. It was from him that for the first time I heard the phrase “We will soon bring your people into the open.”

I believe it was namely then, in 1944, that Stalin had begun to ponder over the Jewish question and its solution, contemplating to introduce restrictions of some kind for the representatives of these people. At the same time, unofficial information was circulating to the effect that a Jewish Republic might be organized in Crimea.⁶³ Judging by it all, Stalin managed to promise such a Republic to the Allies,⁶⁴ but had later declined. In particular, the actor S. Mikhoels⁶⁵ became a victim of this solution, as Mikhoels organized a Jewish Anti-Fascist Committee and was actively lobbying, among other things, for the creation of the Jewish Republic. Naturally, Stalin could not go back on his words. It was easier to remove Mikhoels.

Returning to the ideas of nationalism and anti-semitism, I would like to emphasize one more time that these ideas were implanted into the mass consciousness from nowhere else but from above; and it began after the war. As it seems to me, in general, there had been no Jewish or ethnical question in Ukraine before that.

It was easy for me to study, and already on my second year I received a stipend, named after some Komsomol Congress, while in the year 1939 Stalin stipends were established to commemorate his jubilee, and I was among the first such recipients. In those times this was a relatively large amount of money, and I could effortlessly purchase a lot of chocolate and give the girls a treat.

At the University, since I was a straight-A student, I once received a voucher to a resort near Kiev, named Vorzel,⁶⁶ a nice cottage place. I met an MSU⁶⁷ student named Valya, at this resort. Our relationship had continued, although she lived in Moscow. I was visiting Valya when I was in Moscow to pass the “Theoretical Minimum” exams in 1940 and 1941. At the onset of the war, Valya evacuated to Kuibyshev⁶⁸ with her mother and worked there at the aviation factory. She returned from Kuibyshev in 1942, when I was already serving on the staff of an Anti-Aircraft Regiment, stationed on the *Kaluzhskoe Shosse* (highway). There Valya was visiting me, and we got married in 1943. Our eldest daughter Lena was born in 1944.

It is interesting that this *Kaluzhskoe* road goes throughout my entire life rather strangely. I served there during the war, I worked at the Institute for Physical Problems which was and is situated there. In general, one’s life is indeed filled with such strange coincidences.

⁶²An acronym from “Party organizer,” a designated representative of the Communist Party. In the Army such an individual was assigned to any regiment and supervised regiment’s political work, as a minimum.

⁶³A peninsula in the north of the Black Sea, famous for its mild climate and resorts on the coast.

⁶⁴To the Great Britain and United States of America.

⁶⁵S.M. Mikhoels (1890–1948) is a Soviet Jewish actor and producer, murdered by MGB following Stalin orders.

⁶⁶A resort village, about 20 miles west-northwest of Kiev.

⁶⁷The Moscow State University.

⁶⁸Present-day Samara, Russia.

АКАДЕМИЯ НАУК СССР
ИНСТИТУТ ФИЗИЧЕСКИХ ПРОБЛЕМ

ACADEMY OF SCIENCES OF USSR
INSTITUTE FOR PHYSICAL PROBLEMS

Kalujskoe shosse, 32, Moscow

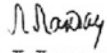
Москва, 153, Калужское шоссе, 32.
Телефоны: В-2-17-61 — директор
В-2-28-59 — зам. директора
В-2-20-29 — управ. делами
Телеграфный адрес: Москва, „Матнит“

26 м а я 1941 года
№ 25—

Уважаемый тов. Халатников !

Было бы крайне желательно, чтобы Вы смогли, не позже чем в 1-х числах июля, приехать в Москву в Институт.

Я считаю, что Вам необходимо продолжать заниматься теоретической физикой в аспирантуре, так как во время Вашего пребывания в Институте Вы произвели на меня очень хорошее впечатление.—

Доктор физико-математич.
наук

профессор Л.Ландау.

An invitation to enroll for post-graduate studies, by L.D. Landau. 1941. *Text:* The Academy of Sciences of the USSR. The Institute for Physical Problems. *Left top address:* The Academy of Sciences of the USSR. The Institute for Physical Problems. Kaluzhskoe Shosse, 32, Moscow. *Right top address:* Moscow 133, Kaluzhskoe Shosse 32. Telephones: B-2-17-61—the Director, B-2-28-59—the Deputy Director, B-2-20-29, the Administration. *Telex:* Moscow, “Mag-nit.” 26 May 1941, Number 25. *Main text:* Dear Comrade Khalatnikov! It would be highly desirable if you could, no later than in the first days of July, come to Moscow, to the Institute. During your visit to the Institute, you made a very good impression on me, and therefore I believe that you should continue to study theoretical physics as a post-graduate student. *Signature:* Doctor of Physical and Mathematical Sciences, Professor L.D. Landau

I was supposed to work on my thesis under the supervision of B.N. Finkelstein, however, Boris Nikolaevich, being a friend of Landau, recommended that I go to Moscow and take the so-called “Landau-minimum” exams,⁶⁹ in order to continue my study with Landau himself. Since there were no textbooks then, I used summaries of the lectures and prepared for eight exams. Two of them were on mathematics, the so-called Mathematics-1 and Mathematics-2. I arrived at Moscow in September of 1940, carrying a Finkelstein’s letter for Landau with me. Together

⁶⁹Later the “Theoretical Minimum” consisted of mathematics (two exams), classical mechanics, classical field theory, quantum mechanics, statistical physics, mechanics of condensed matter, electrodynamics of condensed matter, and quantum electrodynamics, to a total of nine exams. Currently, the “Minimum” encompasses eleven exams, covering two mathematics, and selected chapters from the ten volumes by L.D. Landau, E.M. Lifshitz, and L.P. Pitaevski, with mechanics of condensed matter and elasticity theory covered in one exam.

with a friend of mine we came over to meet Landau. He gave me an exam on the spot: he wrote an integral on the blackboard to be reduced to a standard form. I did it right there, on the blackboard. It must have impressed Landau somewhat, since he did not ask me anything else but only said "Continue with the exams." Thus, I passed the Mathematics-1.

In the same September of 1940 I passed another three exams. Then I came to Landau for the second time, it was already in February of 1941, and passed four more exams. Landau recommended that I apply to graduate school and gave me a letter right away. It began with the words, "To Comrade Khalatnikov ..." It was a written invitation to apply to the graduate school, and I meant to go to Moscow the next Fall, to study under Landau. But this was not destined to happen: on Saturday, in June, I passed my last special exit exam on theoretical physics at the Dnepropetrovsk University. I remember how I was sitting with my professor for this exam on a bench on the boulevard along the Karl Marx Avenue. This was on 21 June 1941.

In the morning, I heard on a black radio speaker (each kitchen had one of these, all absolutely identical) that the war had begun.

From the Atomic Bomb to the Landau Institute

Autobiography. Top Non-Secret

Khalatnikov, I.M.

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