



In Defense of Timoféeff-Ressovsky

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# THE GRIM HERITAGE OF LYSENKOISM: FOUR PERSONAL ACCOUNTS V. IN DEFENSE OF TIMOFÉEFF-RESSOVSKY

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THE REPUTATION and integrity of the late great geneticist, N. W. Timoféeff-Ressovsky [N. V. Timofeev-Resovsky, 1900–1981], have been recently attacked by certain German and Soviet scientists, writers, or journalists. These persons have attempted to incriminate him as a chief supporter of Nazi theories of race and genetic deterioration as well as a supporter of Nazi eugenic policies.

In the West the most active accuser has been Benno Müller-Hill, a molecular geneticist who is a member of the Board of Directors of the Institute of Genetics, University of Cologne [Köln], in West Germany. He has recently been joined by Karl Heinz Roth (1986), a physician and historian of Hamburg, who contributed to a book entitled *Der Griff nach der Bevölkerung* an article entitled “Schöner neuer Mensch,” in which he traced the roots of Nazi eugenic policies to American and British investigators of genetic mutation and population genetics, but he especially singled out Timoféeff as the principal German scientific supporter of Nazi eugenic policies. His arguments have been severely criticized and rebutted by Bentley Glass, in a review of the book containing the article (Glass, 1989). In the Soviet Union, the attack upon Timoféeff-Ressovsky was launched by the journalists A. Kuzmin and V. Bondarenko,

who are adherents or members of an ultra-nationalistic, racist society known as “Memory.”

The writer Daniil Granin (1987), in his narrative *Zubr* [The Bison], while pretending to follow Gorbachev’s new principle of “openness” [glasnost] and to call in question the unjust attitude of those in power toward Timoféeff during the regimes of Stalin, Khrushchev, and Brezhnev, actually managed to clear those political powers of guilt in the matter. He produced a highly distorted picture of Timoféeff. Even the title of his narrative is ambiguous, for the nearly extinct European bison (aurochs) means in colloquial Russian a person who stubbornly follows obsolete principles, a fossil. Like Khrushchev’s minions, who swayed the destinies of prisoners, Granin would permit amnesties, but not rehabilitation, for Timoféeff-Ressovsky. Granin accused Timoféeff of staying in Germany when ordered to return to the USSR and of refusing to collect documents that would have proved his non-involvement either in framing the racist theory of the Nazis or in carrying out experimentation upon human beings who had been doomed to death. According to the opinion of Kuzmin and Bondarenko, it was Granin’s duty to have unmasked Timoféeff’s services to the Nazis, in order to prove that he did not deserve amnesty.

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Nikolay Vladimirovich Timofeev-Resovsky, a descendant of a noble family, was truly fortunate to survive the bloody turmoil of the Revolution and Civil War, from 1917 to 1923. The latter was the year when he began his studies in genetics, under the guidance of N. K. Koltsov and S. S. Chetverikov at the Institute for Experimental Biology in Moscow.

N. K. Koltsov was a radiant personality, a representative of the Russian Renaissance, a brilliant teacher, and a founder of scientific institutions. He organized various university departments, experimental stations, and the great research Institute of Experimental Biology. He founded several scientific societies and the periodicals they published. In 1938, he was first to formulate the template principle of chromosome replication. In establishing eugenics as a branch of human genetics, he created a new science antithetical to the perversions of science that arose in Nazi Germany. Chetverikov became even more recognized internationally as a leader in creating the synthetic theory of evolution and as the real founder of experimental population genetics.

As a student under these scientists, Timoféeff demonstrated a marked ability to combine the comparative method of biological investigation, which had been the chief means used in the development of biology in the 19th Century, with the experimental methods introduced in the 20th Century. In Koltsov's footsteps, Timoféeff also exhibited an extraordinary ability to make contacts with scientists in other specialties and to work in little-explored boundary areas lying between divergent branches of science.

In 1925, the German neuroanatomist Oscar Vogt, director of the Kaiser-Wilhelm Institut für Hirnforschung located in Berlin-Buch, invited Timoféeff-Resovsky to join the staff of his institute. Under the existing arrangement for the exchange of scientists between the Soviet Union and Germany, this was readily arranged. At first, Timoféeff occupied the lowly position of an assistant, since he had not yet completed his doctoral degree. Later he became a postgraduate student. Vogt's aim was to develop in his institute a strong genetical approach to problems of mental functioning and mental disorder and disease, and he had made such an exchange of personnel a condition of his acceptance of an invitation to perform a

neuroanatomical study of the brain of Lenin shortly after Lenin's death. Timoféeff rapidly fulfilled this goal, and before 1930 was already head of a new Department of Genetics at the Institut für Hirnforschung.

To show the impact of Timoféeff's work in Germany, it is sufficient to cite a brilliant translation of genetic postulates into the language of physics, made by Erwin Schrödinger in his book *What is Life? The Physical Aspect of the Living Cell*, first published in 1944, and reprinted no less than seven times by 1974. In this classic of science, Schrödinger presented for the first time a cybernetic concept of the transmission of hereditary information from generation to generation of living organisms. He based his formulation largely on Timoféeff's investigations and conclusions (Schrödinger, 1967). He wrote (p. 45):

The laws governing the induced mutation rate are extremely simple and extremely illuminating. I follow here the report of N. W. Timoféeff in *Biological Reviews*, v. 9, 1934. To a considerable extent it refers to the author's own beautiful work.

From the work of Timoféeff-Resovsky and of his coauthor, Max Delbrück, Schrödinger visualized an organization of living matter that would be compatible with its nonstatistical but deterministic mode of action. The gene was presented as being a unique unit of a hereditary code. This constituted a step forward not only for biology but also for physics itself. Schrödinger wrote (p. 73):

From Delbrück's general picture of the hereditary substance it emerges that living matter, while not eluding the "laws of physics" as established up to date, is likely to involve "other laws of physics" hitherto unknown which, however, once they have been revealed, will form just as integral a part of this science as the former.

In order to study the structure and variability of the hereditary material, investigators of the period commencing in 1927 commonly used ionizing radiation, especially X-rays of extremely short wave-length. In using this technique, Timoféeff followed H. J. Muller in the study of induced mutations in the fruit fly *Drosophila melanogaster*. The results obtained by many investigators along these lines pointed to the danger existing not only for patients ex-

posed to X-rays or to the gamma rays from radium used for diagnostic or therapeutic purposes, as well as to the unshielded or poorly shielded medical staff members, but also extending to the progeny and later descendants of exposed persons. Schrödinger phrased this matter as follows: "The Timoféeff report contains a particular hint which I cannot refrain from mentioning here." This "particular hint" was the concern expressed by Timoféeff about the "possibility of gradually infecting the human race with unwanted latent mutations" (Schrödinger, 1967: 47-48). Muller, and soon after him also Timoféeff, were the first geneticists to urge strongly the critical need for the protection of human genes from radiation hazards. These views were confirmed and extended by several international committees during the 1950s: an American committee of the National Academy of Sciences, USA; a British committee of the Medical Research Council; and a committee of the United Nations. All of these committees agreed that the genetic hazard of exposure to high-energy radiations is far greater than had been supposed in earlier times, and that strict measures should be taken to safeguard the population from unnecessary exposures, whether on account of medical diagnosis or treatment, or from the products of nuclear weapons tests. In the context of this paper and the current vilification of Timoféeff by such persons as Müller-Hill and Roth, it is to be stressed that this was the sole involvement of Timoféeff-Ressovsky in "Rassenhygiene." Every one of Timoféeff's contributions to radiation genetics, population genetics, and developmental genetics is to be seen as also constituting an input into medical genetics and preventive hygiene.

The invitation from Oscar Vogt to Timoféeff to come to Germany to work in the Kaiser-Wilhelm Institut für Hirnforschung saved Timoféeff, as a descendant of the nobility, from mortal danger when Lysenko rose to power under Stalin's favor, and when many geneticists were doomed to extinction. Timoféeff's own brothers were among the targets of this political repression. One of them was shot, the other exiled. In 1929, Chetverikov was exiled from Moscow without inquest or summons. Genetics and geneticists were subjected to an ideological attack that became ever more menacing. Genetics, indeed, moved toward im-

minent disaster. The most brilliant geneticists of Soviet Russia—Vavilov, Levitsky, Karpchenko, and many others—were imprisoned, then disappeared forever. It was clear that to return to the Soviet Union would have amounted to an act of suicide by Timoféeff. Quite reasonably, he made no plan to return to Stalin's empire.

Nevertheless, in 1929, Timoféeff-Ressovsky was actually thinking of returning to the USSR in order to attend the All-Union Meeting on Genetics and Selection. Learning of this, his friends at the Institute of Experimental Biology, being fully aware of the danger to him, persuaded him not to come. Again, in 1937, it once more became known that Timoféeff was ready to come back to Russia; but Vavilov entreated him not to do so, passing the message to him through H. J. Muller. Koltsov also wrote a letter to him, and passed it out of the country secretly in the Swedish diplomatic bag. Koltsov declared: "Of all the methods of suicide, you have chosen the most agonizing and difficult. And this not only for yourself, but also for your family." Zhores Medvedev has documented these events in *The Medvedev Papers* (Medvedev, 1971, p. 94). It was thus that eventually the graduate student who had left Russia temporarily to work at the Kaiser-Wilhelm Institute for Brain Research became, first, head of a department, and later, a vice director of that Institute.

Timoféeff, however, according to the official Soviet designation, became a "nevozvrashchenets," a person who did not return to his country after being sent abroad, and hence was an enemy of the people. Yet he did not thereby lose his Russian citizenship. Obviously he prized that highly, and refused to accept the alternative of becoming a naturalized German. His mighty intellect, his noble patriotism, his knowledge of history, and his faith in the dignity of the Russian people inspired in him a belief that the time of slavery would pass, and that eventually he would be able to return to his native land. Nor was he an escapee, so long as he had not forfeited his Soviet passport.

When war between the Soviet Union and Nazi Germany broke out, Timoféeff-Ressovsky, as a citizen of a hostile country, was in danger of losing his status in Germany. Yet he was not sent to a camp for detainees, nor even dismissed from his position of vice director of the

K-W Institut für Hirnforschung. Even after his son Thomas, who became a member of the underground resistance, perished in a Nazi detention camp, Timoféeff himself was not removed from his high position. Thus it came about that the ultimate victory of Soviet Russia over Nazi Germany turned into a fresh tragedy for Timoféeff-Ressovsky. According to a statement made in 1950 to Bentley Glass by Timoféeff's personal friend, M. Rajewsky, who at that date was Director of the Max-Planck Institut für Biophysik in Frankfurt-am-Main, he had himself made a hazardous trip to Berlin in the last weeks before the fall of Berlin in order to try to convince Timoféeff to flee to the West before it became impossible to escape the advancing Russian Army. Timoféeff's response was characteristic of the man. He refused to flee, saying that it was his responsibility to try to save the Institute for Brain Research from destruction, as well as to save its staff members from harm. Since he could speak Russian fluently, and was indeed a Russian, he felt that he could explain the nature of the Institute to the commanders of the advancing troops and see that it was preserved from harm. And that is exactly what he did accomplish. Only later, on orders from Moscow, was he imprisoned. [See Bentley Glass, in the Foreword to this collection of articles.]

In the words of Alexander Herzen, "from victorious swords are formed the strongest chains." Timoféeff was imprisoned, sentenced to ten years of labor in a camp of correction. Here Timoféeff was isolated from scientific work of any kind, as well as from those members of his family, especially his wife Elena, who had survived the abysmal collapse (a "Götterdämmerung") of the Nazi "Gross Deutsches Reich."

Half dead after two years of hard labor and inadequate food, and suffering from a partial loss of eyesight and from pellagra, Timoféeff-Ressovsky was transferred to another punitive establishment, ironically called by dissident intellectuals a *sharashka*. (The word *sharashka* actually denotes a very shabby business based on fraud and extortion.) In these special prisons, scientists were gathered to raise the war potential of the socialist state. Here Timoféeff set to work to determine whether or not a treatment of the seeds of plants with small doses of radioactivity would stimulate the productivity of the plants. Here too, in the Urals, Timoféeff's wife

and younger son were allowed to rejoin him and to share his imprisonment. By the time Khrushchev initiated his policy of de-Stalinization, Timoféeff had almost served his full sentence of ten years. The new era was heralded by the release and rehabilitation of hundreds of thousands of persons who had been exiled or imprisoned. In 1955, Timoféeff too, was released, but for him no rehabilitation followed. The mercy of Khrushchev, when condemning the bloody past, did not extend so far as to pardon one who had refused to return to the Soviet Union lest he fall a victim of the very terror that the de-Stalinization policy had so unambiguously revealed and denounced.

After his amnesty, Timoféeff-Ressovsky was permitted to live in the city of Sverdlovsk, where he founded and headed a Department of Biophysics at the Biological Institute of the Ural Branch of the Academy of Sciences of the USSR, and also to establish a small experiment station in the southern Urals. Thither came scientists of many specializations in a sort of pilgrimage to learn of this new science previously undeveloped in Russia. Timoféeff's co-workers at the *sharashka* were also released to work with him at the experiment station. A series of articles written by various members of the group and devoted to the effects of the stimulation of plants by radiation appeared in the journal *Biophysika*, founded by the USSR Academy of Sciences in 1956, as well as in the *Botanicheskii Zhurnal* and in the *Doklady Akademii Nauk*.

In the spring of 1964 Timoféeff-Ressovsky moved to Obninsk, in the Kaluga region southeast of Moscow and quite near the capital city. Here he organized a laboratory of radiation genetics within the Institute of Medical Radiology, and commenced to work on the role of aquatic plants and animals in absorbing radioactive elements and thereby preventing the pollution of reservoirs. He thus became a disciple of the founder of biogeochemistry, V. I. Vernadsky, and Timoféeff transformed that science into an experimental one.

During all the years since first going from Russia to Berlin, Timoféeff had never completed a doctoral thesis, although already in the early 1930s he was widely recognized as one of the leading geneticists in the entire world. At long last, he had the opportunity to obtain the academic degree of Doctor of Biological

Sciences. Actually, in the end, he was awarded the degree in 1964 only because, at the very moment of his defense of the thesis, the extreme fluctuations in the attitude of the government toward genetics turned in his favor. Just when Khrushchev lost political power, genetics got a lift.

Timoféeff's interest in biogeochemistry was by no means narrowly restricted to the need for cleansing reservoirs. The biosphere as a whole, a system including humanity as a component, and providing humankind with everything needed for breathing, feeding, and creating a suitable climate, became the center of his attention. The delicate balance between the living and non-living components of the biosphere, and between different species of plants and animals and microorganisms needed study and control. Thus the laws of the evolution of the biosphere, which Vernadsky had elucidated—and primary among them the law of the increase during geological time of the numbers of atoms drawn into the various life-cycles—had to be applied to the improvement of human life as a safeguard against the alarming increase of human populations (Timofeev-Ressovsky, 1968).

The replacement of Khrushchev by Brezhnev heralded some liberalization in the treatment of science. Lysenko's power was restricted; genetics was legalized and true geneticists were permitted to work; new institutes and periodicals and a Society of Geneticists and Breeders were founded; new textbooks of genetics and textbooks of biology for high schools and universities were published (Medvedev, 1969). Yet along with the resurrection of genetics, the positive results of Khrushchev's de-Stalinization program were buried. The persecution of freedom of thought—that genie freed by Khrushchev from the bottle—was actually begun by Khrushchev himself. Next, the desire of the powers that be to rescind the privileges allowed by Khrushchev's reforms became more intransigent with every passing day. Among these was the amnesty that had been granted Timoféeff in 1955. Some of these acts of baiting I have described in my book, *Acquired Traits* (Berg, 1988, pp. 253–254, 293, 302–308, 310). More is to be found in a marvelous narration by Zhores Medvedev in his books, *The Medvedev Papers* and *Soviet Science* (Medvedev, 1968, pp. 70–112; 1972, pp. 134, 191). Medvedev has there

spoken from the personal knowledge of one who was a coworker with Timoféeff in the Institute of Medical Radiology in Obninsk.

The paradox of the increasing persecution of a geneticist at the very time when genetics was being rehabilitated as a science and when the participation of a geneticist of renown was so urgently needed in its reestablishment discloses that another malign force, besides Lysenko, was working in the political system to destroy genetics. This force was embodied in N. P. Dubinin, who successfully made his way to administrative power by scheming to undermine other geneticists, including the founders of genetics in the USSR. Slanderously he proclaimed them to represent bourgeois ideology. During Lysenko's rule, he was never strong enough to rival him in public, but as soon as *Lysenkovichina* ceased to be an effective deterrent he returned to his insidious strategy. Timoféeff-Ressovsky became one of his victims.

In 1971 Timoféeff, at the age of 70 years, was forced to retire from his position. His laboratory at the Institute of Medical Radiology at Obninsk was broken up upon the direct order of the Party Committee of Obninsk. It was only after a noted physicist, Max Delbrück, a Nobel Prize winner in genetics and a collaborator with Timoféeff in notable genetics papers of the mid-1930s, came to lodge a protest with the Academy of Sciences of the USSR that Timoféeff was granted a position at the Medico-Biological Institute in Moscow. It was merely a desk position. No laboratory for him to head was granted. Timoféeff-Ressovsky died in 1981.

His true friends tried, after his death, to obtain from the Supreme Soviet a "rehabilitation" of his reputation and status. Instead, they were denounced, and Timoféeff was charged with having experimented with Soviet prisoners of war during his stay in Germany. The rehabilitation was denied.

Such was the background of the dramatic posthumous fate of Timoféeff-Ressovsky, a Russian geneticist who clearly ranks with Vavilov and Chetverikov as the greatest of them all. The Gorbachev era of *glasnost* and *perestroika*, a new era of de-Stalinization, seemed to be an appropriate time for the political authorities not only to pardon Timoféeff, but to go even farther, and find those persons who had persecuted him to be guilty of malevolent persecution. Nothing of the kind has occurred. In

1987, the monthly magazine *Novy Mir* ("New World") instead published in its first two issues a narrative written by Daniil Granin, and entitled *Aurochs* ("Bison"). It told the story of Timoféeff's life and fate. At first glance it seemed that the author was indeed daring to choose as a hero a man who was officially a *nevozvrashchenets*, a betrayer, whose criminal convictions had never been rescinded. That initial impression lured many readers into a false understanding, and Granin himself became something of a hero of the Gorbachev era. This I know personally from letters received from my former colleagues in Russia, as well as from three articles in the monthly magazine *Voprosi Istorii Estestvoznaniya i Tekhniki* ("Problems of the History of the Natural Sciences and Technology," Academy of Sciences of the USSR, 1987–1988.) These articles reported on a round table discussion devoted to "Certain Pages in the History of Soviet Genetics in Contemporary Literature."

Those who loved Timoféeff were thankful to Granin for his narrative, for it seemed to be at least a small step toward an official recognition of previously rejected values, such as one's freedom to live wherever one chooses to live, or wherever either lucky or tragic circumstances force one to stay, without being accused as a criminal; and above all else, the freedom to search for scientific truth without being subordinated to any political doctrine or ideology. Timoféeff-Ressovsky, in Granin's presentation, seemed to the majority of intellectuals to stand forth as a shining embodiment of these freedoms.

That was a deception. Seventy years of censorship, during which even a favorable mention of an officially condemned person was in itself a crime, prevented most of us from seeing the reality behind the facade. Not only had the State, by sentencing Timoféeff to undergo hard labor in a camp of correction, performed an act of legal justice but, according to Granin, Timoféeff had in fact pleaded guilty to the charges. Some of the participants at the round table expressed a view that Granin had made errors in presenting certain historical events, errors either affecting persons in contact with Timoféeff or in respect to Timoféeff himself, but they stopped with that criticism. In reality, the picture Granin presented was a reflection in a distorting mirror.

The big questions to be answered were the following: why was Timoféeff not liquidated by Hitler? And why, during the war, did Timoféeff retain his high standing at the Kaiser-Wilhelm Institute? Granin's answer is that he was a genius, and that was accepted as a fact by the Nazis. But Granin could not permit himself to give the right answer, even if he knew it.

The policies of Hitler and Stalin toward world-wide celebrities were identical. Had Granin told the truth, if it be assumed that he knew it, his narrative could have been interpreted as a barrage against the Soviet regime itself. Timoféeff was saved not because of his genius, for the degraded Nazi administration had often treated genius badly, or even with savage contempt. Rather, it was because of his world-wide fame. Thus he served Hitler's regime as a figurehead behind which it was thought the bloody reality might be concealed, so that world opinion might be cheated. The freer his own thought, the sharper his critical remarks, and the greater his own intolerance of deception, the more suited he was for the purpose of international deception.

The well-known Swedish geneticist Arne Muntzing, who in 1962 was visiting Leningrad as a member of some scientific delegation told me personally that he had been in Germany at a conference in 1936 or 1937, where Timoféeff was also present. The meeting was interrupted on account of a broadcast speech by Hitler. Everyone was supposed to stand and listen in silence. As everyone rose, amid the universal silence Timoféeff's voice thundered out:

Wann wird denn dieser Wahnsinn endlich aufhören? [When will this madness finally cease?]

I have described this meaningful event in my memoirs (Berg, 1988, p. 304).

In the USSR, analogous persons to speak out included Ivan Pavlov, the poet Boris Pasternak, and V. I. Vernadsky. Another such person, the historian and academician E. V. Tarle, was saved by his friendship with Romain Rolland for, according to a rumor circulating among academicians, Rolland visited the Soviet Union and asked for a meeting with Tarle, who had been imprisoned. As a result, Tarle was freed.

In his book *Kettenreaktion: Das Drama der Atomphysiker*, Jost Herbig (1976, p. 54) wrote about the urgent request made by the Scientific Council of the German university where Heisenberg was teaching, to arrest him because of his open opposition to the racial policy of the Nazi regime. The request was denied by Alfred Rosenberg himself. That refusal was motivated by the world-wide recognition of Heisenberg's scientific merit. For Stalin as for Hitler, the major tool of deception was silence. Silence could then be broken to disclose that some obvious candidates for camps of correction were *not* imprisoned. That was good propaganda. Of course, to serve such a purpose, the persons would have to be of world-wide fame.

Those geneticists who expressed their gratitude to Granin at the round table discussion were ready to forgive him for the justification he made of Dubinin in his praise of Dubinin's book *Vechnoye Dvizhenie* ["Perpetual Motion"] (Dubinin, 1973, p. 351; 1975, p. 372). In that book, Dubinin accused Timoféeff not only, as the Soviet jurisdiction did, for staying on in Germany when ordered to return, but even for initially accepting the invitation to go to Germany. Timoféeff's crime in leaving the socialist motherland was never to be forgotten, never to be forgiven.

Granin has termed this diatribe which was directed by Dubinin against his own teachers, this apologia of Stalin's and Brezhnev's crimes against intellectuals, peasants, and citizens of Czechoslovakia, a "bald and honest recollection." In order to justify Dubinin's intrigues, Granin insinuated a slanderous accusation of racism at Koltsov. Not a single one of Koltsov's former students who were present at the round table raised a voice in Koltsov's defense. Granin knew exactly the narrow limits of freedom of speech, and the speakers at the round table knew them, too. Yet even Granin's extreme caution not to trespass upon those limits could save him from criticism. The most chauvinistic element of the press in the USSR, a chimerical scion of both adherence to communism and also to Great Russian Nationalism, attacked him. According to those journalists, a person who was an intellectual, who came from the nobility and was thus a class enemy, should not become a beloved, nor even a positive, personage in Soviet literature. From the orthodox Marxist-Leninist standpoint of group-

accusation, the group affiliation of a person is a sufficient reason for persecuting him or her. Granin therefore, according to these journalists, ought to have exposed the criminal actions of Timoféeff beyond his mere refusal to return to the Soviet Union when ordered to do so. Those "patriots" condemned Granin for hiding the services Timoféeff-Ressovsky had rendered to the Nazi government. Let us hear their own voices.

Vladimir Bondarenko, in an article entitled *Ocherki literaturnikh nrayov* ("Essays about literary dispositions") published in the magazine *Moskva*, wrote as follows:

I am interested in whether Timoféeff-Ressovsky collaborated, according to Granin, with the Nazis or not. It is known that in 1944 part of the physicists occupied in nuclear research were transferred under the leadership of the Bison. . . . Does that mean that if the atom bomb had been produced by the Germans and used against us, that would also have been meritorious on the part of the Bison? The narrative does not elucidate that question (Bondarenko, 1987, p. 190).

Bondarenko is entirely silent about the source of his information. His accusation that research on an atomic bomb was under Timoféeff's supervision is a final step in a chain of falsity.

In an essay *K kakomu khramu ishchem mi dorogu?* ("Toward what kind of cathedral are we searching for a road?"), A. Kuzmin attacked both Granin and Timoféeff-Ressovsky (Kuzmin, 1988). The article's title assumes that Kuzmin has knowledge both of what a perfect cathedral might be and also of what road must be taken to reach it. The metaphor of a cathedral was chosen to symbolize the ideal social order that was to be created by Gorbachev's "perestroika." According to Kuzmin, that social order, previously proclaimed by Lenin and realized by Stalin, is the building of socialism in one particular country. By Lenin, patriotism had been opposed to internationalism, which was equated with cosmopolitanism, and perceived as being a force hostile to the Russian people. The right way leading to the ideal cathedral then turned out to be a realization of the program chosen by the chauvinistic, anti-Semitic society known as "Memory." Kuzmin's socialism is thus opposed not only to internationalism and to Trotsky's idea of a world revolution,



but also to individualism. It followed that Granin, and his narration "Bison" (1987), became the targets of a severe attack.

Granin's guilt was not merely to justify an unpatriotic act. Nor was it simply to have written an apology for a man who preferred to live in Nazi Germany when given a choice to leave. Granin's wrongdoing was to conceal Timoféeff's participation in Nazi crimes. Hitler's genocide of the Jews is not mentioned, but instead we hear that what is now taking place in the Gaza Strip embodies "... ideas of the slave-owning era [that] veil the genocide of the great Semitic Arab nation" (Kuzmin, 1988, p. 155). The postulated secret contract of "the Genetics Department of the Institute in Berlin-Buch with the War Ministry and with the Supreme Commissar over atom physics" is transposed from Bondarenko's pamphlet to Kuzmin's article (1988, p. 164). Research done in one of the laboratories under Timoféeff's supervision is depicted as part of Hitler's massacre of Hitler's political enemies, those whom he had declared to be biologically inferior. Kuzmin continued:

Co-authors [Timoféeff, Born, and Zimmer] calmly narrate about experiments in humans, who were subjected to intravenous injections of thorium-X. The fascist Germany was for sure a sole country where experiments of this kind were not even veiled. Inferiors were not considered to be humans (1988, p. 164).

Through unforeseen circumstances, to be described hereafter, I became acquainted not only with these accusations but also with the publications used by the judges of Timoféeff-Ressovsky when bringing in a verdict of guilty against him. It is true that injections of thorium-X into human subjects were described by Wolf and Born (1941) and by Gerlach, Wolf, and Born (1942). Both of these publications are designated as coming from the Genetics Department of the Kaiser-Wilhelm Institute, Berlin-Buch, which was headed by N. W. Timoféeff-Ressovsky, as well as from the Radiology Department of the Auer-Society, Berlin, headed by P. M. Wolf. The work was actually done in the laboratory headed by Wolf. References given in these articles show that the use of radioactive substances as tracers to study blood circulation in animals and humans had already been begun in the 1920s by workers elsewhere.

Thorium-X was chosen by Wolf and Born (1941) particularly because of its short half-life, its low effective dose, and its low energy of decay, yet with radioactivity high enough to permit the signals to be picked up outside the body of the subject. Patients of the clinic served for a comparison of blood circulation in persons suffering from circulatory disturbances with those who had no circulatory problems. Thorium-X was injected in such small doses that it could not even be weighed (p. 342), but the dosage was estimated to be, per experiment, the equivalent of 0.03 mg. radium-equivalent (p. 346). The object of the experiments was simply to diagnose disturbances in the circulation of the blood.

The article by Gerlach, Wolf, and Born does indeed make reference to an article written jointly by Born, Timoféeff-Ressovsky, and Zimmer in 1941. It was entitled *Anwendung der Neutronen und der künstlich-radioaktiven Stoffe in Chemie und Biologie*. It was a short review article in the popular scientific magazine *Die Umschau*. This reference is the only indication that Timoféeff was in touch with Wolf and his co-workers.

The use of radioactive tracers in medicine and physiology was at that time worldwide, and not simply limited to Germany. Great caution was used to keep internal doses from such tracers far below any harmful level. From a standard reference work in the field, a *Handbook on Toxicity of Inorganic Compounds* (Seiler, Sigel, and Sigel, 1987), I learned the following:

The availability of radium and X-rays since the beginning of this century led to the emergence of nuclear medicine and radiology, respectively. Both important medical fields make use of ionizing radiation for diagnosis or therapy. . . . Thorium as a contrasting agent was used because of its physical properties and despite its radioactivity. . . . Today pharmaceuticals play an important role in diagnosis, but the radiation from these activities in the general public is still only a fraction of the exposure caused by radiography (pp. 809-810).

In 1981, in the United States, I was myself injected for diagnostic purposes with a radioactive tracer and could observe on a television screen, together with the physician, the transport of the contrasting agent to the gall bladder and its removal from my body. Similar uses

of radioactive tracers are still in common world-wide use for diagnostic purposes.

Let us return to Kuzmin and his cathedral. Granin incurred Kuzmin's anger because Granin did not present properly the real hero, the knight of the ideological fight against the bourgeois intelligentsia, namely, Dubinin. Granin's flirting with Dubinin, his praise of Dubinin's memoirs, Kuzmin disregarded.

A hostile attack against Timoféeff-Ressovsky by non-Russian scientists I myself witnessed at the 16th International Congress of Genetics, held in Toronto, Canada, in 1988. It was at one of these that Peter Weingart, of the University of Bielefeld in West Germany, when speaking of the renunciation of humanitarian considerations by German race hygienists, asserted that mandatory sterilization and the later holocaust were "relatively well founded on the genetic and medical knowledge of the time" (Weingart, 1989, p. 897). In his abstract, no names were given of the persons who had created this "genetic and medical knowledge"; but in his verbal presentation Weingart did mention one name, and one only. It was that of Timoféeff-Ressovsky. I asked Weingart what he could mean by thus accusing Timoféeff. The answer I received was that Timoféeff had supported the Nazi racist theory.

In the two-page abstract of Peter Weingart's publication (1989), "Politics of heredity—Germany 1900–1940: A brief overview," not a single name was supplied of any person implicated in providing the basis of genetic and medical knowledge on which the Nazi racist ideology was founded. In speaking about the law for "protecting German blood and honor" by prohibiting marriages between Germans and Jews, Weingart wrote (p. 897):

The law is now branded as a purely ideological anti-semitic measure, but historians have overlooked the fact that this law, at the time, reflected widespread concerns over the effects of race mixture that were not limited to German race hygienists.

He implicated Timoféeff-Ressovsky, without mentioning him by name, in the following sentence (p. 897):

The major concern of the state . . . was the cleansing of the hereditary stock from so-called asocial elements. This concern was taken up even by modern geneticists to the extent that

they propagated and undertook research in the identification of heterozygote carriers of recessive hereditary features.

Here the history of population genetics is quite falsified. The identification of heterozygote carriers of recessive mutations causing disease or disorder was already undertaken in Moscow in 1926 by the group of researchers under the guidance of S. S. Chetverikov and, during the last two decades, it has become a major enterprise of human genetics all over the world. It had nothing to do, then or now, with cleansing of the [human] hereditary stock. Timoféeff, as a follower of Chetverikov, started his population studies on *Drosophila* as soon as he arrived in Berlin-Buch.

I digress to examine the article by Weingart (1987), of which the abstract of the talk at the Genetics Congress purported to be a brief summation. That claim is in error, for the longer article itself is an analysis of relationships between science and politics long before the Nazis came to power. In his 1987 article, Weingart pointed to the existence of a conflict between eugenics, a precursor of modern human genetics, on the one hand, and race theory, on the other. To buttress that view, he quoted from a paper given by Raymond Pearl, a well-known American geneticist [and incidentally the founder and first editor of *The Quarterly Review of Biology*], a paper given at the Fourth International Congress of Genetics held in Berlin in 1927. The propaganda of the eugenicists, wrote Pearl,

their public teachings, their legislative enactments, and their moral fervor are plainly based upon a pre-Mendelian genetics, as outworn and useless as the rind of a yesterday melon. . . . The literature of eugenics has largely become a mingled mess of illgrounded and uncritical sociology, economics, anthropology, and politics, full of emotional appeals to class and race prejudices, solemnly put forth as science (quoted from Weingart, 1987, p. 186).

Weingart also quoted the words of H. J. Muller from a review he wrote of the Baur-Fischer-Lenz textbook of human heredity, *Menschliche Erblchkeitslehre und Rassenhygiene* (published in Munich, 1932, 4th edition). Regarding the second part of the treatise, a part written by Fischer and Lenz, Muller commented:

As they stray further and further from the fields in which rigorous genetic investigations have been conducted . . . Fischer and Lenz become less and less scientific, and we soon find them acting as mouthpieces for the crassest kind of popular prejudice (quoted from Weingart, 1987, p. 189).

From Weingart's article we further learn that Lenz regarded the real creator of the Nazi race theory to be Hitler himself. His words were (pp. 188-189):

He [i.e., Fritz Lenz] wrote a lengthy review of Hitler's *Mein Kampf* in which he took the author's race-hygienic and racist theses completely seriously.

Weingart then tried to explain "the growing influence of race theories in Germany at a time when they were already drawn into question elsewhere" (p. 190) as follows:

. . . [U]nder the influence of the party and its ideology the character of race-hygiene increasingly escaped the control of the scientific representatives, who steadily lost their influence on the government's population and eugenic policy (p. 191).

It was the Nazis themselves who were guilty; there was no need to accuse the guiltless. Timoféeff-Ressovsky was not mentioned. That was so different from what was said and implied at the Congress two years later, that I decided to write to Professor Weingart to call his attention to this contradiction. I wrote that I would be grateful if he would write me that his words at the Congress were not just and if he would permit me to refer to his letter in my articles. In a letter of August 23, 1990, Professor Weingart wrote that his words were misinterpreted: "My claim is that even a scientific genetics cannot prevent political abuse. . . . I did not . . . want to attack Timoféeff-Ressovsky for being racist nor do I have sufficient knowledge of his work and his personality to be able to do so. . . . I hope that this . . . clarifies what was an obvious misunderstanding and is sufficiently clear to serve your purpose for quoting it in other contexts."

At the Congress, following Weingart's remarks, Benno Müller-Hill caused a further sensation. From the podium he proclaimed that he could document Timoféeff's involvement in

racist actions. He then reported that at Timoféeff's institute in Berlin-Buch a meeting had taken place, at which Alfred Rosenberg, the notorious Nazi leader of racist policies, made a speech. Müller-Hill's statement aroused an ardent controversy. It erupted during the session and continued during the breaks, and became more and more violent. Müller-Hill's accusations became more and more vigorous. Every geneticist from the Soviet Union who was present and who knew Timoféeff tried to persuade Müller-Hill that he was wrong, but he kept firmly to his accusations. Because of the implacable nature of our controversy, I was therefore surprised when, after returning to St. Louis, I got a letter from Müller-Hill containing his presumed documentation of Timoféeff's guilt. In our ensuing correspondence, I became a possessor of all the materials that Müller-Hill had scraped together in order to unmask Timoféeff as an active collaborator with the Nazis and, in particular, a supporter of their racial and eugenic policies.

Let me state at this point that I knew Timoféeff personally. On several occasions I had visited seminars at his biological experiment station in the Urals. Some of my own publications have dealt with Timoféeff-Ressovsky's presentations (Berg, 1957, 1958). I was also a coauthor of the first article written by Timoféeff after his release from imprisonment (Berg and Timofeev-Resovsky, 1961). In 1972, when he presided at a symposium on population genetics at the Second All-Union Congress of Genetics and had chosen its speakers, I had the luck to be invited. I also knew his published work while he was in Germany, both before and during the time of Hitler. In 1984 I spent a half year in the city of Mainz, in West Germany. There I immersed myself in the biological publications of the "thousand years" of the Nazis and had access to journals inaccessible in the Soviet Union. Indeed, I found monstrous manifestations of the moral degradation of the scientific community, but Timoféeff proved to be irrefragable.

Timoféeff himself told me how he had used the enormous, sluggish machinery of the Nazi administration to save from dismissal Jews employed in the Kaiser-Wilhelm Institute. I also knew from him directly his own disposition toward Lysenko and the destructive activities in

science, agriculture, medicine, and education of Lysenko and his followers and patrons. The *Lysenkoushchina* that began under Stalin had continued under Khrushchev to be a part of the official ideology. From one dictatorship over all branches of science, Timoféeff had fallen into another one. Discreetly he avoided every hint of support for political and scientific dictatorship, although he never openly attacked the powers under which he lived. Instead of arguing against quackery, he opposed it by himself following a relentless search for scientific truth, and by spreading scientific knowledge to as many people as possible. From his subsequent behavior, after the return to Russia, it was simple to extrapolate what his behavior under the Nazis must have been. I was myself absolutely sure that Timoféeff did not collaborate with Hitler or his minions. Now, thanks to Müller-Hill, I had acquired documentary proofs that Timoféeff had not been involved in Nazi criminal deeds or in support of Nazi ideology.

The documents that were alleged to compromise Timoféeff-Ressovsky showed, in the first place, that the meeting Müller-Hill had mentioned at the International Genetics Congress in 1958 was actually held, not at the Kaiser-Wilhelm Institut für Hirnforschung, but at some educational center for local Nazi leaders. The periodical *Neues Volk*, in reporting the meeting, reproduced the speech of Alfred Rosenberg, truly a cynical attempt to falsify facts in order to advocate racism. It also provided a photograph that showed Timoféeff surrounded by the Nazi leaders attending the meeting. The caption under the photograph reads: "Members of special classes visit the Institute for Brain Research in Buch. Dr. Timoféeff (center) is one of the most noted geneticists." This piece of propaganda was clearly aimed to legitimate the nature of Nazi race policy, as being rooted in science and accepted by a world scientific elite. Obvious is also that mere attendance at a meeting of this sort, by the Vice Director of a Kaiser-Wilhelm Institute, could in no way have been avoided. It does not imply any harmony between Timoféeff and the views expressed by such persons as Rosenberg.

In order to provide evidence of Timoféeff-Ressovsky's support of fascist eugenics, Müller-Hill also enclosed an article published by Timoféeff in a magazine of medical genetics.

The article was entitled "Experimentelle Untersuchungen der erblichen Belastung von Populationen" [Experimental studies of the hereditary load in populations] (Timoféeff-Ressovsky, 1935). Timoféeff first described how recessive mutations of a deleterious nature are hidden under the protection of their normal alleles in populations of certain species of flies and beetles. This was common knowledge among the geneticists of the 1930s. Timoféeff then wrote:

It would be of paramount importance for human genetics as well as for race hygiene [the term Germans preferred to use in place of "eugenics" (R.B.)] not only to estimate the percentage of people affected with a particular hereditary disease, but also to find out the geographical distribution and the allelic frequencies of hidden mutant genes. This would not only facilitate race-hygienic control, but would also be helpful in avoiding certain difficulties in the classification of hereditary diseases. It is known that different mutations produce similar phenotypes and that there are genes which manifest themselves differently in combinations with other genes, so modifying considerably their phenotypic expression (p. 118).

It must first be said that there is not a single idea expressed in this paragraph which not only every informed geneticist of the 1930s would have unhesitatingly endorsed, but that the same holds true for informed opinion today. Differences of opinion arise only when geneticists consider what should be done to mitigate the genetic load. In the early 1930s many eugenicists advocated such measures as compulsory sterilization of persons affected by extremely harmful genetic diseases and disorders, and even sterilization of the carriers of such recessive genes. Others advocated internment of such persons in state institutions. Still others felt that voluntary measures and genetic counseling would be adequate. It was only after the mid-1930s, when the harsh excesses of Nazi eugenic policy became widely known, and when geneticists such as J. B. S. Haldane showed the ineffectiveness of sterilization in lowering the genetic load, that genetical opinion swung radically away from compulsory eugenic measures, and the improvement of medical treatment and obliteration of environmental deficiencies seemed much better. In preparing an article for a journal of medical genetics, Timoféeff of

course used the term "race hygiene" in the same sense given it by such early German founders of eugenics as Wilhelm Schallmayer (see Sheila Faith Weiss, 1987) at the beginning of the 20th Century, and also as it was used by the founders of eugenics in the Soviet Union, Koltsov and Filipchenko. The two Russian founders of eugenics declared that the principal components of eugenics were (1) medical genetics, including medico-genetic consultation, aimed to estimate the probability of birth of affected offspring and to cure hereditary diseases on the basis of the correct diagnostic measures; and (2) voluntary refraining from reproduction in the case of a high probability of having an affected child, a restraint, or self-denial, to be based on a sufficient knowledge of human genetics.

Timoféeff's attitude toward the "purification" of the "Aryan Race" was exactly the same as the outlook of H. J. Muller, as expressed at the same time in Muller's book, *Out of the Night*, which was published in 1935 while Muller was in Russia, but was written many years earlier. Muller, in combatting the idea, then popular in the United States among some biologists, that forced sterilization was an effective way of lessening hereditary feeble-mindedness (or other components of the genetic load), wrote as follows:

As regards the eradication of feeble-mindedness, many of the so-called eugenisists are laboring under a misconception, for (as Haldane has pointed out) sterilization of all the feeble-minded would by no means prevent the reappearance of this trait in the next generation. . . . Important in this connection is the fact that a large proportion of the hereditary defects are probably inheritable in some concealed form . . . (pp. 78, 80).

Muller did insist that the cure of hereditary ailments is an urgent necessity and he stressed the need for the right diagnostics:

Modern genetics shows that in many cases such ailments occurring in different families, may be so alike in symptoms as to be indistinguishable from one another, yet have a fundamentally different hereditary cause; and each causally different innate weakness may present its own special problems of treatment . . . Such a problem . . . cannot be attacked with the greatest efficiency by the medical man before the ailment has been classified in relation to

what the individual's heredity contained. The recent introduction of this point of view in pathology, neurology, etc., which we owe largely to Dr. Levit in Russia and to Dr. Vogt in Germany, vastly increases the work to be done in these subjects, and the need in them for a thorough understanding of genetics (pp. 70-71).

Oscar Vogt, whom Muller mentioned, was at that time and until 1938, when he retired, the Director of the Kaiser-Wilhelm Institut für Hirnforschung, where Timoféeff had studied the genetic load in *Drosophila* populations. S. Levit was at that time, and until 1936, the Director of the Institute for Medical Genetics in Moscow. In 1936 he was arrested and never heard of again. His was the sad fate that would have awaited Timoféeff, had he not been forewarned by Koltsov and Vavilov.

Muller, of course, was freer to express his views than Timoféeff was in Nazi Germany. Today it is routine practice in medical consultation to take into account the genetical data that Muller and Timoféeff insisted should be collected and used in genetic counseling.

Among the supposedly compromising materials Müller-Hill sent me were the two articles by Wolf and his coauthors dealing with the injections of thorium-X into humans (Wolf and Born, 1941; Gerlach, Wolf, and Born, 1942). Müller-Hill commented to me, in a letter of January 5, 1989, that to publish works of that kind and to participate in experiments on humans was "on the part of Timoféeff-Ressovsky 'abscheulich' [horrible; dreadful]," and he continued, "An expert [putative, R.B.] has written me that he could extrapolate from the data that the experiments were lethal." Such a misunderstanding of conventional tracer experiments used worldwide indicates either an abysmal lack of understanding or a willful distortion of the truth intended to mislead the ignorant.

Another allegedly "horrifying" crime committed by Timoféeff was connected with a paper written by S. R. Zarapkin, a coworker of Timoféeff in the KWI für Hirnforschung, an article entitled "Über die Variation der Kopf-form bei einigen Menschengruppen" [On the variation of head-form in certain human groups] (Zarapkin, 1943). Four groups were compared with respect to head form: Jews, Eskimos, English, and Sicilians. Some differences

were found, and were reported without the slightest implication of any racist theory. It was demonstrated that although the head form of Jews changes with age, it was not affected by environmental conditions. No fresh measurements were made by Zarapkin, but Franz Boas's measurements were simply used to check Boas's own Lamarckian conclusions, and the author held that Boas's conception of the inheritance of acquired traits was disproved. Müller-Hill's comment, however, was how dreadful it was that Timoféeff's purpose [sic] was to show by means of this study that a Jew remains a Jew wherever he lives. That conclusion, so compatible with Nazi ideology, is a prime example of a dual fallacy of reasoning: first, to attribute to a particular person a point of view that might be held by an associate; and second, to extrapolate from a particular characteristic (in this case, head form) to a general all-embracing "racial" complex, social as well as biological.

Recent mail has brought me Müller-Hill's review of Granin's *Bison* (Müller-Hill, 1988a). Ironically, one can note a striking resemblance between the shameless propaganda of Kuzmin, adherent of the anti-Semitic group "Memory" and also a Stalinist, and what Müller-Hill has written. According to each of them, Granin has falsified Timoféeff's biography by concealing his crimes. Müller-Hill, to be sure, does not depict Timoféeff as the manager of the Nazi's atomic bomb project, but in other respects he shares Kuzmin's ardent wish to disparage Granin's target by making the same accusations. Müller-Hill has definitely tried, in this review, to persuade the reader that Timoféeff was devoted to Nazism. He has even stated that in 1933, when the Nazis came to power, "Muller fled to the Soviet Union, Timoféeff-Ressovsky stayed in Germany." The fact, according to the personal knowledge of Bentley Glass, who was with Timoféeff and Muller in Berlin-Buch in 1933, is that H. J. Muller came to Europe with the firm intention of going to the USSR, together with his wife and Carlos Offerman, a South American who was studying genetics under Muller, and that they merely stopped for a temporary visit to Timoféeff before proceeding onward.

Muller had long planned to go back to Russia for a second visit, for his first, in the 1920s, had been highly rewarding to him. He was in-

deed deceived by the Communist propaganda. Bentley Glass vividly recalls more than one somewhat heated argument he had during their joint stay in Berlin-Buch, Glass maintaining that there was nothing to choose between one kind of fascist dictatorship and another. Both Soviet and Nazi authorities were determined to dominate science completely, and to distort it to further their own political ideologies. Muller claimed there was a vast difference in that respect between Soviet Communism and Nazi ideology and policy. His first visit to the USSR had convinced him that in Soviet Russia science was free and was warmly defended in its conclusions (see Glass, Foreword). Muller at this time was elected an Associate Member of the Academy of Sciences of the USSR, and was invited to head the Department of General Genetics of the Institute of Genetics of the Academy of Sciences. The invitation came from the Director of the Institute, Nikolai Vavilov, who was a friend of Muller. It was not until four years later, in 1937, that Vavilov was to recommend to Timoféeff that he should stay in Germany, and at that same time asked Muller, for the sake of his own safety, to leave the Soviet Union; and it was seven years later, in 1940, that Vavilov was himself arrested, and in 1943 died while in prison.

Timoféeff's article of 1935 on the genetic load in populations of fruit flies and beetles was described by Müller-Hill as a demonstration of racism, as a philosophical acceptance of the propriety of death sentences for persons judged to be inferior. The actual language was as follows:

In 1935 he [Timoféeff-Ressovsky] published an article on the mutational load in *Drosophila*, in which he commented that such a type of analysis would help greatly the "control" of human populations in race hygiene (*Der Erbarzt*, No. 8, pp. 117-118) (Müller-Hill, 1988a, p. 722).

In the same review, Müller-Hill once again mentioned the symposium, organized by the race headquarters of the Nazi Party on the problems of the *Weltanschauung* [world view], the meeting that he had mistakenly declared at the International Congress of Genetics in 1988 to have taken place at the Kaiser-Wilhelm Institute for Brain Research in Berlin-Buch. In this review, however, Müller-Hill merely concluded that Timoféeff, as a "member of the

symposium . . . in reality did nothing" (p. 722). He was, nevertheless, held responsible for the public impression created by "his picture among all the brown shirts." To strengthen this veiled charge, Müller-Hill informed his readers that Timoféeff "invited the participants to his institute" (p. 722). This grave charge, which could scarcely have been needed by party functionaries who went wherever they pleased, was not documented in the review, nor did Müller-Hill mention it in correspondence with me.

In the review, there was also a passage about the injections of thorium into human subjects.

During the war Timoféeff-Ressovsky found an even better rationale for his research: Heisenberg's atom machine. He [i.e., Timoféeff] was certainly the best-qualified radiation expert in Germany at the time, and so he extended his research in this direction. His collaborators, Gerlach, Born, and Zimmer looked at the turnover of thorium-X (radium-222, an alpha emitter with a half-life of two days) in human beings (*Arch. f. exp. Pathologie*, 199: 83-88, 1942). The authors of this paper do not mention who were the individuals into whom they injected the thorium-X, nor do they say how large the dosage was. I take here their word that it was harmless (p. 722).

First, there is an error in the citation of the paper referred to by Müller-Hill. The publication in the *Arch. f. exp. Pathologie* is under the authorship of Gerlach, Wolf, and Born, not by Gerlach, Born, and Zimmer. Having access to the paper to which Müller-Hill refers, I found in it all of those data that Müller-Hill asserts are missing (see p. 24).

Both Kuzmin and Müller-Hill have contrasted the villain Timoféeff-Ressovsky with the hero Dubinin. According to Kuzmin, Dubinin needs to be protected against the slanders of Granin. Müller-Hill stated that this protection was needed against the State. Actually, Müller-Hill's sentence that mentioned Timoféeff and Dubinin together is most confusing:

The charlatan Lysenko had been against eugenics. His former enemy, the geneticist Dubinin, was against it, too. But Timoféeff-Ressovsky was for it. So now when Dubinin had turned into a cantankerous old antisemite, does this not indicate that eugenics was and is unquestionably a good thing? (Müller-Hill, 1988, pp. 721-722).

This puzzling comment seems to mean the following: Granin used the official permission of pardon for Timoféeff-Ressovsky to imply a sanction by the state of Timoféeff's racist, fascist eugenical views. For in a state where everything is sanctioned by the authorities, the mere permission to publish a book about Timoféeff must signify that the state has accepted the views of the rehabilitated person and has decided to put those views into practice. How marvelous that line of reasoning, which ignores the fact that Timoféeff was never actually rehabilitated, and which furthermore completely misunderstands the significance of *glasnost*. Behold! Timoféeff-Ressovsky was an adherent of bloody Nazi eugenics. Dubinin, the enemy of eugenics, is slanderously exposed to public dishonor, and silenced. Granin's book heralds the onset of a new era of fascism.

In Müller-Hill's review, to continue, he described the imprisonment and release of Timoféeff in the following way:

Timoféeff-Ressovsky was transferred to a secret laboratory . . . and the work went on. . . . He now had to do secret research. . . . Apparently nothing was published during these years. Finally when the problems were solved, Timoféeff-Ressovsky became director of a small biological station in the Ural Mountains (Müller-Hill, 1988a, p. 721).

What a distorted picture of Timoféeff's experiments on the radiostimulation of plants, which were published in several journals! of his unqualified release owing to Khrushchev's de-Stalinization policy! and of his founding of a biophysics department in Sverdlovsk at the Biological Institute of the Academy of Sciences. Müller-Hill's aim seems to be to represent Timoféeff as not only a participant in Hitler's holocaust, but also an attendant of Stalin's war machine.

To grasp the aim of Müller-Hill to ascribe to Timoféeff a conduct so alien to his nature, I had finally to read Müller-Hill's book, *Tödliche Wissenschaft: Die Aussonderung von Juden, Zigeunern, und Geisteskranken, 1933-1945* (Müller-Hill, 1984; Eng. trans., 1988b). This little book is a useful reminder of Germany's tragedy of 1933 to 1945, and aims to prevent a relapse. The author undertook an enormous labor in order to reconstruct the history of Nazi crimes against humanity.

According to Müller-Hill, the guilty persons include all the inhabitants of Germany, except for those who themselves perished in hospitals, in prisons, internment camps and ghettos, or in "scientific institutes" where they were being used as laboratory animals for experiments. The criminals in Germany numbered not only all scientists, especially the anthropologists and geneticists, but also all physicians, and especially psychiatrists. Science itself is guilty, not just the persons who applied scientific data in criminal ways, but science as such. The accusation against science starts with the very title of the book. It is science that is murderous. Müller-Hill wrote:

It seems to me that the intrusion of science into the field of the human being, endowed with speech and a means of signaling, the intrusion that started in the 18th century, was a fundamental error. . . . Because man observed in this way turns out to be reduced to an object or to an animal doomed to subservience (Müller-Hill, 1984, p. 100).

[Note: this passage and all the following quotations have been translated by the author from the original book in German (R.B.).]

If one takes Müller-Hill's expression of compunction literally, no medical care would ever be acceptable, since it always represents an "intrusion" upon the body of the patient! The reasonable ethical issue is to consider precisely where to draw a line between warrantable intrusion on the body of a human and unwarrantable intrusion.

Müller-Hill went on to express his view of the guilt of the Germans as follows (Müller-Hill, 1984):

Hitler came to power, because he threw it open for German citizens to use biologically well-grounded science for their dreams to become murderers (p. 94). More important than a "General Plan" [i.e., an order from a superior authority (R.B.)] was the will to wipe out the Jews, Gypsies and mentally ill persons. . . . The "will," liberated by Hitler, was the desire of the "hidden and undisguised murder-lovers to kill" (p. 96).

Anthropologists and psychiatrists Müller-Hill held to be guilty because they created "the ideology, or more precisely, the religion of fascism. Many were at that time of the opinion

that this religion is needed to save the motherland and capitalism" (ibid., p. 94). Some of them repeatedly and deliberately "provoked the death of their patients with whom they experimented. . . . The controlling scientists considered certain categories of humans as some kind of experimental animals" (ibid., p. 98). Müller-Hill concluded with a question, "whether there were anthropologists or psychiatrists in Germany who did not match the delivered image." His own answer was the following: "As to anthropologists and specialists in human genetics, I affirm my right to say that there was not a single person who would differ considerably from those whom I have mentioned" (ibid., p. 100) and he continued, "I have named only the most active ones, so as not to be accused of dealing with insignificant persons" (ibid., pp. 100-101).

To hold that a person is guilty because of group affiliation is a doctrine of every revolution, of each forcible reconstruction of society. Proceeding in his review of Granin's book to reaffirm this depraved idea, Müller-Hill implicitly accused Timoféeff, for the "Bison" was lucky enough to be among the "insignificant" persons whom Müller-Hill did not mention in his book. Müller-Hill's group accusation of all Germans as harboring murderous intentions naturally evoked a protest from those Germans who had attended his public address. He has described those attacks on him in an article entitled "Genetik nach Auschwitz" [Genetics after Auschwitz] prepared for inclusion in a volume called *Das Weltbild der Biologie* (I quote two examples of these attacks upon him [translated from the German manuscript (Müller-Hill, 1982, p. 29)]):

You were not there. To speak about this history is possible only for those who witnessed it.

You despise your audience. Even your clothes show how you despise us.

The few persons present who sympathized with the speaker dared to demonstrate their approval of his words only after the lights had been turned off in the auditorium. Müller-Hill conveniently ascribed the hostile demonstrations not to the indiscriminate nature of his accusations, but as a sign of a coming relapse into Nazism.

One final misrepresentation of what was go-



ing on in Nazi Germany prevented Müller-Hill from making a correct explanation of the freedom accorded to Timoféeff-Ressovsky under Hitler. To aggravate the guilt of the Germans and to justify his sweeping condemnations, Müller-Hill denied that the bloody business conducted in the Third Reich was done secretly. He wrote (Müller-Hill, 1984, p. 94):

Everyone knows that Jews and mentally ill persons are being killed, but nobody dares to tell it. The essence of German fascism, annihilation, was an open secret and had to remain an open secret. . . . Like the name of God, so was the name of annihilation not to be pronounced. . . . Hitler gave to German citizens an opportunity to carry out their desire to murder, by being able to tell that they were forced to do it [or] did not know anything. He transformed them back to children, who forget and [then] tell that they did not know anything [about it].

Müller-Hill's charge that everyone knew that Jews and mentally ill persons were killed, simply does not correspond with the facts. During my own stay in Germany in 1984, many German acquaintances told me that they knew about the dismissals and deportation of Jewish people but not about the annihilation. A blockade of information existed within Nazi Germany; outside the country, misinformation prevailed. The American wife of one famous geneticist, Curt Stern, who was one of those who supplied the most convincing proofs of the chromosome theory of heredity, told me how she persuaded her husband not to return to Germany after the International Genetics Congress of 1932, which Stern had attended in America. His life would indeed not have been endangered had he gone back to Germany at that time. Other distinguished German Jewish geneticists, such as Richard Goldschmidt, were not forced out of their positions and exiled until the mid-1930s. Reliable information about the persecution of the Jews, which began in 1933, was so scarce and so contradictory that Stern actually decided at one time to return. Evelyn Stern had to go to Germany herself to learn that Jews were being dismissed from all jobs and professional positions. The professorship offered to Curt Stern in München would clearly not have been his for very long, so he decided not to return at all, after

the term of a fellowship awarded to him by the International Education Board had expired.

It goes without saying that Müller-Hill did not mention the deceitful Nazi propaganda that depicted before the public opinion of the world a favorable image of a free and generous country. Timoféeff-Ressovsky's world fame and reputation for defending the freedom of scientific thought are not consonant with Müller-Hill's accusations. Had Müller-Hill drawn a correct conclusion from his unsuccessful search for evidence of Timoféeff's services to Nazi ideology and racial policy, he would not have accused Granin of making a hero out of a Nazi collaborator. Instead, he would have countered Granin's arguments by disclosing the criminal actions of the Soviet State against a man who had defended scientific integrity at the risk of his life, in the totalitarian hells of both Hitler and Stalin. For any person who knew Timoféeff-Ressovsky personally, his devotion to the freedom of science is no mystery. His world fame, combined with his refusal to take rewards from the government, provided him independence, both under Hitler and afterwards in the Soviet Union. In Nazi Germany a world reputation was his shield; in Russia, even more important was his noble asceticism.

In my own life, I have known several persons of that kind: Vernadsky, Astaurov, Lyubishchev, Dmitri Filatov, Ukhtomsky, Rapoport, Efroimson, and my father, Lev Berg. However paradoxical it may seem, their independence was rooted in the destitute condition of Russia in their time. The scarcity of resources, held at the disposal of the ruling authorities, and the prerogatives of the same powers to bestow positions and to grant promotions, as well as to give permissions to go abroad, served to stratify society and used the prevalent misery as one of the means to govern. Privileges become hooks to fish for those who might prefer a replete slavery to a hungry freedom. Are those who might prefer a hungry freedom not unrulable?

It was my original intention to conclude my defense of Timoféeff-Ressovsky at this point, but the march of events has been rapid and inexorable. The debate continues over whether Timoféeff in fact deserved his ten-year sentence to camps of correction, or whether the sentence was simply one of Stalin's countless crimes against the population of the Soviet Union.

Those who believe the former alternative to be true are aided by the new German accusers. Müller-Hill and Karl Heinz Roth are proving themselves to be of great advantage to the most reactionary elements of Russian society. It seems that the debate divides its participants cleanly into those who desire a liberalization of society in the USSR, on the one hand, and on the other those who oppose the recent liberalization and who justify the bloody deeds of Stalin's "oprichnina." In the second category we find the two authors, D. Ilyin and V. Provorotov, of an article entitled "Ktovy, Doktor Timofeev-Resovsky?" that was published in the magazine *Nash Sovremennik* ["Our Contemporary"] last year (Ilyin and Provorotov, 1989).

Although D. Ilyin is not identified for the reader, Provorotov is listed as being the major-general of justice, senior assistant of the chief military prosecutor, and Honored Lawyer of the R.S.F.S.R. According to the opinion of these two writers, the recent attempts to prove the innocence of Timoféeff-Ressovsky, an obvious criminal, take their root in the "new thinking," in "democracy," and in "pluralism." All of these terms, it must be emphasized, have been brought into current use by Gorbachev. To show their disgust at such innovations, Ilyin and Provorotov always enclose the opprobrious words in inverted commas, to make quite sure the reader will discern to whom they are to be referred. These words, according to the writers of the article, are now used to "revise and to pervert in accord with self-seeking interests the sacred, unquestionable principles, traditions, legends [predania]. . . . The 'socialistic market' is not yet created, but the morals are going to become marketable goods" (Ilyin and Provorotov, 1989, p. 173).

We learn from the article that in 1987 the son of Timoféeff-Ressovsky, Andrey Nikolayevitch Timofeev, applied to the Supreme Court of the USSR for an official "rehabilitation" of his father. That appeal was supported by several members of the USSR Academy of Sciences, by several associate members, and by various professors and cultural workers, to the total number of twelve.

As a consequence, the Supreme Military Procurator's Office instituted new proceedings in the case. The report of this reinvestigation exhibits incredible tendentiousness and ignorance. The new inquiry then confirmed the

conclusion of the previous court-martial that Timoféeff was a war criminal. The evidence given of participation in the war against the Soviet Union was, in particular, that his genetic studies of the influence of X-rays on humans were pointed toward the use of X-rays to destroy Soviet troops. Rehabilitation of Timoféeff-Ressovsky was consequently denied.

Ilyin and Provorotov have not limited themselves to describing this new juridical farce. The article by Müller-Hill (1988a) published in *Nature* has been used as valuable evidence of Timoféeff's guilt. A letter written by Professor G. Sereda to the editor of the magazine *Nash Sovremennik*, and devoted to Müller-Hill's accusations, is mentioned with great sympathy. Sereda repeats the lie that Timoféeff invited the participants of the symposium on the Nazi *Weltanschauung* to his institute. As quoted by Ilyin and Provorotov, Sereda's final words were as follows:

To the description of Müller-Hill . . . I can add that half a month after the meeting (November 10, 1938) the Nazis organized an enormous Jewish pogrom called "the imperial crystal night." These were the results of the racist "Symposium" in practice.

Thus, according to Sereda, Timoféeff-Ressovsky is among those who bear the responsibility for the pogrom.

The thorium-X experiments on humans, again interpreted by Ilyin and Provorotov in a highly ignorant way, are among the further accusations directed at Timoféeff-Ressovsky. For this purpose, Ilyin and Provorotov reintroduced Professor Sereda, as a specialist in radiochemistry. This specialist then stated that "the international sanitary regulations prohibit injections of any dosages of radioactive substances." What utter nonsense! According to Sereda, the dosages used in the experiments of Timoféeff's coworkers exceeded the lethal dose by 14 to 20 times. Thus was proven the murderous nature of the experiments.

I possess copies of the articles cited by Sereda. Tests of thorium content in tissues of the reportedly injected organisms were carried out by the authors to reveal the differential accumulation of radioactive substances in different tissues. The experimental animals were of course sacrificed to make these tests. These were rats. But according to Sereda, experiments were

done on humans, execution being routine. Sereda must assume, obviously, that not a single person in the Soviet Union has read these articles, the falsified account of which is then used by Ilyin and Provorotov as a damning documentation of their charges. They concluded the thorium-X topic gloatingly by stating that among Timoféeff's adherents no one has commented on Sereda's publication, and then ask, "Does this silence not give consent?"

The other source used by Ilyin and Provorotov to "expose" Timoféeff-Ressovsky was the publication by Karl Heinz Roth (1986), previously referred to by Bentley Glass (1989) and by myself, in the earlier part of this paper. One should not overlook the subtitle of the book in which Roth's article was a major contribution. It was "The Actuality and Continuation of Nazi Population Genetics."

First permit me to mention a good turn that Roth actually did to Timoféeff's reputation. He has reported that in Timoféeff's institute the salute "Heil Hitler" was prohibited by him, on pain of punishment (Roth, *ibid.*, p. 45), and further that "Timoféeff was in 1943 denounced because of his 'defeatist' expressions about the war potential of the Soviet Union. The executive agent of the Kaiser Wilhelm Society (KWG) remedied the situation." The latter action refers to a letter of general administration of the KWG addressed to the head of the State Ministry of Education (Roth, p. 61, footnote 75). [The quotation marks are Roth's.]

Karl Heinz Roth is by no means an adherent of the Nazi measures aimed to protect the "Nordic race" from the progressive accumulation of deleterious hereditary traits. The very title of his article, "Schöner neuer Mensch," [The beautiful new man] reveals his sarcasm. Roth has denominated the Nazi ideology, with its chief ingredient of racism, as a *Wahnsystem* [a mad system]. His goal, instead, was to find what persons were guilty in laying its theoretical foundations and thereby of justifying it.

Roth further stated that Müller-Hill missed the truth in this matter because he disregarded the results of investigations in population genetics.

Müller-Hill has therefore drawn a conclusion that the Nazi scientists were possessed by an irrational Baal cult of annihilation. . . . I disagree with Müller-Hill at this point. The an-

nihilation policy of Nazi anthropologists, human geneticists, and psychiatric specialists in hereditary mental disorders had at its disposal plenty of rational and consistent motives. . . . The rationality of the annihilation thought, thanks to recent change in biogenetic thinking, roots in the universal panic about the alarming deterioration of the human genepool. The catastrophic nature of the deterioration resulted in visualized and theoretically justified extreme changes [*Radikalisierungen*] in dealing with humans. There is an immanent logic in the conclusion that every step toward the application of biology and genetics to alter humanity implies annihilation (*Vernichtung*). The route towards utopia, combining harmoniously creative and murderous trends, was paved in the thirties and forties by leading geneticists of those days. The utopia was substantiated in its cognitive and methodological aspects (Roth, 1988, pp. 51, 52).

From Roth we also learn that it was not concern for the welfare of mankind nor the search for scientific truth that propelled the efforts of the leading geneticists. No, it was the desire to rule over the life of every individual, and also to save capitalism.

That statement about capitalism jars severely the credence of any reader who might be even remotely aware of the views of the most famous geneticists of the time, such as H. J. Muller and J. B. S. Haldane. It is no simple deviation from the facts, but an outright rejection of the truth. Take Muller, for example. His initial sympathy for communism and his hostility to capitalism are very well known. Let the doubter read his famous address to the Eugenics Congress in New York in 1932, which was entitled "The Dominance of Economics over Eugenics" (Muller, 1933). It was further expressed in his book *Out of the Night* (Muller, 1935). The evolution of his political views after his four-year stay in the Soviet Union in the 1930s has been described by Elof Carlson in his biography of Muller, *Genes, Radiation and Society: The Life and Work of H. J. Muller* (Carlson, 1981). Muller's sympathies for Communism were later shattered, but that did not mean for him any reconciliation with capitalism. As Carlson wrote: "Muller never chose the path of being a vocal anticommunist. He did denounce communism when he had to, but he never closed eyes to the abuses and inadequa-

cies that still existed in the United States" (p. 432). During the civil war in Spain, both he and Haldane served in the International Brigade, offering medical services to the troops of the socialist army.

Haldane, on his side, expressed his adherence to Marxism in his book, *The Marxist Philosophy and Sciences* (Haldane, 1938). Until 1948 he remained a member of the Communist Party in England, but he left the Party then in protest against the ruthless use of power by Stalin, and because of Stalin's decision to give Lysenko's quackery the status of an official ideology. In spite of this, Haldane never forsook his own communist ideal. Because of his well-known Marxist views, Haldane had difficulty even until his last years in getting entry into the United States as a visitor. He was denied an entry visa to attend an International Symposium on the Origins of Physiological Systems held in 1963 in Florida, and again in 1976 was denied an entry visa to visit the University of North Carolina, which had invited him to come (Feldman, 1976). Nor was the Nazi government grateful to persons who, according to Roth, had supplied the underpinnings of its annihilation policy. A "Special Search List for Great Britain," drawn up by the Central Security Office during the time of the projected invasion of Britain, listed persons it was thought important to incarcerate at once. Along with Churchill was J. B. S. Haldane (Shirer, 1960).

How then could Muller and Haldane be imagined to be ardent supporters of capitalism? Roth supplies an answer. The sympathy of geneticists toward capitalism was by no means disinterested. Roth wrote:

The international union of geneticists [*die Genetiker-gemeinde*] was world-wide subsidized and controlled by U.S. Capitalism. Grants were distributed on an international scale and German institutions, the Kaiser-Wilhelm Institutes among them, were not excluded from these subsidies. Scientific day-dreams about power and economic claims for power [*ökonomischer Machtanspruch*] mutually fortified one another (Roth, *ibid.*, p. 19).

Roth even expressed the thought that it was by no means accidental that the Soviet geneticists who emigrated to the West (Timoféeff-Ressovsky and Dobzhansky) in the 1920s became the leaders of radiation genetics, popu-

lation genetics, and the accepted evolutionary synthesis (Roth, *ibid.*, p. 22).

Bentley Glass, to whom I have already referred in my introductory paragraphs, in his review, "The Roots of Nazi Eugenics," commented on these views held by Roth, as follows:

It was clearly (in some minds) a gigantic international conspiracy to make poor Germany the site of a field experiment in human genetics and evolution. And, of course, it was financed by the Rockefeller Foundation, which supplied considerable funds to the Kaiser-Wilhelm Institutes (Glass, 1989, p. 178).

The irony of his comment may perhaps not be perceived by some readers. In any case, Glass vigorously rebutted the following statement made by Roth:

Until the outbreak of war, the traditional eugenic movements of the world applauded the compulsory sterilization and asylum laws of the Nazis.

Among those who forcefully and in a timely way repudiated Nazi eugenics Glass lists H. J. Muller and Julian Huxley, both of whom Roth reckons among those who bear the responsibility for Nazi eugenic (read, "extermination") policy. To these names Thomas Hunt Morgan and J. B. S. Haldane ought to be added. (In respect to Morgan, see Garland Allen, 1978, pp. 282-283.)

As a population geneticist myself, one who has been studying the genetic load of *Drosophila* populations since 1937, I cannot refrain from commenting that Roth's description of the methods used to unmask the concealed recessive mutants that constitute the genetic load is simply wrong. In ignorance, Roth then makes the following judgment:

We thus have good reason to put forward a well-founded supposition that no extraordinarily intense, harmful mutation load exists in nature, but was brought about by [human] experiment itself (Roth, *ibid.*, p. 56).

According to Roth, the chief person in Germany responsible for Nazi crimes is thus shown to be Timoféeff-Ressovsky. Many pages of Roth's treatise are devoted to a description of Timoféeff's experiments in radiation and population genetics. One example is sufficient

to reveal his perverted logic. As has already been mentioned, Timoféeff, in an article published in *Erbarzt* (Timoféeff-Ressovsky, 1935) spoke about the necessity of making careful diagnoses of hereditary human diseases and emphasized the variability in their manifestations. Both internal and external factors are responsible for this variability. Diseases caused by different mutant genes sometimes have a similar manifestation, while some mutations manifest themselves differently in different individuals. The right classification of hereditary disorders, so urgently needed for cure or for genetic counseling, is hindered by this variability of manifestation. Is it then not obvious that for the extermination of harmful genes by the annihilation of their carriers a detailed classification of diseases that neglects this variability is of no value at all?

Again, according to Roth, Timoféeff deliberately forced a fear of human degeneration upon the German leaders and thus promoted the policy of annihilation. In this context, Roth wrote:

Needed were new legitimate arguments to sharpen and to make more precise the measures of correction applied to counteract the putative increasing genetic danger for the population. Timoféeff-Ressovsky provided the arguments willingly (Roth, *ibid.*, p. 37).

Those who are guilty must be punished. The following passage concludes Roth's article:

Some experts in human genetics and some physicians were, after 1945, court-martialed. . . . While some persons were punished, those who were responsible for eugenic and demographic-genetic massacre were left out of reach, together with their scientific ruling programs (Roth, *ibid.*, p. 59).

It seems that, in accordance with Karl Heinz Roth's conviction, Timoféeff would be impeached in the courts of justice side by side with Muller, Chetverikov, Dobzhansky, Julian Huxley, and J.B.S. Haldane, to say nothing of almost all other geneticists and evolutionists, West or East. That did not happen. Instead, Timoféeff alone was court-martialed by Stalin's court of military justice. The article by Ilyin and Provorotov supplies an account of the recent rehearing of the original court's verdict.

Roth's delirious vision of an international

conspiracy against Germany supported by the Rockefeller Foundation, with Timoféeff-Ressovsky playing the role of mercenary in fulfilling the diabolical plan, coincides in every respect with the world concept fostered by the obscurantist stratum to which Ilyin and Provorotov belong. In their lampoon, they do not restrict themselves to an attack upon Timoféeff-Ressovsky, but warn every defender of any person whose persecution in the time of Stalin they do not consider to be unjust. Such defenders are warned that their very defense of such persons will be regarded as an attack upon the sacred principles of the past and will be subjected to a vigorous counterattack. The poet Boris Pasternak and the writer Vassily Grossman are named as examples of those who, like Timoféeff, should be condemned even more severely than they were the first time, just because faithful supporters have dared to raise the question of their posthumous rehabilitation. Ilyin and Provorotov declare that it would be better for the defenders to be silent and bring about no further disclosures that would damage their idols.

I learned from Ilyin and Provorotov, to my amazement, that the list of names of those who signed the appeal for a rehabilitation of Timoféeff-Ressovsky had, at its top, the name of N. P. Dubinin. Dubinin, however, has been eager to correct the "mistake" that included him among the signers. He has sent a note to *Nash Sovremennik*, the same magazine chosen by Kuzmin, Bondarenko, and Ilyin and Provorotov for their broadsides, to protest that "It is my duty to declare that I did not sign any petitions to the Supreme Court about the rehabilitation of Timoféeff. . . . I always considered that his work for Germany during 1941-1945 is immoral" (Dubinin, 1990). Dubinin referred to a book by D. Irving to document the charge that the work of Timoféeff-Ressovsky in coauthorship with Born and Zimmer was aimed at using irradiation as a military weapon. Dubinin also quoted memoirs he wrote, issued in 1973 and 1975, to express his continuing affirmation of his opinions of those years, in which he claimed that the unforgivable guilt of Timoféeff was to accept an invitation to go abroad (Dubinin, 1990, p. 191). It must be said that in these days, when *glasnost* goes far beyond the limits set by Gorbachev, such a statement sounds both obsolete and

frightening. The barometer points to bad weather ahead, to a collapse of freedom of speech. Dubinin concluded his commentary by commending Ilyin and Provorotov. In fact, they did not really need to refer to the old inquiry of 1946 on Timoféeff because the new one "has shown in relief who Timoféeff-Ressovsky really was."

Two recent publications in defense of Timoféeff-Ressovsky have come out of Russia. One, written by A. Malenkov and V. Ivanov (1989) was published in *Nature*. It is a response to Müller-Hill's review of Granin's book *Zubr* and bears the same title as Müller-Hill's review, "Heroes and Villains." Malenkov and Ivanov knew Timoféeff personally. They were members of his unofficial "university" in the Urals, where Timoféeff was the sole professor. They have stated that "according to the opinions of people who knew him well, Timoféeff-Ressovsky—descendant of the princely Vsevolzhskies—never betrayed his ancestral motto: 'Honor above all'" (p. 612).

The other publication presents materials collected by S. Bura in defense of Timoféeff-Ressovsky and appeared in the newspaper *Moskovskie Novosti* [*Moscow News*] (Bura, 1990). It was timed to appear on the ninetieth anniversary of Timoféeff's birth. This report describes the findings of the Special Commission summoned by the Eastern Branch of the Academy of Sciences in Germany to study the activities of Timoféeff-Ressovsky during the war years 1941-1945 and to find whether he was involved in any war projects. The commission rejected all the accusations made by the Prosecutor's Office of the USSR, at whose request the Commission had been instituted. Further evidence, also published in the newspaper account, was from two letters Bura had received from various persons. One of these letters was written by Nikolaus Ril, who was one of the supervisors of the military uranium project of the Nazis. He simply stated that Timoféeff's research had nothing at all to do with measures of warfare. Timoféeff did nothing he would live to regret. He had survived among the Nazis only thanks to friends who sheltered him.

The second letter was from E. Feinberg, a German physicist, who had knowledge of a French prisoner of war who worked in Timoféeff's Department. The name is given

as "Sharl Peir," which probably stands for "Charles Peyre." This man testified under oath that Timoféeff was a convinced anti-fascist. Timoféeff's assurances to the Nazi administration that his radiation experiments with fruit flies were important for the war were simply camouflage. The words used by Bura as the title of his communication, "I was born Russian and I don't see any means to change that fact," were uttered by Timoféeff when he rejected the offer of German citizenship.

The entire ideology of the recent detractors of Timoféeff's reputation may be regarded as equivalent to the doctrines of the society "Memory." It is therefore of particular interest that the Russian language newspaper of New York, *Novoye Russkoye Slovo*, of February 22, 1990, reported, on the basis of an official Soviet press release, that the Procurator's Office has brought legal action against the society "Memory." This action cites the society's Program, which was published in the little-known Moscow newspaper *Energetics*, and which demands that the Government implement a law depriving Jews of the right to hold any of the leading positions, to join the Communist Party, or to be honored with any scientific degree. The outcome is not clear.

Let me conclude my defense of Timoféeff-Ressovsky, then, by saying that in my own opinion he needs no "rehabilitation" by the Soviet government. He himself never applied for that, a rejection that I believe to be in true accord with his personality. He believed in an eternal hierarchy of moral values, and remained confident that in the future the perverted scale of such values adopted by his prosecutors would be reversed. History would justify him. In that respect, he stands beside Galileo and other great scientists persecuted by the authorities of their time. Like Gregor Mendel, the scientific forebear of all geneticists, perhaps he too died saying, at least in his heart, "Meine Zeit wird schon kommen." [My time will indeed come.]

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