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Reflections in Mutation Research

Lysenko and Stalin: Commemorating the 50th anniversary of the August 1948 LAAAS Conference and the 100th anniversary of T.D. Lysenko's birth, September 29, 1898 ¹

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On July 27, 1948, after a 10-day interruption caused by an unknown malady and late in the evening as was his habit, Stalin made an appearance in his Kremlin office. At 10 min past 10:00 that evening two other people arrived at Stalin's office: Malenkov and T.D. Lysenko [1]. They anticipated that Stalin would turn over to them with his stamp of approval a report by Lysenko entitled "On the Situation in Biological Science." Malenkov had sent this report to Stalin's country home in Kuntsevo on July 23rd. Malenkov had already read Lysenko's paper and had made no comments. He and Lysenko were startled to find that Stalin had made a number of changes and corrections as well as critical comments in the margins of the pages. In the course of 1 h, as Lysenko himself later noted [2], Stalin "gave me a detailed explanation of his corrections and instructions on how better to present particular parts of my report." An hour later, at 11:10 p.m., they were joined by Beria, Bulganin, Mikoyan, Voznesensky and

The status of Lysenko as the President of the Lenin All-Union Academy of Agricultural Sciences (LAAAS) grew steadily more unstable after the end of WWII. This crisis came to a head in April of 1948 at a seminar for the regional party cadre when Yuri Zhdanov openly criticized Lysenko and his "Michurin biology." (Michurin biology takes its name from the Russian horticulturalist I.V. Michurin, whose thoughts on plant breeding ran counter to Mendelian genetics.) Yuri Zhdanov was the son of A.A. Zhdanov, a member of the Politburo. The young Zhdanov, although only 29 then, had an advanced degree in chemistry thanks to the connections of his father and of Stalin himself. Yuri was, after all, Stalin's son-in-law by virtue of his marriage to Svetlana. Not surprisingly, Yuri held the impressive post of head of the Central Committee's Science Division which neither his scientific nor Party expe-

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Kaganovitch. There ensued an hour-long discussion of certain problems. Lysenko, in particular, was told by Stalin to announce at the final assembly of the conference that the report had been examined and approved by the Central Committee of the All-Union Communist Party (Bolshevik), in other words he was to make an announcement about something which in fact had not taken place.

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rience warranted. Yuri Zhdanov criticized Lysenko on many points and inadvertently revealed that he was expressing his own opinion and not a new line of the Party. However, the regional party cadre accepted the report unconditionally as if it were a directive. Lysenko was not present in the auditorium but listened to Zhdanov's speech through a hook-up in the office of M. Mitin, a professor of philosophy. Lysenko was very alarmed. On April 17th, he sent a letter of protest to Stalin. Chairman of the USSR Council of Ministers, and to A.A. Zhdanov, Secretary of the Communist Party's Central Committee. Failing to get an answer after a month. Lysenko sent a formal letter of resignation from his post as President of LAAAS to the Minister of Agriculture, I.A. Benediktov [3].

Inasmuch as Benediktov could not resolve such a problem independently, Stalin's intervention in one form or another was inevitable. The opportunity for this arose on May 31st when the Politburo met to consider candidates for Stalin prizes in science and invention. Traditionally, Stalin himself would announce the final recommendations for recipients of the "first rank" of awards. Present at this session in addition to members of the Politburo were Vyacheslav Malyshev (Minister of Shipbuilding), S.V. Kaftanov (Minister of Higher Education), and Academician Alexander Nesmeyanov (Chairman of the Stalin Prize Awards committee).

V. Malyshev noted the next day in his diary recently uncovered in party archives: "Before reviewing these questions (about the awards), Comrade Stalin brought everyone's attention to the fact that Yuri Zhdanov (the son of A.A. Zhdanov) had delivered a lecture condemning Lysenko and, in so doing, stated himself that he was expressing his own personal opinions. Comrade Stalin said that personal opinions and personal points of view had no place in the Party, and that only the Party could have an opinion. Yuri Zhdanov had set as his goal Lysenko's destruction and annihilation. This is wrong." "One must not forget," said Comrade Stalin, "that Lysenko today is the Michurin of agrotechnology. Lysenko has his faults and errors as a scientist and man, and he has to be controlled, but to set as his goal the destruction of Lysenko as a scientist is like pouring oil on the fires of the Zhebrakians" [4]. (Prof. Anton Romanovich Zhebrak was then the head of the Department of Genetics and Plant Selection at Moscow's Timiryazev Academy of Agriculture (TAA). In 1947, Zhebrak was also elected President of the Belorussian Academy of Sciences. Zhebrak was an energetic opponent of Lysenko, and it was thought that he was the person who advised Yuri Zhdanov on genetics.)

1. Malenkov, Zhdanov and Lysenko

Stalin's remarks meant that some decisions would have to be made. The job of laving the groundwork for these decisions fell to A.A. Zhdanov since he was the one answerable to the Secretariat of the Central Committee and to the Politburo for ideological, scientific and cultural correctness. He would have to come up with the necessary initiative. The job of producing a proposal for the Central Committee's consideration fell to D.T. Shepilov, editor of the newspaper Pravda and to M.B. Mitin, academician in charge of party philosophy. This report was finished on July 7th, edited by A.A. Zhdanov and sent to Stalin [5]. Stalin, however, was against simple directives. He considered it more appropriate to organize an ostensibly open discussion of Lysenko's original report. Plans for holding an LAAAS conference to elect new academicians had been in the works since 1947 but postponed several times due to the fact that Lysenko saw as too slim his chances of getting his own cohorts elected to the Academy. Suddenly, there was now an urgent need to prepare for an LAAAS conference which was to start on July 31st. Malenkov, rather than Zhdanov, handled the preparations for the conference.

Instead of electing new members to the academy, the Council of Ministers of the USSR simply announced the appointment of 35 new academicians whom they had chosen on July 15th from a list of names submitted by Lysenko. (This decision of the Council of Ministers was not published in the central press until July 28th, after Stalin's Kremlin meeting with Lysenko.) Before July 30th, the date on which Stalin got Lysenko's paper edited by Malenkov and incorporating Stalin's suggestions, any communication between Lysenko and Stalin was accomplished with Malenkov acting as go-between.

Malenkov's interest in organizing the LAAAS conference has led several historians to suggest that

Malenkov was concerned not only in saving Lysenko but in compromising A.A. Zhdanov who was at that time Malenkov's primary rival. Strictly speaking, Zhdanov was ranked second in the party hierarchy after Stalin. However, while Zhdanov was located in Leningrad during the war, Malenkov was in Moscow taking charge of all party matters even though he was not a member of the Politburo but only a candidate for a seat in it. A significant number of important documents being sent by various agencies to Stalin for his own information or for approval were sent also to Molotov and Malenkov. The three formed a unique triumvirate which ran the country [6].

In 1946. Zhdanov relocated in Moscow and assumed the roles of head Party ideologue and overseer of the activities of foreign Communist Parties. The Communist Information Bureau (Cominform) was created to replace the earlier disbanded Comintern. Zhdanov was an extremely conservative Stalinist whose sphere of activities in Moscow included among other things, companies which tried to free Soviet culture from foreign influences (the struggle against "cosmopolitanism" and "reverence for anything foreign," the persecution of certain writers and composers) and the introduction of myriad restrictions in science. Although Malenkov was elected to the Politburo in March of 1946 (along with Beria), Zhdanov managed to squeeze him out of operational control of the country. Ever since May of 1946, memoranda, especially those from the MVD (Ministry of Internal Affairs), did not get to Malenkov: his name had been crossed off the distribution list. Among the names on the distribution list, in addition to Stalin and Molotov, one saw with increasing frequency those of Beria, Zhdanov, and N.A. Voznesensky. Malenkov was, as is well known, put in charge of the Central Committee of the Communist Party of Uzbekistan. However, Malenkov spent precious little time in Tashkent and continued as before to meet three or four times a week with the other Politburo members in evening and night sessions in Stalin's office.

Zhdanov, despite his anti-Western ideology, was nevertheless not an advocate of Lysenko and his promises. This is why he was unsuitable for organizing the LAAAS conference. Almost immediately after the last session of the conference, Malenkov

was returned to the group in charge of running the country and on August 19th he became once again eligible to see and receive secret memos and reports from the MVD. Meanwhile, on July 10th Zhdanov was crossed off the distribution list; this was an immediate consequence of the decision to hold the LAAAS conference and not to convene before the Central Committee of the All-Union Communist Party. The latter choice would unquestionably have provided good cover for Lysenko from his critics. However, the LAAAS conference with Lysenko's own report, approved by the Central Committee as well as by Stalin, made Lysenko the unlimited dictator of science. The LAAAS became an even more influential center of the natural sciences than the USSR Academy of Sciences itself.

Late in August, A.A. Zhdanov took a vacation at the Central Committee's resort in Valdai. Once there, he suffered two heart attacks and died. In 4 years, during the Fall of 1952, it was precisely Zhdanov's heart attacks which initiated the infamous case of the Kremlin physicians which Stalin had conceived as a means of removing Beria and Malenkov from the inner ruling circle.

2. Stalin's corrections

Lysenko kept his report with Stalin's own hand-written suggestions on it in his office and would at times show it to visitors. After Stalin's death Lysenko turned over the original paper with Stalin's corrections to the Party's central archives, keeping only a copy for himself. In 1993 K.O. Rossianov, a researcher from the Institute of Natural Science History and Technology of the Russian Academy of Sciences, was studying the proceedings of the August session of the LAAAS and found in the Party's archive the original document and was thus able to be the first to comment on the nature of those changes and corrections which Stalin had added [7].

Stalin, contrary to expectations, did not use his usual heavy hand but took it easy on Lysenko. For instance he removed all mention of "bourgeois biology" from the report. Stalin crossed out the section entitled "The false basis of bourgeois biology." In the margin next to Lysenko's statement that "any science is based on class" Stalin wrote, "Ha-ha-ha!!

and what about mathematics? Or Darwinism?" In another section Stalin added an entire paragraph which bore witness to the fact that Stalin had preserved the neo-Lamarckian convictions of his youth (which one sees in his essay "Anarchism or socialism" of 1906): "One cannot deny," adds Stalin, "that in the debate which heated up in the first quarter of the 20th century between the Weismannists and the Lamarckians, the latter were closer to the truth for they upheld the interests of science whereas the Weismannists abandoned science and became addicted to mysticism."

Stalin's remarks showed a decisive departure from the theme of the class nature of science in the 1920s and '30s. Stalin's world view was clearly influenced by the large advances made in the U.S. and Great Britain in nuclear physics and in the subsequent creation of the atomic bomb. By the end of the war Stalin had come to realize that progress in science and technology was less a matter of ideology than one of healthy financial support for the scientists. Not everyone recognized this even after the speech that Stalin gave on February 9, 1946, at a meeting of Moscow's Stalin District Electorate at the Bolshoi Theatre. In particular, Stalin said that day [8], "...I am confident that if we give our scientists the help they need, they will in the very near future not only catch up with but go beyond the achievements of science in other parts of the world." This statement was not just an empty declaration. By March of 1946, the allocation for science in the national budget had tripled. Scientists and technicians in all branches of scientific activity received very healthy pay increases. However, rejection of the obsolete theme on the class nature of all sciences, including the natural sciences, was not to be taken as Stalin's recognition of a world science community. Still preserved was the division of scientific direction and theory into "materialistic" and "idealistic" camps. The notion of "Soviet science" came now to mean "science of the fatherland" in order to emphasize the succession between the Soviet and the Russian, pre-revolutionary, periods. This broadened the range of activities subject to criticism and punishment. Not only acts which could be classified as "anti-Soviet" but also those which would be called "anti-patriotic" were now lumped together. Scientists were strictly forbidden to publish the results of their work abroad.

3. Stalin as a Lamarckian

In many articles about Lysenko in both the Soviet and Western press, the opinion was expressed that he possessed the special psychological or hypnotic powers of Grigory Rasputin and was thus able to thrust upon Soviet leaders, first Stalin and then Khrushchev. his completely unfounded and false ideas. In fact Lysenko had no such "Rasputin-like" talents. He did not really try to persuade the leaders by overpowering them with his own views. Rather, he got caught up in the game of trying to make sense of the sometimes absurd ideas expressed by Stalin and later by Khrushchev and then creating from them pseudo-scientific assertions. Stalin and Khrushchev were essentially Lamarckians, which was only natural for the Bolsheviks who were convinced that anything could be re-made by establishing the right conditions. "Existence defines consciousness" was a formula which could be extended to apply to other qualities and characteristics.

Many people still remember how Khrushchev tried to promote the idea of growing corn in the Archangelsk and Leningrad regions and even "adapting" it for Siberia. However, very few people remember that the genetics debate which ultimately led to the 1948 LAAAS conference did not begin as a scientific quarrel between Lysenko and Nikolai Vavilov. Rather, it was the result of decisions made by Party and government leaders in August of 1931 [9]. The conclusion drawn by these leaders was that the nature of agricultural crops could be redesigned in a time frame so short as to contradict every principle of genetic selection. With the intention of supporting the collectivization process by introducing new high yield seed varieties, the Soviet government in the guise of the Central Control Commission of the Communist Party and the Workers and Peasants Inspection Commissariat issued a resolution "On selection and seed growing" [9]. According to this resolution, the full range of cultivated low-yield crops was to be replaced by high-yield varieties over the entire country in the course of 2 years. The resolution demanded that new varieties of wheat be created which could replace rye in the northern and eastern parts of the country. The southern regions were to get newly created varieties of the potato. Simultaneously, the resolution called for reducing

the time for producing new varieties from 10 or 12 years to 4 or 5 years. It was expected that after 4 or 5 vears Soviet wheat could be high-vield, resilient. with high protein content, non-shedding, cold resistant, drought resistant, pest resistant and blight resistant. Nikolai Vavilov and the majority of Soviet geneticists and selection specialists found these goals to be the products of wishful thinking and quite unrealistic. Lysenko and his still small group of followers promised that they would meet these goals. When they were subsequently unable to meet their promises. Lysenko et al. explained away their failure by blaming it on the lack of cooperation from those who sided with "bourgeois" genetics. The latter were gradually liquidated during the Terror of the 1930s.

Even after the war. Stalin continued to believe that the problems of Soviet agriculture could only be solved by "re-makes" and "miracle varieties" of one kind or another. In 1947, Lysenko began boasting about the unusual prospects of a so-called "branched wheat," seed samples of which he had received from Stalin during their brief meeting on December 30, 1946 (Fig. 1). Spikes of wheat had been sent to Stalin from Soviet Georgia (Gruzia). However, despite the large spikes that could be produced, but only by severely thinning out the sowing, this particular variety of wheat — already known in ancient Egypt — was not only low-yield but showed poor resistance to disease and produced flour with a low protein content. The very fact that Lysenko promoted this wheat so widely in 1947 already proved that he, worried about the stability of his position, used the promotion as a means of stressing his close relations with Stalin. In fact, there was no real closeness between Stalin and Lysenko. They were never together in any circumstances other than official.

Stalin repeatedly revealed his own initiatives relative to plant "re-makes." Plants, especially flowers and fruits, were one of Stalin's hobbies. Stalin's summer homes near Moscow and in the south had greenhouses which were so situated that he could enter them alone directly from the house both day and night. He attempted to grow exotic plants and did his own pruning.

In his novel, *Happiness*, the well known Soviet writer Peter Pavlenko, who lived in Yalta and was

invited to see Stalin whenever Stalin visited the Crimea, put together a dialogue between Stalin and a gardener. This conversation was not entirely fictional: it reflected Stalin's actual musings uttered at various times. The novel reflects the events of 1945 in the Crimea when Stalin went there in the winter to participate in the Yalta conference of the leaders of the three powers. One of the novel's heroes, a former soldier in the frontlines, Voropaev, was invited to Stalin's home. In a light-colored spring tunic and in a light-colored service cap, Stalin stood next to the old gardener by the gravevines. Glancing at Voronaev, he was finishing up showing the gardener something in which obviously they both had a serious interest. "Go ahead and try this method, don't be afraid," said Stalin, "I have checked it myself; it won't let you down." But the gardener, confusedly and at the same time with childlike admiration. glanced at his conversational partner and made a helpless gesture: "It's a little scary to go against science, Iosif Vissarionovich. In the days of the tsar there were some specialists here, but they didn't say anything." "They had plenty of reason to keep quiet." — replied Stalin. "Under the tsar people grew up in ignorance, but what's that got to do with us today. Experiment away! We need grapes and lemons in other regions besides here." "The climate, Iosif Vissarionovich, puts a halt to everything. Look how fragile, how delicate they are — how can they survive a frost?" the gardener pointed to the grapevines. "Train them to accept harsh conditions, don't be afraid! You and I are southerners yet we have learned how to handle the north," Stalin finished speaking and took several steps toward Voropaev; "Here is a gardener...he's been at it forty-five years but it still afraid of science. This, he says, won't work, and that, he says, won't either. In Pushkin's time eggplants were imported to Odessa from Greece as a rarity, and now only fifteen years ago we started growing tomatoes in Murmansk. If we wanted it to work — it did. Grapes, lemons, figs need to be taught to grow in the north. We were told that cotton wouldn't grow in the Kuban region, in the Ukraine, but now it does. If you want something badly enough, you can achieve it — that's the main point." [10].

Attempts to grow cotton in the Ukraine and in the Northern Caucasus were made in fact during the

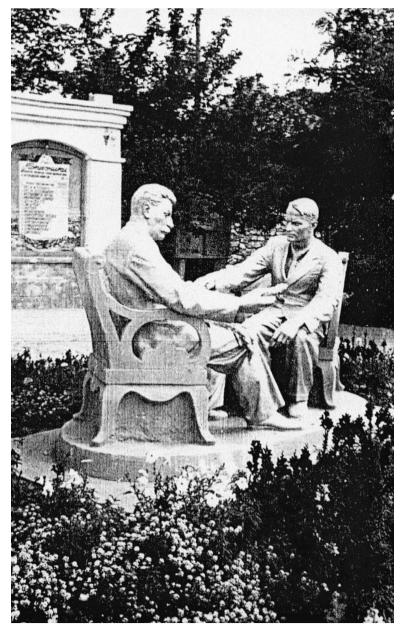


Fig. 1. Bronze monument of Stalin and Lysenko. Stalin is holding a sheaf of branched wheat.

1930s. However, these efforts were subsequently abandoned. More successful was the introduction of tea in Georgia, Azerbaijan, and the Krasnodar region, and likewise the introduction of peanuts in the southern part of the Ukraine. All of these were

initiated by Stalin. However, Stalin's plan to turn Turkmenia into a country of olive plantations was unsuccessful. The attempt to cultivate wild field rubber plants (kok-sagyz) ended in failure. Not far from Stalin's summer complex near Ritza Lake,



Fig. 2. A 1949 poster: And We Shall Defeat Drought. Using forest belts to alleviate the persistent problem of wind erosion in the prairie (steppe) regions of the Northern Caucasus, in the Rostov and Voronezh regions, and in the Ukraine was a method that could give positive results; however, state efforts to create broad forest belts from the North to the Caspian Sea ended in futility. Here, all the plants and seedlings died in the course of 1 or 2 years.

greenhouses had been built where scientists tried to "re-make" cacao and coffee trees. That was not successful nor was the attempt to grow lemons in the Crimea.

Stalin was a firm believer in the principle that acquired traits could be inherited. He viewed the connection between heredity and some kind of genes or another to be sheer mysticism. Based also on Stalin's Lamarckian convictions was the famous "Nature Transformation Plan" announced in 1948. The confidence that forest zones of oak, pine and other central belt cultures could flourish in the dry Zavolga steppes and in the salty, semi-arid areas near the Caspian Sea was not based on any experimental data but rather on the expectation that the newly introduced trees and plants would adapt to their new

environment. Lysenko had no direct involvement in the details of this plan (Fig. 2).

4. Stalin, Lysenko and Sergei Vavilov

During the 1930s, genetics and geneticists involved in agriculture were almost completely liquidated. Nikolai Vavilov, arrested in August of 1940, was the last victim. Only his international fame allowed him to survive as long as he did. Indeed, there was no lack of denunciations against him; quite the contrary, he had a multitude of detractors who had denounced him. His arrest had to have been sanctioned at the very highest level because of his international reputation. By 1940, the main surge of the terror had nearly played itself out. At the same

time, however, the war engulfing Europe made the international reputation of any given scientist an item of secondary interest. Nikolai Vavilov was arrested on August 6, 1940, after a complicated process which included a business trip to the Western Ukraine which had been ceded to the Soviet Union under the terms of the Molotov–Ribbentrop pact. His arrest took place out in the country away from witnesses. A group of NKVD agents who had arrived in haste from Moscow had as their mission to arrest Vavilov as if he had been caught in the act of crossing the border from occupied Poland.

The complex arrangements were evidence that Vavilov's arrest had been worked out in great detail. In the 1930s, only ordinary people were arrested during the night. Important people, generals and marshalls, were arrested according to carefully scripted scenarios in order to ward off publicity and the possibility of resistance. Those who planned Vavilov's arrest did a good job. The arrest was hardly noted if at all, and there was no international reaction. A few scientists and scholars, mostly in England and the U.S., started asking questions about the fate of Nicolai Vavilov, but that wasn't until 1944. In 1945, the number of inquiries about Vavilov's fate increased abruptly. A particularly large number of letters to the USSR Academy of Sciences and to various diplomatic channels came from the Royal Society of Great Britain of which Vavilov had been a member since being elected in 1942, by which time he was already dying in a Saratov prison.

In June of 1945, the Academy of Sciences of the USSR triumphantly observed its 220th anniversary and to commemorate the occasion more than a hundred scientists from abroad had been invited. During the anniversary session, Vavilov's foreign friends found out the basic facts about his fate. Present at these meetings was Nikolai Vavilov's vounger brother, Sergei, who also had an international reputation as a physicist who specialized in light, fluorescence and optics. Lysenko did not attend the anniversary session. The president of the Academy of Sciences of the USSR was the botanist, V.L. Komarov. He was very old, and July 17, 1945, had been designated as the day on which to elect a new president. Sergei Vavilov, the younger brother of the dead geneticist, was chosen for that post. His election was received very enthusiastically. It was viewed as a sign that persecution and repression directed at the field of genetics was over. Vavilov's election was a serious blow to Lysenko, whose influence had already previously been declining. His opponents in the Academy and in the universities promoted a new, far-ranging discussion which would have an impact on several agricultural institutes. Yuri Zhdanov's speech in April of 1948 was part of that discussion which now threatened the existence of the entire school of "Michurin biology."

Incidentally, the election of Sergei Vavilov was most certainly not an indication of the improved status of genetics or of the end of repression. Everybody understood that the final choice from among the short list of candidates was Stalin's alone. This fact is confirmed by recently published documents from the archives [11]. By choosing S.I. Vavilov from a list of 22 candidates, Stalin was indicating that he had nothing to do with Nikolai Vavilov's arrest

Each of the candidates' names on the list was accompanied by a brief biography put together by the NKGB — the People's Commissariat of State Security. Stalin deflected from himself any blame for the death of the great scientist whose enormous international prestige was only now becoming clear to him. The NKGB biography of Sergei Vavilov gave Stalin no grounds to deny Sergei the post except for the fact of a brother who was arrested and who died in prison. The NKGB document stated that Sergei Vavilov was "politically loyal" and further noted his enormous authority in the sciences as well as his organizational abilities. "His manner is simple, his daily life modest," added the authors of Sergei Vavilov's brief which was signed by the Chief of the Second Section of the NKGB, Lt. General N.V. Fedotov. Molotov and Malenkov also received copies of the candidates' biographical profiles. Other outstanding scientists on the list did not fare so well in the NKGB's evaluation of their personal characteristics. Ivan Bardin, the Vice President of the Academy of Sciences "does not associate with (other) scientists due to the extreme greediness of his wife." The academician Aleksander Zavaritsky is "by nature cantankerous, and leads a closed life." The academician and mathematician Ivan Vinogradov is "unsociable and ignorant of other fields of science...single, a heavy drinker." Even

Igor Kurchatov, a favorite of Stalin, was not without sin: "by nature reserved, cautious, sly and a real diplomat." But for secret atomic projects these defects were, of course, virtues.

5. State pseudoscience

In the summer of 1948, I was still a student at TAA. I spent that summer in the Crimea and worked in the Nikitsky Botanical Garden near Yalta completing a scientific project as part of my degree requirements. I followed the proceedings at the LAAAS conference by reading about it in *Pravda*. I was glad to see that my scientific advisor. Petr Mikhailovich Zhukovsky, an academician at LAAAS and Chair of the Botany Department at TAA, gave a very strong and ironic speech on August 3rd in which he criticized Lysenko's basic theories. But at the final meeting of the conference after Lysenko let it be known that his paper had been approved by the Central Committee of the Communist Party of the USSR, Zhukovsky's address was filled with apologies and self-criticism. The organizers of the conference needed participants who had not only been defeated, but who also admitted the error of their ways. P.M. Zhukovsky arrived at the Nikitsky Botanical Garden in mid-August. There he ran a few projects in order to recuperate from everything that had gone on at the conference. "I concluded a Brest-Litovsk peace with Lysenko," he told me as soon as we were alone. Petr Pavlenko arrived at Zhukovsky's place that evening as a guest. Zhukovsky and Pavlenko had become good friends in Tiflis before the revolution. In early September, having buried Zhdanov, Stalin arrived in the Crimea for a vacation. Stalin usually took the first part of his long vacation in the Crimea and then sailed along the coast of the Caucasus in October on one of the cruisers under the Black Sea Naval Command.

When I returned to Moscow in early October, the war being waged successfully throughout the country against genetics had already been completed. Lysenko and his principal cohorts who had been given emergency powers, worked relentlessly. A chain reaction began in October. Acting upon the example of the LAAAS conference, pseudoscientific concepts and tendencies gained preeminence in other spheres of knowledge as well. Physiology, microbiology, chemistry and cybernetics were all pushed decades backwards. The "Brest–Litovsk peace" with Lysenko continued too long, until 1965 and into 1966.

The negative consequences of this long reign of pseudoscience in the USSR spread for an even longer period. A *full* "recovery from these consequences" has yet to be achieved even today. Indeed, the reduced authority of Soviet science, the delayed development of biotechnology and the hypertrophy of far too expensive and complex projects in the fields of atomic physics and space — all made Soviet science too dependent on government coffers which are now almost empty. Science in the USSR has not become the primary mover of technological and economic progress. Science was continually revitalizing itself, but the development of technology and the economy were basically copies of whatever had already been done in other countries.

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