Beyond Species: Il'ya Ivanov and His Experiments on Cross-Breeding Humans with Anthropoid Apes

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Beyond Species: Il'ya Ivanov and His Experiments on Cross-Breeding Humans with Anthropoid Apes

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I believe that some pollutions are used as analogies
for expressing a general view of the social order.
Mary Douglas, *Purity and Danger* (Douglas 1966, 14)

Argument

The possibility of crossing humans with other anthropoid species has been discussed in fiction as well as in scientific literature during the twentieth century. Professor Il'ya Ivanov's attempt to achieve this was crucial for the beginning of organized primate research in the Soviet Union, and remains one of the most interesting and controversial experiments that was ever done on non-human primates. The possibility of removing the boundary that separates humans from other animal species, apes in particular, is loaded with important political meaning and violates cultural and ethical taboos. The history of Ivanov's scientific experiment thus helps to reveal some of the twentieth-century's important cultural conventions and hidden assumptions about human nature, species, and social hierarchy.

Introduction

For centuries, stories about hybrids between humans and apes have been told by travelers, naturalists, and novelists (Buffon 1766, 31; Restif de La Bretonne 1781; Flaubert [1837] 1910; Vercors 1952; Crichton 1980; Høeg 1997). Interest was often mixed with disgust and fear. In one respect at least, these feelings are not ungrounded: As we begin to recognize now, close contact with monkeys or apes can lead to the transmission of viral infections fatal to humans (Karlen 1995). It is likely that HIV, the twentieth-century's most dangerous virus, had simian origins and that some "bottleneck event" triggered the spread of the pandemic around 1931 (Korber et al. 2000).

Scientists have also discussed the possibility of obtaining a hybrid in the laboratory. Geoffrey Bourne, director of the Yerkes Primate Center in Atlanta and one of the founding fathers of the federal program of primate research, wrote in 1971: "There seems to be very little physiological reason why artificial insemination could not

be used between man and the apes with a possibility that a viable child might be reproduced. . . . And it is surprising that this type of hybridization has not in fact already taken place" (Bourne 1971, 261–262).

In fact, such experiments had been carried out. In February 1926, the Soviet government and the Academy of Sciences sent an unusual expedition to Africa. Its main goal was to artificially inseminate chimpanzee females with human sperm and to obtain, if possible, a viable hybrid of the two species. The effort was directed by Professor Il'ya Ivanovich Ivanov, then probably the world's foremost expert on artificial insemination of farm animals who was also known for his work on the reproductive physiology and interspecific hybridization of mammals (see fig. 1). Ivanov's African mission was supported by the directors of the Institut Pasteur in

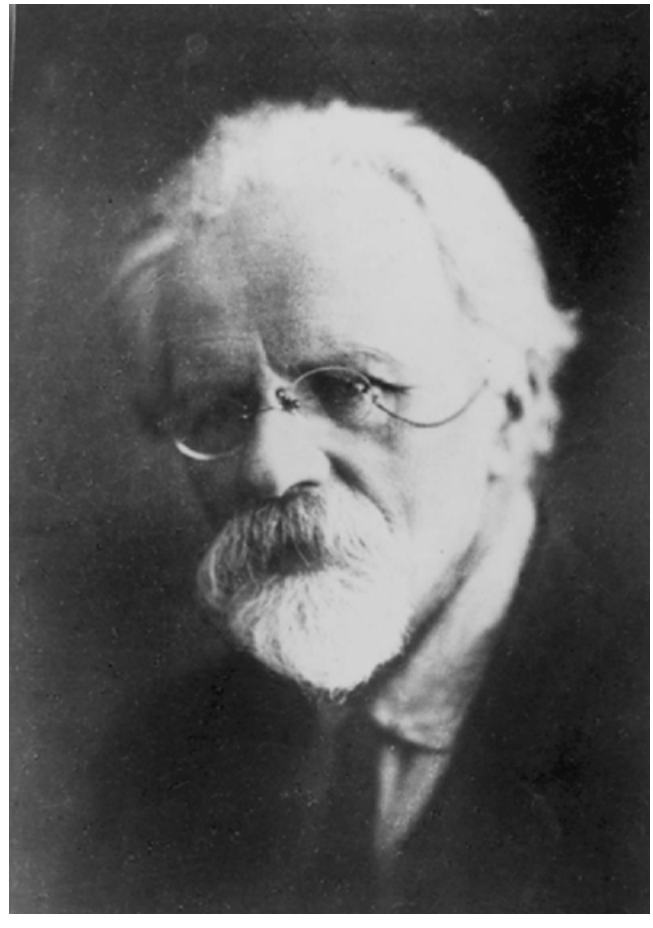

Fig. 1. Il'ya Ivanovich Ivanov shortly after his African mission. (Courtesy of the Archive of the Institute for the History of Science and Technology, the Russian Academy of Sciences, Moscow)

Paris, Emile Roux and Albert Calmette, who allowed Ivanov to work at the institute's primate station in Kindia, French Guinea.

During the first half of 1927, Ivanov inseminated three chimpanzee females with human sperm, but failed to obtain a hybrid. When the time of his mission expired in the summer of 1927, he moved some of the primates to Sukhum in the southern Soviet Republic of Georgia where the Soviet government established a special primate station. There he repeatedly attempted to arrange further experiments on the artificial insemination of women-volunteers with the sperm of Tarzan, a 26-year-old orangutan male. Ivanov's efforts stopped when he was arrested by the Soviet secret police in December 1930. The following year he was released, but died in exile in 1932, at the age of 61, without publishing anything on his work either in Africa or in Sukhum. Following Ivanov's death, the details about his hybridization program remained buried in the Soviet archives, and the very fact of his mission was all but forgotten both in Russia and in the West.[1]

Historians have not yet paid sufficient attention to the early period of biological and biomedical experimentation with primates in general and the hybridization problem in particular.[2] Interest in the problem persisted for decades, and several researchers planned experiments on hybridization, though none were able to carry them out. In 1971 Charles L. Remington, professor of biology at Yale University, compared the scientific importance of hybridization between man and chimpanzee with that of the "moon exploration" or the "first heart transplants." However, the practical realization of such a plan would attract the attention of world media, which he considered an "alarming" possibility (Remington 1971, 462).

The easier the scientific and technological aspect of such an experiment appears, in particular with improvements in the technique of artificial insemination, the more impossible it looks from the ethical point of view, as it presents a whole series of unsettling questions: What would a researcher do if the experiment succeeded? Who would be selected to be the father or the mother of the hybrid? Would the hybrid be regarded as an animal or a human being? Should the definition of the human species be extended to include anthropoid apes? If not, why not?

The possible blurring of the boundary between humans and animals touches further upon all of the most sensitive social issues, since even scientific discourse about animals, and especially apes, reflects in no small measure what humans think of themselves and their society. The metaphor that links "inferior" humans to animals or "nature" has played an important role in the narratives of race, gender, ethnicity, class, and social status. "Degeneration" – regression to the primitive and "animal" state – was widely regarded as a major biological and moral threat to the human race, and used to justify racial, social, and gender inequality (Chamberlin and Gilman 1985;

[1] Ivanov's experiments were mentioned for the first time by Skatkin in his biography of Ivanov, but there was no further discussion of this topic in the Soviet Union (Skatkin 1964).

[2] In her book, Donna Haraway (1989) deals mainly with American primatology and focuses on the post-World War II period. Some information about early primate research in Germany can be found in Ash 1995, 148–167, and in Heinecke and Jaeger 1993; on Soviet primate research, see Fridman 1967.

Pick 1989). At the same time, the revolutionary program of socialism tried to get rid of these inequalities within a very short period of time, and to destroy the old society's social and cultural taboos. It was perhaps easier to address hybridization as a scientific problem in Bolshevik Russia where social barriers and hierarchies no longer appeared as "natural" and/or inevitable. The public resonance of the experiment would have been extraordinarily strong at the time of Scopes trial in the United States and the Bolsheviks' war against religion in the Soviet Union.

The history of Ivanov's experiments offers some new perspectives on these larger problems. Section 1 of this paper describes Ivanov's early career in Imperial Russia and his experiments with artificial insemination and hybridization between various species of domestic and wild animals. Section 2 discusses the impact of revolution on his work and his negotiations for support for an African expedition with the Bolshevik Government. Section 3 looks at Ivanov's project in the context of primate science of his time and analyzes his relationship with the Institut Pasteur in Paris, as well as discussions he held about the project with other interested scientists in the West. Section 4 takes the reader to Africa, the site of colonial science, racist discourse among European colonizers, and their relationship with the native population. Section 5 describes how Ivanov planned to carry out the insemination of women with the sperm of ape males at the new Sukhum primate station in a way that would be acceptable to revolutionary Soviet society with its attempts to forge new gender roles. In the conclusion, I tell the story of the hybridization problem after Ivanov, and discuss the ethical implications of his hybridization project.

1. Artificial Insemination in Late Imperial Russia

Il'ya Ivanovich Ivanov was born in 1870 to the family of a local official, the head of the Treasury of the Kursk Province in central Russia. He studied physiology at Khar'kov University. Following graduation in 1896, Ivanov traveled to Paris at his own expense and took further courses in bacteriology at the Institut Pasteur. When Ivanov returned to Russia in 1898, he started his first series of experiments on the physiology of reproduction while working in the laboratory of the biochemist and bacteriologist Marcell Nencki at the Imperial Institute of Experimental Medicine (IEM) in St. Petersburg. He also did some work in the laboratory of the physiologist Ivan Pavlov at the same institute, as well as in the Zoological laboratory of the Imperial Academy of Sciences, under the direction of the prominent embryologist Aleksandr Kovalevskiy.[3]

The first experiments done by Ivanov under Nencki were aimed at elucidating the role of the different components of sperm and of the different accessory glands in the

[3] Ivanov's papers, now at the Central State Archive of the Moscow Region (*TsGAMO)*, collection 837, dossier 1, will be cited hereafter as *IP* (Ivanov Papers) followed by file number. On Ivanov's stay in Paris, see *IP* 450, 1032, 1033; much information about Ivanov's early years comes from his contemporaries, see Skatkin 1964 and Shergin 1970.

process of fertilization. From his very first articles on the topic, Ivanov emphasized that in order to solve problems in reproductive biology one should work with a sufficient number of big animals – horses, for example. This was hardly possible under the conditions of laboratory research in the early twentieth century; even decades later, scientists in reproductive biology still needed sites outside their laboratories, in agriculture and elsewhere (Clarke 1987). In order to secure the crucial access to the bodies of large animals, Ivanov developed connections with private and state stud farms outside St. Petersburg (for Ivanov's early experiments, see Ivanov 1899, 1900, 1907).

Working at Russian stud farms, Ivanov quickly established an international reputation for his research on artificial insemination. According to one later appraisal by a Western author, the method "remained chiefly an experimental curiosity in the animal laboratories until Ivanov considered its practical veterinary value" (Folsome 1943, 915). Although artificial insemination had been used occasionally in experiments on animals since the time of Lazzaro Spallanzani and in medical practice following the work of John Hunter and others, it had not become an established technique by the early twentieth century (see Poynter 1968). Both in gynecology and in farming, practitioners looked upon artificial insemination as the "last resort" strategy in cases of infertility. According to some estimates, the medical press had reported only 21 births generated by artificial insemination by 1911 (Rohleder 1911). In stud farming, the numbers had not been significantly larger when Ivanov entered the field in 1899 (see Ivanov 1907).

It was believed that artificial insemination of women, even with the sperm of their husbands, was damaging to the "natural foundations" of marriage. In 1897, the Holy Office officially banned the use of artificial insemination in medicine. In Germany, practitioners faced serious legal risks (Traumann 1909). In Russia, the official Greek Orthodox Church was known for its conservative position on family matters, and there is no evidence of artificial insemination in medical practice before the 1917 revolution (Il'in 1917). On the other hand, the opposition to artificial insemination had much to do with the widespread belief in the physiological significance of "natural" sexual intercourse, which was thought to be crucial for successful impregnation as well as for the health of offspring. In medical practice, physicians often tried to arrange artificial insemination immediately following the sexual intercourse between spouses in order to preserve the "necessary" degree of sexual arousal in the woman and make the artificial insemination appear as a "natural continuation" of intercourse. Hermann Rohleder, for example, described his own practice of waiting inside the patient's apartment until the completion of intercourse, then entering the bedroom and performing artificial insemination (Rohleder 1911).

At the beginning of his work, Ivanov faced strong opposition on account of this attitude. In 1900, a commission of experts appointed by the Moscow Agricultural Institute examined Ivanov's methods and issued a negative verdict, warning that his practice might result in the degeneration of stock because of the absence of "normal"

sexual intercourse (Ivanov Papers [hereafter *IP*] files 507, 508, 511, and 515). Furthermore, Ivanov's work broke with the existing tradition in the field by focusing on valuable studs and using the technique for large-scale improvement of stock, rather than as a compensatory strategy in cases of infertility. He developed his own modification of the existing method and used a special sponge that was inserted into the vagina of the mare. The obtained sperm was divided into portions and, as a rule, was used for the insemination of several or many mares. The sponge made it possible to obtain nearly the entire amount of the ejaculate and to inseminate up to ten times more mares per one stallion than was the case in natural pairing. Although each mare received a diminished amount of sperm, the probability of conception was often higher, since Ivanov used special rubber catheters and introduced the sperm directly into the uterus (see Ivanov 1907, 1910a, 1911a).

By World War I, Ivanov had created standard instruments that allowed for relative simplicity of operation in field conditions and had performed his method on 6,804 mares and on more than one thousand sheep, making Imperial Russia the world's leader in the use of artificial insemination in farming (Ivanov 1922). This remarkable success became possible due to the support that Ivanov received from his patrons. Despite the opposition of many agricultural experts, scientists from the Imperial Institute of Experimental Medicine (IEM) and the Imperial Academy of Sciences supported his efforts from the very beginning. In 1899, Nencki informed Prince Ol'denburgskiy, the royal patron (*popechitel'*) of IEM, about Ivanov's work and its possible usefulness for horse breeding. The message was then passed to other members of the royal family: Grand Duke Dmitriy Romanov, who was formally in charge of the Department for State Stud-Farming, and his brother, Grand Duke Konstantin, president of the Imperial Academy of Sciences. Helped by a favorable review written by academician Kovalevskiy, Ivanov obtained the cherished possibility of experimenting with horses at state stud farms, and received a grant of 2,500 rubles for this work from the young Czar Nicholas II in 1900.[4]

Some critics disputed the economic usefulness of his method with the argument that artificial insemination required more expenditure of human labor and money than natural pairing (see K-i 1912; Kovalevskiy 1913). However, Ivanov insisted that the rapid "mass-improvement" of stock had great importance for Russia. In comparison with most European countries, Russian farms generally had a dramatically smaller proportion of thoroughbreds. The large-scale use of artificial insemination could compensate for this handicap and "solve" the problem, as it provided a unique opportunity to improve stud- and cattle-farming within a relatively short period of time (Ivanov 1910a, 1209; 1913).

Russia's backwardness and the need for rapid modernization thus became an important factor in the development of a novel technology and practice in farming.

[4] *IP* 1052, pp. 1–4 and 501, 519, 520–522 and 524; see also Archives of the Russian Academy of Sciences (Arkhiv Rossiyskoy Akademii nauk), hereafter *ARAN*, collection 310 (Aleksandr Kovalevskiy), dossier 1, file 93.

Indeed, since the time of Peter the Great, Russia had tried to modernize itself without disrupting the archaic social structure, which was especially visible in the agrarian sector (Joravsky 1970, 19). The patriarchal and religious peasant was seen as the mainstay of monarchy. After the failed revolution of 1905, which saw massive peasant revolts and seizures of land, however, the monarchy began to perceive the economic and cultural backwardness of Russian peasants as a source of direct political threat. Prime Minister and Minister of the Interior, Pëtr Stolypin, initiated a series of reforms, trying to ease contradictions and to preserve the system of landownership by the nobility and gentry. As part of these attempts, the government dramatically raised the level of support for agricultural science (see Elina in this issue).

In 1908 Valentin Nagorskiy, director of the Veterinary Department of the Russian Interior Ministry, received government funds to organize a special laboratory for Ivanov. The proposal that Ivanov had written was supported by letters of recommendation from Pavlov, the first Russian winner of the Nobel Prize, Vladimir Shimkevich, professor of zoology at Petersburg university, and Vladimir Zalenskiy, the new director of the Zoological Laboratory at the Academy of Sciences (see *IP* 519–522, 524). Nagorskiy was a close associate of Stolypin and nourished ambitious plans for the establishment of the Experimental Veterinary Institute. Starting in 1909, Ivanov taught his technique at the Department's annual courses for specialists from both state and local veterinary services (*zemstvo*) from all over Russia. The other institution of central government – the Department of State Stud-Farming – distributed instruments for performing the artificial insemination free of charge.[5]

Even after he had obtained his own laboratory at the Veterinary Department in 1909, Ivanov retained strong contacts with academic scientists, and continued working in Pavlov's laboratory, publishing papers in various biological and medical, as well as veterinary, journals. He learned the technique of making fistulae in dogs, which Pavlov developed for the studies of digestion, and applied it in his own studies of the role of different sexual glands in the production of sperm (Ivanov 1913). Starting around 1910, Ivanov increasingly defined his research as belonging to experimental biology in a wider sense, rather than just the physiology of reproduction. The institutionalization of genetics in Russia began in Ivanov's laboratory, where Yuriy Filipchenko started the first experiments on genetics ever performed on Russian soil. Ivanov invited Filipchenko from Munich where the latter had been working with Richard Hertwig, and also helped him to obtain a position as Privat-dozent at St. Petersburg University, where since 1913 Filipchenko taught the first Russian course in genetics.[6]

[5] The correspondence and other information about Ivanov's activities at the Veterinary Department is in *IP* 519, 520, 522, and 524. See also Ivanov 1913. For the general structure and history of the Russian veterinary service, see Koropov 1954.

[6] See Ivanov's letters to Filipchenko. M. E. Saltykov-Shchedrin Public Library (*GPB)*, MS division, Petersburg. Collection 813, file 323 and Filipchenko's letters to Ivanov in *IP* 395.

Ivanov's aspirations to deal with fundamental problems of experimental biology directed his research toward the problem of hybridization between different species of animals. Artificial insemination made possible many crosses that could not be achieved in a natural way and was, for Ivanov, the experimental tool for constructing new forms of life, forms that did not exist in nature. Since the early 1900s he had performed hybridization experiments between various species of animals and birds, and in 1905 he established contact with Friedrich Falz-Fein, who had turned his private estate, Askania-Nova in Southern Russia, into the country's largest nature reserve and acclimatization center. Over 35,000 acres of land gave home to zebras, ostriches, kangaroos, camels, bison, and many other rare and exotic species of mammals and birds (see fig. 2). In 1910, Ivanov organized a special zootechnical station in Askania as a branch of his Petersburg laboratory and used the method of artificial insemination to obtain a number of new hybrids (Ivanov 1911b, 1911c, 1913; Ivanov and Filipchenko 1915; Filipchenko 1916/1917, *IP* 542, 538, 539, and 540).

Ivanov apparently believed that artificial insemination allowed hybridization among a wide variety of species. In his talk at the International Zoology Congress in Graz in 1910, Ivanov mentioned for the first time the possibility of inseminating a female ape with human sperm, noting that the use of artificial insemination would help to circumvent ethical objections that inevitably arose in the case of natural pairing (Ivanov 1910b, 626). There is no indication, however, that he was contemplating any real experiments at the time. Apparently, the connections with the conservative autocratic State were very important for the success of his work. At the same time, Ivanov had no easy access to anthropoid apes and, undoubtedly, had many more productive lines of work to occupy himself with, and many other animal species

Fig. 2. One of the hybrids between zebra and horse in Askania-Nova, photograph taken around 1913. (Courtesy of the Central State Archive of the Moscow RegionTsGAMO)

available for hybridization experiments. The situation would change dramatically after the Russian Revolution in 1917.

2. Apes, Angels, and the Missing Middle Class

The Bolsheviks perceived their revolution as a radical break with old Russia, destroying its army, its state machine, the police, banks, and the entire system of private land ownership. At the same time, they acknowledged the significance of experts and, in particular, of specialists in science and technology. The "new" Socialist Russia should become modern and industrial, and its population enlightened and educated, and thus they combined the Promethean and technocratic elements in their attitude towards science (Bailes 1978, 407–426). However, the Civil War and blockade, which marked the first years of Bolshevik rule, made the life of scientists extremely difficult.

The revolution destroyed the network of patronage that supported Ivanov's research. Most of his patrons from the higher bureaucracy, aristocracy, and royalty were gone forever. Askania-Nova was terribly devastated by the White and Red troops during the Civil War, while Falz-Fein emigrated to Germany in the summer of 1918 and died there two years later. The Academy of Sciences and the State Veterinary Department remained, but Ivanov lost his position and the laboratory during or shortly after the Department's chaotic transfer from Petrograd to Moscow in 1918.

Ivanov also moved to Moscow, and in 1919 established the Central Experimental Station of the Reproduction of Domestic Animals under the Commissariat of Agriculture, but the general economic collapse during the Civil War deprived him of nearly all material conditions for research. The manufacture of instruments for artificial insemination collapsed as well. In 1921, when the general situation began to improve, the Commissariat provided Ivanov with some funds in "hard currency" and sent him abroad with a mission to purchase the necessary instruments in Germany and France.[7] Speaking to American geneticist Hermann J. Muller in Berlin in the summer of 1922, Ivanov complained that he lacked even the most elementary equipment for his work (Muller 1923, 544). Until 1924, he was unable to obtain space for his laboratory in Moscow and recurrently thought about emigration, although the probability of finding a reasonable position in postwar Europe was very low and the language barrier made it unrealistic for Ivanov to get a job in the United States. Like most Russian scientists of his generation, he spoke German and French, but not English.[8]

[7] See Ivanov, "Report about the mission" (1922), *IP* 927; "Report about the activities of the Central Experimental Station of the Reproduction of Domestic Animals" (1923), *IP* 683, pp. 1–10.

[8] See Ivanov to Raymond Pearl, 21 April 1922, Pearl to Ivanov, 6 May 1922, and other letters, Raymond Pearl Papers, Correspondence with Ivanov, American Philosophical Society (hereafter *APS*).

Changes in social and financial conditions during the Civil War caused many Russian scientists to abandon their former research topics. Ivanov, apparently, also felt the need to find new avenues, new patrons, and possibly new sites for research, which may explain why, in 1922, he asked his young research associate Mikhail Nesturkh to start making abstracts for him from a number of sources on anthropogenesis and primate biology. In several letters written to the American biologist Raymond Pearl during that year he indicated that he was thinking about experiments on apes and, in particular, about hybridization between man and chimpanzee.[9]

The next time he traveled abroad – in 1924, when he did some experiments on sperm disinfection at the Institut Pasteur in Paris – Ivanov discussed with his hosts the practical possibility of the hybridization experiment. One of the institute's researchers, the former pupil of Élie Metchnikoff, Aleksandr Besredka, reported to a friend in Moscow that Ivanov had given a number of scientific talks in Paris and had produced the most favorable impression in the Academy of Sciences and "in scientific circles here. If not for the lack of funds, the Institute would have sent him with a mission." The Institute's directors Emile Roux and Albert Calmette, indeed, wrote to Ivanov on 12 June 1924 that it would be "possible and desirable" to do the hybridization experiment between humans and apes. They offered Ivanov free access to animals at the institute's recently organized chimpanzee facility in the village of Kindia, French Guinea, but could not pay for other operational and travel expenses of the project.[10]

He then turned to the People's Commissar of Enlightenment [Minister of Education] in the Soviet government, Anatoliy Lunacharskiy, requesting 15,000 US dollars for the project. His proposal of 24 October 1924 was mailed from Berlin and accompanied by two letters of support from Bolshevik officials at the Soviet embassy. Sergey Novikov, the Berlin representative of the Commissariat of Enlightenment, referred to the hybridization project as an "exclusively important problem for Materialism," while Lev Fridrichson, the representative of the Commissariat of Agriculture, thought that "the topic proposed by Professor Ivanov, . . . should become a decisive blow to the religious teachings, and may be aptly used in our propaganda and in our struggle for the liberation of working people from the power of the Church."[11]

There was definitely something in Soviet culture of that period that made the project appear acceptable. The Bolsheviks of the early 1920s felt extremely vulnerable

[9] See M. Nesturkh, "Notebooks with abstracts" (1922), *IP* 174 and "Abstracts," *IP* 188; Ivanov to Raymond Pearl, Raymond Pearl Papers, *APS*.

[10] Besredka to Lev Tarasevich, 12 July 1924, *ARAN*, collection 1538 (Tarasevich)- dossier 4,- file 51. Calmette and Roux to Ivanov, 12 June 1924, *IP* 429, pp. 3–4; Calmette to Ivanov, 9 April 1925, ibid., file 429, p. 5.

[11] Ivanov to Lunacharskiy, 17 September 1924, *GARF*, collection A-2306 (Commissariat of Education, Narkompros), dossier 69, file 131, pp. 2–11; Novikov to Lunacharskiy, 18 September 1924, ibid. p. 1; Friedrichson to Aleksandr Tsyurupa, deputy chairman of Soviet government, 20 September 1924, *IP* 952.

because the revolution materialized only in backward Russia and not in any of the more industrially advanced European nations. Many of them were afraid that their advanced modernizing project was doomed to drown in the ocean of the country's illiterate and religious peasant majority. In one of his last articles Vladimir Lenin reluctantly admitted that Russia had not yet achieved the level of "culture" which was necessary for the "building of socialism." "What," he asked, "if the complete hopelessness of the situation [caused by World War I – K.R.] . . . offered us the opportunity to create the basis of civilization in a different way from West European countries? . . . Why can't we begin by first creating the conditions for the appropriate level of culture in a revolutionary way, and *then* . . . proceed to overtake other nations?" (Lenin [1923] 1936, 400; emphasis in original).

In a sense, the Bolsheviks saw science and technology as their only internal allies in the enlightenment of the Russian people. Darwinism, in particular, had a direct political value for them as a tool in anti-religious propaganda. Muller – one of the first western scientists to visit post-revolutionary Russia – stopped in Moscow and Petrograd in the summer of 1922 and was astonished to learn that the authorities had postponed the publication of a book by Lev Berg, the prominent Russian ichthyologist, because the author expressed there anti-Darwinian views. Muller noted with surprise, that while Darwinism was considered a "pernicious" doctrine in the United States, anti-Darwinism came to play a similar role in Russia (Muller 1923, 549).

Commissar of Enlightenment Lunacharskiy, however, was an expert on theater, literature, and arts, rather than the sciences, and he did not show much interest in Ivanov's proposal. In April 1925, Ivanov returned to Moscow from his foreign trip and on 27 July he wrote to Besredka in Paris that high government officials had promised him support for work in Kindia (*IP* 296). The sympathetic official Ivanov referred to was Nikolay Petrovich Gorbunov (1892–1938), Lenin's former secretary and the chief of staff (*upravlyayushchiy delami*) of the Soviet government (see fig. 3). Although his official position was a relatively minor one, it provided Gorbunov with direct permanent access to the chairman of the government and other crucial connections, de facto making him more influential than many heads of individual Commissariats. With a diploma in chemical engineering and a strong personal interest in science, Gorbunov emerged during the first decade of Soviet power as probably the most important Bolshevik patron of science. His role in Soviet science received some official recognition in 1925, when he was given the formal title of the director of the government's Department of Scientific Institutions (Podvigina 1986).

Gorbunov was especially fond of scientific expeditions and supported, among others, the worldwide collecting expeditions of the famous geneticist and geographer Nikolay Vavilov. Ivanov's proposal also appealed to him, and on 21 September 1925, Gorbunov submitted the project to the government's Financial Commission, of which he was a member. The Commission recommended the allocation of $10,000 to the Academy of Sciences "for the realization of Professor I. I. Ivanov's scientific

Fig. 3. Nikolay Petrovich Gorbunov in his Kremlin office. (Courtesy of the Central State Archive of Photodocuments in Krasnogorsk)

work on the hybridization of anthropoid apes in Africa." A few days later, Gorbunov obtained the signature of Lev Kamenev, the Politburo member and the deputy chairman of the government, and on 25 September had the Commission's recommendation approved by the Council of Labor and Defense that dealt with the government's everyday administrative matters.[12]

Ivanov immediately departed for Leningrad to present his project to the Physico-Mathematical Division of the Academy of Sciences. Precisely at that moment, the Academy and the Soviet government enjoyed a honeymoon in their relationship and were strongly inclined towards smooth cooperation. Earlier that month, the Academy had pompously celebrated its 200th anniversary, on which occasion the state honored it with the official title "Soviet" along with other expressions of support. Before he secured government funds for Ivanov's expedition, Gorbunov had probably consulted with the permanent secretary of the Academy, Sergey Ol'denburg, and obtained his approval. Present at the Academy's session on 30 September 1925 were, besides Ol'denburg, the president Aleksandr Karpinskiy, vice-president Vladimir Steklov, director of the Zoological Museum Aleksey Byalynitskiy-Birulya, and academicians

[12] "Classified Supplement [Sekretnoe prilozhenie] to the Record no. 219 / STO/, Session of Financial Commission, 21 September 1925" *GARF* 5446 (Sovnarkom)-72 (Kamenev Papers) 216, p. 47. "Council of Labor and Defense. Classified Records" session of 25 September 1925, record no. 184-c, *GARF* 5446-72-195, p. 216; about the administrative functions of Council of Labor and Defense, see Korzhikhina 1986, 60–61.

Pavlov, Nasonov, Fersman, Komarov, and Lazarev. Some of them had been familiar with Ivanov's work from pre-revolutionary times.[13]

Ivanov presented his project to the Academy somewhat differently from the manner in which he had presented it to the communists. Religion, most probably, was not mentioned at all. Ivanov described at length his earlier experience with obtaining interspecific hybrids in Askania-Nova and elsewhere. The proposed experiments with anthropoid apes in Africa, said Ivanov, "may provide extraordinarily interesting evidence for a better understanding of the problem of the origin of man and of a number of other problems from such fields of study as heredity, embryology, pathology, and comparative psychology." Ivanov outlined the program as consisting of two parts: "obtaining hybrids between different species of anthropoid apes is very probable . . . , [while] the birth of a hybrid between the human and the anthropoid is less probable, but the possibility cannot be ruled out." In reality, however, he was almost sure that the hybridization was possible and probably intended to do the second part first because gorillas and orangutans were not available in Kindia. The Academy agreed that the proposed experiments had "great scientific significance" and "deserved serious attention and full support," confirmed Ivanov's capacity to do the work, and approved sending him on a mission to Africa.

It is remarkable that there was no discussion about the ethical aspects of the proposed experiment. But, undoubtedly, there were a lot of rumors circulating among the scientists and the educated public at large. Shortly before Ivanov's departure, Nikolay Vavilov wrote to him: "Don't pay attention to all the gossip and rumors about your trip. To the devil with them!" (Vavilov to Ivanov, 27 January 1926, *IP* 342). He asked Ivanov to bring some samples of plants and seeds from West Africa for the collections of the Institute of Applied Botany in Leningrad. Before embarking on the trip, Ivanov also discussed the topic of establishing a Soviet primate station with Professor Grigoriy Kozhevnikov, director of the Zoological Institute at Moscow University and the former chairman of the Imperial Society for Acclimatization of Animals and Plants (Weiner 1988). Aware of the long period of pregnancy for chimpanzees, Ivanov planned to bring some apes back to his country and settle them in a new facility somewhere in the south. Kozhevnikov was enthusiastic about the idea and wrote a letter to the Institute of Experimental Endocrinology, pointing out that chimpanzee glands were used in Europe for medical transplantations.[14] Ivanov met with Yakov Tobolkin, assistant director in charge of animal facilities at the Institute of Experimental Endocrinology, and apparently introduced him to Gorbunov. While Ivanov was away in his expedition, Tobolkin would be busy looking for the site and establishing the primate station in Sukhum on the coast of the Black

[13] See Ol'denburg to Ivanov, 26 September 1925, copy, *IP* 956, p. 1; Ivanov, Draft of the talk 30 September 1925, *IP* 955, minutes of the session in *IP* 957.

[14] Grigoriy Kozhevnikov to the Institute of Experimental Endocrinology, 15 September 1925, *Nikolay Semashko Institute for the Organization and History of Medicine*, collection 28 (Shervinskiy), dossier 12, file 1, pp. 93–94; for more information about Kozhevnikov, see Weiner 1988.

Sea (see Ivanov's correspondence with Tobolkin, *IP* 1010). Having made these preparations, on 4 February 1926 Ivanov departed for Paris, his first stop on the way to Africa.

3. Negotiating the Borders

By the time of Ivanov's expedition, the possibility of crossing anthropoid apes with humans had already been discussed in Western Europe where scientists attempted to use apes as experimental animals. While in Russia researchers had no direct access to apes, in countries with overseas colonies, researchers had some access, but it was limited and expensive. The first anthropoid primate facilities had only just started to develop, and they were all located in southern territories far away from laboratories. The unusually high cost of apes created an additional incentive for scientists to justify expenses by emphasizing the close biological link, or even by blurring the boundaries between humans and anthropoid apes.

At the same time, as Ivanov's negotiations with Western colleagues and patrons indicate, the experiment seemed acceptable to them if arranged in remote colonies, far outside "civilized" society. From the racist perspective, the colonies were also seen as the "biological" periphery inhabited by exotic animals and racially inferior people, where the distance between the man and the animal was small. Race had not had a role in Ivanov's discussion of his project in the Russian context – either Imperial or Soviet – partly because the Russian colonial experience was different from the European. The continental empire lacked distinct boundaries that separated different races geographically, and inter-racial mixing was a commonly accepted phenomenon that was never viewed as a serious problem (see Blakeley 1986; Sunderland 1996). "Backwardness," rather than race, was a problem – or even obsession – for educated Russians who tended to view the relative development of different people as a cultural and technological, rather than a racial and biological phenomenon. After the revolution, Bolsheviks made the racist discourse politically unacceptable by banning it explicitly and undertook a major effort to overcome developmental differences and achieve real equality between races and nationalities. The issue of race was completely absent from Ivanov's negotiations with Bolshevik officials and with the Academy of Sciences, but it emerged when he engaged in contacts with Western colleagues and colonial officials.

The idea that different species of apes can be successfully crossed with each other and with man was expressed in one of the first publications about the serological reactions of the blood of humans and anthropoid apes. At the turn of the century, Hans Friedenthal, Paul Uhlenhuth, and George Nuttal investigated blood samples taken from apes – mostly those available at the zoos – and concluded that anthropoid apes were closer to humans than to any other animal species (Friedenthal 1900; Uhlenhuth 1904; Nuttal 1904). Friedenthal wrote in 1900 about the possibility of obtaining hybrids between the different members of the *Anthropomorphae* suborder,

which included humans together with anthropoid apes. If their blood cells were similar, the reproductive cells could be very similar too (Friedenthal 1900, 507–508).

It is likely that these studies on comparative serology had influenced Élie Metchnikoff who, from 1903 on, used apes as models to study syphilis and other infectious diseases of man at the Institut Pasteur in Paris (Metchnikoff and Roux 1903, 1905). Metchnikoff was the first scientist who needed anthropoid apes in significant numbers, and he worked, in total, with approximately fifty or sixty chimpanzees and orangutans (Gaissinovich 1980a, 38). But in his studies Metchnikoff entirely depended on scarce shipments of apes to Paris. During the last years of his life, when Metchnikoff started writing his *Etudes sur la fonction sexuelle*, he realized that he lacked information about the sexual life of apes and had to send his inquiry to Rosalia Abreu in Cuba (*ARAN*, collection 584 [Metchnikoff], dossier 4, file 58). Abreu, a wealthy Cuban pet-lover and amateur researcher, had founded the first anthropoid facility on her estate in downtown Havana around 1909. Robert Yerkes did later important work on Abreu's estate, and described her collection in *Almost Human* (Yerkes 1925). Her biggest achievement probably was the first chimpanzee baby born in captivity in 1915; the second one followed within a decade. However, the rest of her collection – which included 14 chimpanzees and 3 orangutans – came from dealers.

As associate director of the Institut Pasteur, Metchnikoff repeatedly attempted to pave the way to Africa (see Metchnikoff 1974, 181–182). For some time, between 1905 and 1908, he supported Hermann Marie Bernelot Moens, a college teacher and amateur zoologist from Maastricht, Holland, who was planning to go to the French Congo, capture the chimpanzees, and do an experiment very similar to Ivanov's. According to some evidence, Metchnikoff supplied him with letters to colonial authorities and probably expected that Moens would bring some of his chimpanzees back to Paris (Rooy 1995).[15] Moens was motivated by evolutionary theory and had discussed his project with Ernst Haeckel, the major European expert on evolution. Haeckel approved his plans to inseminate a chimpanzee female with human sperm and wished him success. Quoting the recent results from comparative blood studies, he expressed the view that the experiment could result in the birth of a hybrid, which would be very important for a better understanding of human evolution. Believing in the separate evolutionary origins of different human races, Haeckel also stressed that, for the success of the experiment, Moens had to use the sperm of an African man. Moens visited Jena to meet with Haeckel personally and published his plans in a short book in 1908 (Moens 1908). His attempts to organize an expedition, however, produced a scandal and cost him his teaching job.[16] It is hard to tell whether

[15] I am grateful to Trudy Dehue and Ad Prins for drawing my attention to this article.

[16] For Haeckel's letter to Bernelot Moens (1905), see Anon. 1960; Moens' letters to Haeckel are at *Ernst Haeckel House*, Jena University, Jena. For Moens' dismissal, see E. Nehman to Ludwig Plate, 18 June 1911, *Ernst Haeckel House*. For more biographical information about Moens, see Rooy 1995.

Ivanov was aware of Moens' book when he first mentioned the possibility of the hybridization experiment in 1910, but they corresponded in 1911 (*IP* 441).

The second anthropoid station was established in 1912 on Tenerife, Canary Islands, by the Prussian Academy of Sciences and a private foundation. The number of chimpanzees there was maintained at around seven, with new animals being regularly bought in the German colony of Cameroon to replace those who died in captivity. The station was designed for the study of ape behavior, and during World War I, Wolfgang Köhler made his famous experiments there. Initially, the Berlin neurologist Max Rothmann and the anatomist Wilhelm Waldeyer had developed the project and ensured the funding of the station, but they never intended to visit Tenerife. In fact, the first Director of the Station, Eugen Teuber, had been a psychology student, while Köhler was only 26 when he replaced Teuber in January 1914 (Heinecke and Jaeger 1993; Ash 1995).

The initial research plan of the station stated that the chimpanzees should be approached as "untalented children with an extreme deficit of attention"; they should be taught to play musical instruments, to understand human language (German), and deal with numbers, space, and geometrical figures.[17] At the same time, a prominent German sexologist, Hermann Rohleder, developed plans to use the Tenerife station for experiments on hybridization between humans and apes. As a pioneer of artificial insemination in German gynecology, Rohleder was familiar with the technique. He was apparently unaware of Moens' earlier proposal when he presented his own at the 1916 meeting of the Leipzig branch of Haeckel's Monist League.[18] Rohleder thought that the possible hybrid would provide the crucial evidence for evolution. He also believed that one should use the sperm of a non-European donor – one of the inhabitants of Tenerife with mixed blood – for better chances of success. In 1918 Rohleder published a thick volume on the problem of hybridization between human and ape (Rohleder 1918). However, his plans, like those by Moens, remained only on paper: By 1920, the economic situation in Germany made further support of the primate facility on Tenerife impossible and the station was closed. Five chimpanzees were moved to Germany where they very soon died (Heinecke and Jaeger 1993).

Following Metchnikoff's death in 1916, the Institut Pasteur had undertaken several attempts to organize its own chimpanzee facility, and in 1923 the colony was established in Kindia, French Guinea.[19] The station's main goal was to supply the Paris institute with apes for laboratory research in microbiology and pathology, and it did ship several hundred chimpanzees during the first few years of its existence.

[17] "Die Schimpansen sind wie schwachbegabte Kinder mit weitgehender Unaufmerksamkeit zu betrachten." See "Die Untersuchung der Schimpansen" [The investigation of the chimpanzees], p. 4, *APS*, Eugen Teuber papers, unprocessed.

[18] See the letters of Rohleder to Haeckel at *Ernst Haeckel House*, Jena. More biographical information about Rohleder can be found in Geus 1997; I am grateful to Thomas Junker for drawing my attention to this source.

[19] See Calmette to Simon Flexner, 30 September 1920, and other letters, *APS*, Simon Flexner papers. On the early history of the station in Kindia, also see Calmette 1924 and Delorme 1929.

According to some evidence, the two white veterinarians who worked at Kindia also used apes to test the BCG (Bacille de Calmette et de Guérin) vaccine (Wilbert 1925). At the same time, Calmette repeatedly attempted to obtain some additional support for the station from the Rockefeller Foundation by promising to make Kindia chimpanzees available to American scientists.[20] Trying in his letters to Simon Flexner to portray Kindia as a real research center, Calmette mentioned Ivanov and the plans to do experiments on hybridization between different species of apes. In 1926 Ivanov became the first professional researcher to set foot on the Kindia primate facility, and he was followed there in 1929 by Robert Yerkes.

Ivanov arrived in Paris on 12 February 1926, stayed several weeks and probably discussed the project again with Calmette. It is likely that Calmette had an additional reason to be interested in the technique of artificial insemination as a possible means to ensure the reproduction of apes in captivity.[21] Despite favorable climatic conditions, chimpanzees did not reproduce at the Kindia station. Furthermore, since the Kindia suppliers of apes – native African hunters – were mostly capturing baby chimps while killing the adults, there were serious fears that the anthropoid species faced rapid extinction in the wild. Ivanov would, indeed, attempt artificial insemination between chimpanzees during his stay in Kindia.

Ivanov's first visit to Africa, however, lasted only a little longer than a month. When he first arrived in Conakry on 27 March 1926, he was warmly welcomed by Paul Poiret, the governor of French Guinea, who had received a cable from the French Ministry of Colonies. However, when Ivanov visited the anthropoid station in Kindia, 150 kilometers away from Conakry, he got a cool or even hostile reception. Ivanov explained that the hostility of the station's staff arose from their fears that he would report back to Paris about the real problems at the facility. According to the documentation that he managed to see, about seven hundred chimpanzees had been bought from native hunters since the founding of the station in 1923, and more than half of them had died before they could be shipped to Paris for biomedical experiments. The huge mortality figures did not even include deaths during transportation or acclimatization in Europe.

On the other hand, it was still not fully recognized at the time that, in order to be able to reproduce in captivity, chimpanzees need human-like caressing, warmth, and love from their captors. The reason for failure at Kindia, however, could be much simpler: the chimpanzees there were apparently younger than seven or even five years old, which, as is now known, is well below the age of pubescence. Ivanov tried and failed to obtain spermatozoa from a male chimpanzee's testicles even by a surgical method. Investigation of the sexual organs of females also led him to the conclusion

[20] The primate colony, which Yerkes established at Yale University in 1924, remained small until 1929, when Yerkes received a $500,000 grant from the Rockefeller Foundation and could greatly expand the number of animals (Haraway 1989, 72).

[21] See "Dr. Calmette with A. Gregg at Institut Pasteur, November 27, 1926, Paris," a report by Rockefeller Foundation, quoted from a copy the Rockefeller Foundation Division of Studies sent to Yerkes. *Robert M. Yerkes Papers*; Sterling Memorial Library, New Haven, Collection 569, box 69, fld. 1315.

that all Kindia chimpanzees were prepubescent (see Ivanov's "Diary," notes of 27 March–9 April 1927, *IP* 988). With the start of the rainy season, he returned to Paris and waited there from early May to November 1926.

In the meantime, Ivanov did some experiments with chimpanzees kept at the Institut Pasteur for biomedical research. He tested sleeping gas and special nets, with which he hoped to equip native hunters in Guinea so that they could capture adult apes. At the same time, Ivanov collaborated in Paris with Serge Voronoff, a Russian-born French surgeon who also worked with chimpanzees (see Ivanov to Soviet Academy of Sciences, 2 September 1926, *GARF* 3316-45-16, pp. 24–29; Ivanov's Laboratory diary, *IP* 158). Voronoff was an international celebrity at the time because of his sensational invention of a "rejuvenation" technique. He mistakenly claimed to have achieved a real rejuvenation of aging patients by transgrafting them with the testicles and ovaries of primates (Hamilton 1986; Voronoff 1926). When Ivanov came to Paris, Voronoff was already in the process of establishing his own primate facility, which would open on his estate at Menton, Côte d'Azur, around 1928. He planned to organize it as a farm, where chimps would be cultivated like ostriches.

We still know very little about the early networks of primate researchers, animal dealers and colonial officials. But it is likely that, having its own anthropoid facility in Africa, the Institut Pasteur had many contacts among scientists who worked with primates in different countries. When Ivanov tried to find a new site for experiments, Calmette and Roux supported him with a letter of recommendation to Abreu. At first, Abreu viewed Ivanov's plans to attempt hybridization between humans and apes on her estate sympathetically but soon changed her mind, explaining that, as a very well-known person in Cuba, she would feel uncomfortable if the experiments were to be arranged on her estate, since the news would inevitably leak into newspapers (*IP* 306; 402; 450, p. 5; 988, p. 31).

Edwin E. Slosson, director of Science Service, the first American non-commercial organization for popularization of science, was very concerned about fundamentalist attacks on Darwinism in the United States and had been involved in the Scopes trial. He had also been looking for instances of hybridization between different species of mammals, regarding the possibility of obtaining new species of higher animals as the best and most convincing evidence for evolution (see Slosson to Davenport, 5 July 1927, Davenport papers, Correspondence with Slosson, *APS*). Once he learned about Ivanov's project from Calmette, he circulated among American newspapers the information that Ivanov would "try to produce a hybrid between the highest anthropoids and the most primitive of the human race" (Anon. 1925; Anon. 1926). As a result, Detroit lawyer and amateur biologist Howell S. England promised to raise some $100,000 in support of the planned experiment. England was acquainted with Slosson and had some connection with the American Association for the Advancement of Atheism.[22]

[22] For England and the American Association for the Advancement of Atheism, see Slosson to Watson Davis, 5 August 1926, Science Service Papers, Smithsonian Institution Archives, Rec. Unit 7091, box 20; for other correspondence between Ivanov and Slosson and between Ivanov and England, see *IP* 311, 321, 414, 452.

Ivanov proposed to come to the United States for a lecture tour to help raise the money, but both his American correspondents warned him against taking such risks. The topic of Ivanov's lectures, wrote England, "would be sufficient to raise a perfect storm in our fundamentalist press, all insisting that you be deported and not allowed to land. I would suggest that the best time to have you come to America to lecture would be after the first little anthropoid hybrid shall have been born and ready for exhibition. We have enough scientists in the United States to assure you after that, not only a safe entrance into the country but a welcome here" (England to Ivanov, 24 March 1926, *IP* 414, p. 6). The borders of species thus coincided with the borders of the United States, while the potential hybrid appeared less threatening to the existing moral and biological order if it were to come from the colonial borderlands.

It is likely that Calmette expected to get the $100,000 from "American philanthropists."[23] Designed for Ivanov's project, the money would help the station in Kindia enormously. Although the "philanthropists" – it is likely that they were connected with the American Association for the Advancement of Atheism – never fulfilled the promise, some interest in hybridization experiments persisted among American primate researchers. The topic reappears in the "Memo on Abreu situation" that was compiled by the close associate of Yerkes, Dr. O. L. Tinklepaugh, following his negotiations with Abreu in September 1928. The document is, in fact, the draft of Abreu's last will – she formulates "suggestions" and "conditions" under which her animals could be used for public purposes after her death, among which are: "1) No Spanish keeper (all too cruel); 2) Charge admission to keep away the rabble . . . . 5) No cross of female chimpanzee with man. Man is too big and, if the cross should be successful, the childbirth would be too painful for the mother. No objection to cross of male chimpanzee with female Homo."[24]

As Ivanov's hopes for alternative funding and a site for his experiments were drying up, he faced the difficult challenge of finding an independent source of apes. In July, he wrote to Poiret and received from the governor a friendly reply and an offer of space at the colonial Botanical Gardens in Conakry.[25] As he was heading to Bordeaux to board a ship bound for French Africa, he had for the purpose of his expedition only the modest sum that had been provided by the Soviet government.

4. Psychic Infection

Ivanov was accompanied on the second trip by an assistant, his own son, 22-year-old Il'ya Il'ich Ivanov, then a student of biochemistry at Moscow University. They arrived in Conakry on 14 November 1926 and found at their disposal a two-story building

[23] See Slosson to Ivanov, 7 January 1926, *IP* 452, pp.7–8; Calmette to Slosson, 18 January and Slosson to Yerkes, 2 February 1926 in *Yerkes Papers*, box 69, fld. 1314.

[24] Type-written draft, not signed by Abreu but with a handwritten note by O. L. Tinklepaugh on the top of first page: "Memo on Abreu situation based on conversations in Washington D.C. September 1928." In *Yerkes Papers*, collection 569, box no.1, fld. 7.

[25] See Ivanov to Poiret, 10 July 1926, Poiret to Ivanov, 4 August 1926, *IP* 319, pp. 3–4 and file 985; also see Ivanov to Gorbunov, 14 August 1926, *GARF* 3316-45-16, pp. 16–21.

in the grounds of the Botanical Gardens in Camayenne, a few kilometers from the colonial capital. Poiret further provided Ivanov with the necessary papers that allowed him to hunt, buy, and take chimpanzees back to Europe, which one could not do without permission from the colonial administration. The initial grant from the Soviet government was running out, but Ivanov hoped that if he could obtain only one single hybrid, further funds would flow in quickly and in much larger quantities.

Ivanov describes his experiments in his diaries, which also give us important information about his thoughts and feelings.[26] He may not have been a racist in Russia, but in Guinea he quickly adopted the mentality and the discourse of a white European colonizer. He felt bonds tying him to the few whites in the colony and enjoyed a special relationship among them, which was far less formal than the one they would have had in Europe. It is likely, however, that his racism was "cultural" rather than "biological," and he never believed that it would be easier to achieve hybridization when using the sperm of a black donor.

From Ivanov's diaries we also know about the details of his travel. In December 1926, Il'ya Ivanov Sr. and Jr., accompanied on the governor's orders by an officer who oversaw the hunting of apes, departed in two cars for an expedition to Fouta-Djallon, the mountainous region of Guinea that was rich with chimpanzees. They captured several adult apes and brought three of them back to Camayenne in January 1927. On 14 February 1927 ten more animals arrived, which were captured by native hunters from Fouta-Djallon with the help of nets provided by Ivanov. The cages with chimpanzees were placed outdoors in the Botanical Gardens. There, under the open sky, Ivanov did his experiments on hybridization. His main concern, however, was to hide the real purpose of his experiments from native assistants.

The boundaries between the human and the animal, humans and nature, had been blurred in European discourse about Africa. Of course, this was possible because of another boundary – geographical distance – between the colony and the metropolis. The actual experience in foreign tropics was accompanied by fear of losing one's "European" or "human" identity. As late as the 1920s and 1930s, Carl Gustav Jung warned his white readers of the "threat" of a psychic "infection": "Even today the European, however highly developed, cannot live without impunity among the Negroes in Africa; their psychology gets into him unnoticed and unconsciously he becomes a Negro. . . . If he succumbs to the primitive influence he is lost" (Jung 1964, 121 and 47).

On the one hand, Ivanov followed in his African notebooks some commonplaces of the European narrative, emphasizing the "visible" continuity between the aborigines and nature: "Negroes and Negresses, sometimes ugly, more often,

[26] *Diary*, 16 March 1926–18 July 1927, *IP* 988, pp. 1–54; *Laboratory Diary*, June-October 1926, January–July 1927, *IP* 158 and *IP* 987, *Notes* on insemination of apes with human sperm, undated, *IP* 1007; "African Notes," *IP* 990; see also Ivanov's official "Report about the mission to Western Africa," 22 December 1927, *GARF* 3316-45-18, pp. 61–109.

however, bearing a mark of peculiar beauty, as the African nature on the whole." On the other hand, Ivanov projected his fears about status and hierarchy onto the relationship between the Africans and apes, using the white colonial language of "race" and "inferiority." "The Negroes," – he wrote – "treat the apes and, in particular the chimpanzees, as an inferior human race." Similar considerations influenced his explanation of why nobody had heard about offspring from the ape males and native women. "The women, raped by ape males," he wrote in his report, "are regarded as defiled. Such women are treated as pariahs, as socially dead, and, as I was told, they usually disappear without any trace later" (Ivanov, "African Notes," *IP* 990, p. 44; " Report about the mission," *GARF* 3316-45-18, p. 107).

Because of these concerns, Ivanov tried to conceal his experiment from the native servants. He employed native staff of the Botanical Gardens to take care of the chimpanzees, yet had to arrange his attempt at artificial insemination of apes secretly, under the disguise of a medical treatment. In order to maintain secrecy, Ivanov was assisted by his son alone, and the experiment was carried out by the two of them in a particularly brutal and hurried way, which made the description read like it was a rape. On 28 February, between 8 and 10 a.m., the two chimpanzees Babette and Syvette (earlier mentioned in the lab diaries as "number 2" and "number 3"), who had been observed having periods earlier, were caught in their cages and fastened with the nets twined around their bodies. Although Ivanov had earlier complained about the callous and brutal treatment of chimpanzees in Kindia, he succumbed to similar brutality and insensitivity during his own experiment. He and his son used force when dealing with apes, and the apes fought back. One of the females had bitten Ivanov Jr. during the previous examination so severely that he had to be taken to the hospital. During the insemination, mentioned Ivanov, "each of us had a Browning in the pocket, just in case" (Laboratory diary, note of 28 February 1927, *IP* 987; Notes on the insemination of apes, *IP* 1007).

According to the laboratory notebook, "the sperm was not completely fresh, but approximately 40 per cent of spermatozoa were movable . . . . The injection took place in a very nervous atmosphere and in uncomfortable conditions. The threat from the apes, the work on the open ground, and the necessity to conceal." The same desire for secrecy forced Ivanov to violate his own professional recommendations about performing artificial insemination, which "should be carried out . . . with the introduction of sperm into the cervix of the uterus, using the speculum and other instruments. . . . But in our conditions, this could not be done. We had to make the injections quickly and in such a way as to avoid feeding the suspicions and interpretations by the Negroes, otherwise this could have led to very unpleasant consequences for us." The injection was done without the speculum and intravaginally, rather than intrauterally, which significantly reduced the chances for a successful impregnation.

An outbreak of amebic dysentery among Ivanov's chimpanzees in early March killed many of them. Babette and Syvette survived, but he was able to make a second

attempt only on 25 June, on the chimpanzee "number 25," or "Black." Again around 8 a.m., and again under the pretense of medical treatment, the ape no. 25 was taken to a special cage and put to sleep with the help of chloroethyl. "In 2–3 minutes the ape was motionless . . . . Freshly collected sperm. Sp[ermatozoa] very movable. . . . Introduced 1.5 ccm. The injection was also made on the ground, and half of the ape's trunk was in the cage, whereas the lower half remained outside. Examination of the sperm after 8 hours 35 minutes: energetic forward motion of most spermatozoa. Examination after 14 hours: many preserve energetic mobility. The sperm had been preserved in a sealed pipette" (Laboratory diary, note of 25 June 1927, *IP* 987; see fig. 4).

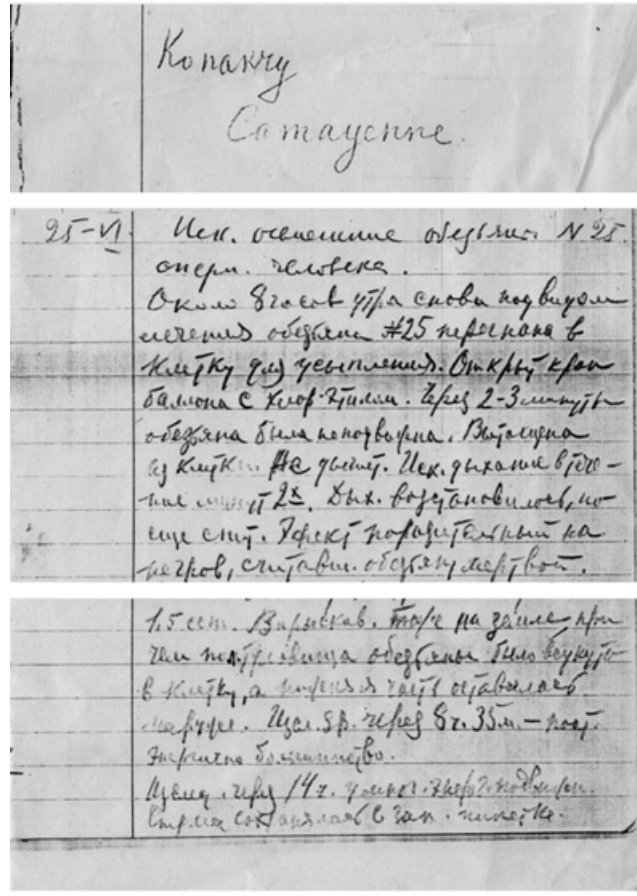

Fig. 4. Entry in Ivanov's laboratory diary, dated 25 June 1927, tells us of the insemination of chimpanzee no. 25 with the human sperm. (Courtesy of the Central State Archive of the Moscow Region. Collection 837, dossier 1, file 987, p. 44)

Ivanov's insensitive and callous treatment of the chimpanzees perhaps reflected his need to develop a psychological distance between himself and the potential baby. The sperm used in the experiment, however, was apparently neither Ivanov's nor his son's. In his "Notes on the insemination of apes," which he kept separately from his lab diary, Ivanov wrote that for the attempt in February, "the sperm was obtained from a man whose age isn't exactly known. At least, not older, than thirty. Not completely clear whether he had children." In the June experiment, "the freshly collected sperm from a man of thirty years old. Bachelor, but, according to his claims, there already have been conceptions from him" (Notes on the insemination of apes, *IP* 1007).

Money was running out and Ivanov had to prepare to leave Guinea. Already before the departure he knew that the first two inseminations failed: both Babette and Syvette had been observed having periods. The total number of attempts he was able to make – three – was simply too small to give much hope for success. In gynecology, for example, according to some estimates at the time, the success rate was approximately 30 per cent, with all the technological recommendations carefully observed, full cooperation from the patient, and five or six repeated injections of sperm per patient in the course of six months. Instructions by Rohleder stressed that the woman should not go by tram, dance, or ride a horse one month following the insemination (Rohleder 1922, 215; idem 1911, 252). Since one could not expect similar comfortable conditions or similar cooperation from chimpanzees, Ivanov needed a much larger number of them for a really convincing experiment.

Since the access to apes was difficult, he was thinking from rather early on about a possibly easier and cheaper alternative: the insemination of women with the sperm of just one or a few male apes. The sperm cells could even be obtained from the testicles of a dead male – in his earlier practice before 1917 Ivanov had used this technique with wild animals shot during hunting trips. Ivanov discussed the idea already on his way to Guinea, between 2 and 14 November 1926, on board the ship going from Bordeaux to Conakry. One of his fellow travelers, Dr. H. Dupuy, was the head of the colonial health service in Brazzaville and Ivanov asked him for permission to inseminate native women with chimpanzee sperm in a hospital in the Congo (Diary, note of 12 November 1926, *IP* 988). He apparently wanted to do this without the women's knowledge and consent, and hoped to secure better cooperation from women in a hospital than from chimpanzees (Ivanov to Gorbunov and Soviet Academy of Sciences, 24 March 1927, *GARF* 3316-45-16, pp. 107–114; *IP* 979). The hospital provided the doctor with easy and controlled access to the patient, her submissiveness, and institutional (and legitimate) separation from the family. At the same time, gynecology and gynecologists had accumulated much experience in the medical examination and treatment of women.

To tell this chilling story we need to cite Ivanov's diary again. Upon his arrival in Conakry, Ivanov mentioned the idea to Poiret and Dr. Pezé from the local hospital, and initially found some understanding. According to his diary: "16/XI – [I] informed Poiret about the program of my work and about my plans to invite Dr. Pezé

to participate in the work. Poiret agreed and promised to talk with Pezé. From Poiret – to Dr. Pezé. [We] understood each other after a couple of words."

One week later, however, the governor changed his mind, as reported again in Ivanov's diary: "23/XI – . . . At 4 PM – again with Dr. Pezé at the hospital . . . He stated that the governor objected to carrying out the experiments in the hospital, that he had gone to Dakar and would be discussing the matter with the General Governor [of French Equatorial Africa] and with Lacené [the chief of health care service in Dakar]. Poiret is expected to return not earlier than in two weeks, and one has to wait, because he categorically banned doing the experiments in the hospital without his permission. *Dehors* [outside the hospital] – yes, but this, to be sure, completely changes the matter and does not guarantee the purity of experiment" (see Diary, notes of 12 November, 14–16 November 1926, and 23 November 1926, *IP* 988).

Ivanov and his son were offended by the governor's change of heart ("A bolt from the blue," "a terrible blow" – Ivanov noted in the diary). What they probably did not fully understand – approaching the problem of hybridization as an "objective," biological one – was the whimsical dialectics of colonial rule that postulated both the division between races and the common "human" identity of colonizers and natives, the justification for the colonialist notion of the "civilizing mission" of the white race. According to the historian of colonialism Nicholas Thomas, "if one is seeking an elementary structure of colonial discourse, it is not to be found at the level of a specific attitude or policy, nor in any particular image or metaphor, but rather in the contradictory character of the colonial objectives of distancing, hierarchizing and incorporating" (Thomas 1994, 142).

Up to the last day of his stay in Africa, Ivanov attempted to arrange the experiments on women, negotiating with physicians in Conakry and elsewhere. Some time after March 11 he got a letter from Dupuy who suggested that the experiments should be carried out in the hospital in a small town, Nola, in the French colony Ubangi-Shari. Ivanov seriously contemplated the possibility of going there, asking whether he would need a visa and on how many women he would be able to perform his experiment (*IP* 310 and 413). It is hard to say what would have come from this if Ivanov had carried out such an experiment. The role of chimpanzee and other primate species as possible sources of viral infections was not known at that time. Recently, the computer analysis of the nucleotide sequence of various strains of HIV-1 virus, which is responsible for the AIDS pandemic, provided important evidence about the evolution of the virus. It is likely that west equatorial Africa was the place where the virus emerged around 1931, when it was supposedly transmitted from chimpanzee to man or was activated in a human host (Korber et al. 2000). However, there is no evidence that Ivanov or anybody else, in fact, did these experiments on African women.

On 1 July 1927, Ivanov left Conakry accompanied by his son, two monkeys, and thirteen chimpanzees, including Babette, Syvette, and Black. Black died when they arrived in Marseilles, and the post-mortem examination found no signs of pregnancy. Syvette died on the way to the Soviet Union. The surviving primates were taken to

Sukhum, one of the few places with a subtropical climate in the territory of the Soviet Union. Their colony, subsequently enlarged by later shipments, marked the beginning of the first Soviet primate station and of Soviet primatology in general (Fridman 1967).[27] While carrying his apes back to the Soviet Union, Ivanov was making plans for the continuation of his experiments there, plans which included the insemination of women.

5. The Soviet Experiment

In 1928 the Bolsheviks started the so-called cultural revolution, abandoning their previous politics of the gradual transformation of backward Russian society. Ivanov never had strong political views but was remarkably able to adapt his program to the various ideologies of his patrons. His hybridization attempts were now supported by the Communist Academy, the institution of a "new" Marxist science.[28]

Ivanov's plans for the continuation of his experiments at the Sukhum station heavily concentrated on the insemination of women. As Ivanov explained the problem in December 1927 to the academic council of the Institute of Experimental Endocrinology, "Experiments on the artificial insemination of women with the sperm of anthropoid apes will require the delivery of only two or three adult male apes," while the insemination of chimpanzee females would need a much larger number of animals (*IP* 983, pp. 14–15). The main difficulty with which the Sukhum primate station had to struggle was the proper acclimatization of primates in the new location. Sukhum with its palm trees may have seemed south to Russians, but it was very far north for the apes.

At the same time, the Academy of Sciences, which had supported his experiments on apes, expressed abhorrence and indignation once the academicians realized that Ivanov had been trying to inseminate women in Africa without their consent. A commission headed by zoologist Pëtr Sushkin, who had known Ivanov since their pre-revolutionary work in Askania-Nova, investigated and reported the matter to the Academy's Presidium. Sushkin pointed out that Ivanov had intended to deceive African women, which might undermine the trust of Africans in European researchers and doctors and make problematic any further expeditions of Russian scientists to Africa. Thereafter, the Academy did not want to deal with Ivanov and

[27] While Ivanov was traveling abroad, Gorbunov urged the Commissariat of Health Care to petition the government for an increase in its overall budget in order to accommodate the new facility and make sure that the request got approved. The allocation was made when Ivanov was still in Guinea, and enabled sending him an additional sum of 6,000 rubles for the purchase of several more chimpanzees and monkeys (see Tobolkin to Ivanov, 20 August 1926, and other letters, *IP* 1010; Nikolay Semashko, Commissar of Health Care, to Gorbunov, 14 June 1927, Gorbunov to Semashko, 7 July 1927, *GARF* 3316-45-19, p. 50).

[28] For the Communist Academy and its activities in natural sciences, see Joravsky 1961; David-Fox 1997, also see *ARAN*, collection 351 (Section of Natural and Exact Sciences) and 350 (Presidium of Communist Academy).

deprived him of any further support (*GARF* 3316-45-18, pp. 1–2, 114–116). Upon his return from Africa, Ivanov resumed his earlier work on the artificial insemination of farm animals in a small laboratory at the State Experimental Veterinary Institute.

Gorbunov continued to support Ivanov, although he had full information about his immoral attempts to experiment on African women. Arguing that his experiments should be continued on Russian or European women, Ivanov complained about Africans' "backward" culture, which had made his work so difficult: "the conditions [in Africa] are so, that the woman would never be willing to voluntarily participate in experiments. . . . As long as the woman is unmarried, she lives with her parents or close relatives. If she is widowed, she is passed on as a wife to the nearest relative of the dead husband" (Ivanov to Gorbunov and Academy of Sciences, 24 March 1927, *GARF* 3316-45-16, pp. 107–114; *IP* 979). In his final report about the expedition, he did not forget to mention the abusive letter from the American Ku-Klux-Klan, which, as he claimed, he had got during his stay in Paris: "In America, . . . these news [about experiments on hybridization] aroused sympathy in progressive newspapers and even the desire to provide us financial support. At the same time, our research caused a burst of indignation, a shower of abuse and threats to me from fascists led by the Ku-Klux-Klan. This only confirms that our work has not only an exceptional scientific, but also a social [or public – *obshchestvennoe*] significance."[29]

Gorbunov's patronage alone was not sufficient for the government to continue its financial support for Ivanov's experiments without approval by an authoritative scientific body. Since the Academy of Sciences refused to be associated with the project, Gorbunov linked Ivanov to the rival academic institution, the Communist Academy. This Academy had been initially founded in 1918 for Marxist studies in the political and social sciences, but since 1924 it also included the Section of Exact and Natural Sciences. On 19 April 1929, Gorbunov's Department of Scientific Institutions invited several scientists from the Communist Academy for a one-day discussion on the problem of hybridization between humans and apes. Significantly, the timing of the meeting coincided with the highest point of the cultural revolution, when the Party turned its back on old "bourgeois" specialists and launched a massive campaign for educating new, Red specialists and scientists. Correspondingly, relations between the government and the Academy of Sciences reached an all-time low mark, as the Academy found itself under enormous political criticism and pressure, threatening it with dissolution.[30] Some of the most aggressive critiques came from the Communist Academy, which challenged the old Academy's status as the supreme national authority in the sciences.

The meeting noted that the Academy of Sciences had failed to consider Ivanov's report during the eighteen months that had passed since the African expedition, and

[29] Although the letter has not been preserved, Ivanov also mentions it in his Diary. See *Diary*, note for November 2, 1926, and "Report about the mission to Western Africa," pp. 68, 89.

[30] For a general assessment of the Cultural Revolution in science, culture, and education, see Fitzpatrick 1978, 1992; Graham 1967.

resolved to turn the matter over to the Communist Academy in order "to organize a comprehensive review of the proposal by Prof. Ivanov . . . and carry out the necessary experiments" (*GARF* 3316-45-19, p. 53 and p. 140). Those attending the meeting included Efim Voronov who was Gorbunov's associate, Ivanov, Tobolkin and several scientists from the Communist Academy: Aleksandr Serebrovskiy, Solomon Levit, and Otto Shmit (Schmidt). Serebrovskiy, one of the founders of Soviet genetics, led a genetics laboratory at the Communist Academy (see fig. 5). Levit, a former physician and a Party member, worked on Drosophila genetics under Serebrovskiy. In the 1930s he would become the leader of the new discipline of medical genetics in the Soviet Union, and would show a particular interest in the study of twins. Shmit, the director of the Section of Exact and Natural Sciences, was a mathematician and Bolshevik official who, during his lifetime, held positions of all sorts in the government and in science, but would become famous primarily in the mid-1930s as the main hero of Soviet polar explorations.

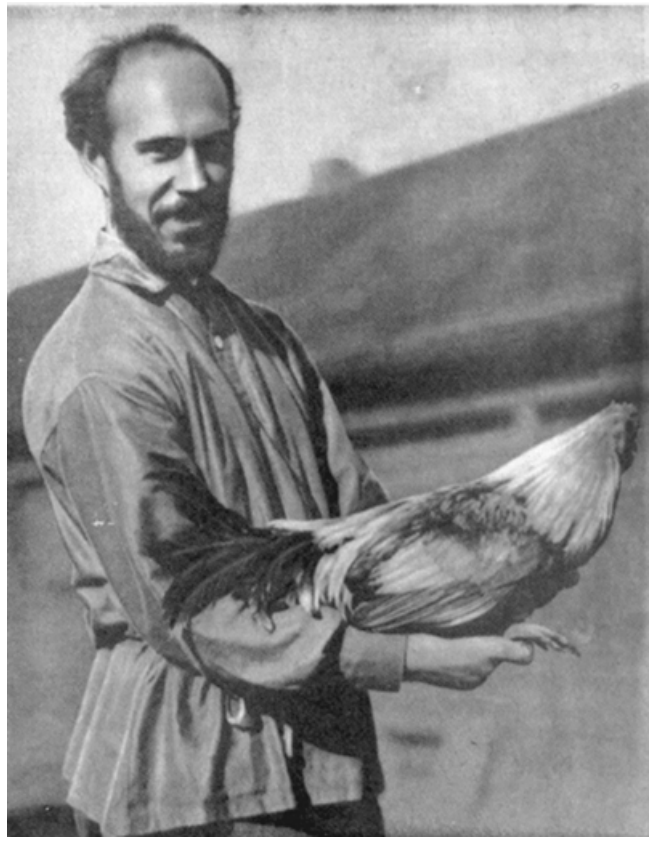

Fig. 5. Aleksandr Sergeyevich Serebrovskiy at the fowl breeding station, between 1918 and 1925. (Courtesy of the Archives of the Russian Academy of Sciences)

Levit orchestrated further discussions at the Communist Academy since he was the deputy director of its Section of the Exact and Natural Sciences and also the vice-chairman of the Society of Materialist Biologists, which was associated with the Academy. Four days after the session in the government, on 23 April 1929, the Society thoroughly discussed Ivanov's project and found it "very desirable."[31] To oversee the future work, the Society of Materialist Biologists established the Commission on Interspecific Hybridization of Primates, with Levit as chairman. Besides Ivanov, the commission eventually included Serebrovskiy, the embryologist Mikhail Zavadovskiy who had worked in Askania before the revolution and had much sympathy with Ivanov ever since, and two other members of the Society – the historian and philosopher of biology Max Levin (or Levien)[32] and entomologist Yevgeniy Smirnov.

The main interests of the Society of Materialist Biologists were connected with the problems of heredity and evolution. The Society's most active members – Serebrovskiy, Levit, and Iosif Agol – experimented with Drosophila genetics and mutations, while some others – Smirnov, Boris Kuzin and Yuliy Vermel' – believed in the inheritance of acquired characters and in 1926 invited the prominent Viennese Lamarckian, Paul Kammerer, to head a special laboratory at the Communist Academy (Gaissinovich 1980b; Koestler 1971). In 1929, after several years of heated controversy, the genetics camp appeared to have won. Smirnov was the only Lamarckian who had been included in the Commission on Hybridization, and although he disagreed with other members on what was, precisely, the Marxist approach in biology, they all apparently were in favor of Ivanov's experiment. After all, regardless of their clashes over genetics, all commission members shared some common values, in particular a predisposition towards scientific control of life and active human interference into biological evolution (see Gaissinovich 1980b).

Planning experiments in Sukhum, the commission chose the insemination of women volunteers with the sperm of an ape as the only realistic option. After all, the Sukhum station still struggled with the problem of acclimatization, and by the summer of 1929 had only one post-pubescent ape, Tarzan, a 26-year-old orangutan male. The Commission decided to "attract the participation of women in possibly big numbers – in any case, no less than five – whose interest would be of idealistic [or ideological – *ideyno zainteresovannykh*] and not of monetary nature."[33] Besides being

[31] The favorable decision was subsequently officially endorsed by the Section of Exact and Natural Sciences and by the Communist Academy's Presidium (see Society of Materialist Biologists, Record of the Session 23 April 1929, *IP* 1024, on p. 1; Presidium of Communist Academy, Sessions of its Bureau, 25 May and 1 June 1929, Records nos. 11 and 12, *ARAN,* 350-1-271, pp. 49, 57; Section of Natural and Exact Sciences, Decision of its Bureau, 14 June 1929, *ARAN* 351-1-46, p. 39).

[32] Levin, who earned his doctorate in comparative anatomy from Zurich university in 1913, later appeared as the war commissar in the short-lived Bavarian Soviet Republic of 1919 and, after its fall, had to escape to Soviet Russia since a bounty was offered for his arrest at home (Gaissinovitch 1980b).

[33] "Concerning the scientific-research primate facility" (O nauchno-issledovatelskom pitomnike obez'ian), *IP* 1024, pp. 4–6; this project was approved at the session of the Commission on the Interspecific Hybridization of Primates in June 1929, *ARAN* 351-1-62, on p. 161 and *ARAN* 1595 [Serebrovskiy] – 1–389.

ideologically acceptable, voluntary participation was also better for the "purity" of the experiment, as a guarantee that women would abstain from sexual contacts for several months after the insemination. The control of women's bodies would be better ensured with "conscious" participants. The contradictions entailed in the plan were essentially the same as in the program of women's emancipation that was part of the cultural revolution.

Along with the building of a classless society, the cultural revolution tried to achieve, as quickly as possible, the full social equality of women. Soviet women were encouraged to play active roles in the professions and society. It was expected that the "hypocritical" bourgeois family which enslaved women in traditional marriage would be destroyed under socialism. Freedom of divorce and abortion was legally unrestricted. Thousands of women, especially younger ones, took part in the emancipation movement. At the same time, the process of women's emancipation was supposed to be guided by the Communist Party, which was a predominantly male organization.[34] Independent organizations of women, like independent organizations of any sort, were viewed with suspicion by the Party. The rhetoric of "conscious" participation masked the existing tension between two contradictory imperatives of socialist emancipation: the desire to unleash a grass-roots revolutionary and egalitarian movement and, simultaneously, to maintain discipline and control by the Party.

One can find similar contradictions in the proposal of socialist eugenics which Serebrovskiy – one of the members of the Commission on Interspecific Hybridization of Primates – drafted in the same year, 1929. He plainly rejected the restrictive methods of "bourgeois" eugenics, such as sterilization, which were supposed to be compulsory: "For these measures to have any noticeable impact, they have to be practiced to such a wide extent, that they could only be maintained by Assyro-Babylonian or Egyptian despotism. And even this despotism would hardly be able to achieve that." Instead, Serebrovskiy proposed a positive "socialist" eugenics based on artificial insemination and "conscious" participation.[35] His main idea was to liberate sex from procreation, in combination with the destruction of "bourgeois" family, in which the husband accepted only those children who were born from his own sperm. It is remarkable that, according to Serebrovskiy, ideological indoctrination from above would persuade all women to use artificial insemination voluntarily as the new mode of propagation: "Inculcation of the idea that not simply the sperm of a 'beloved person' should be used for the conception of a baby, but that this sperm should be

[34] In the Party itself, women constituted only about 12 per cent of total membership, and 20 per cent in the Communist Youth organization (Gorsuch 1996, 637–638; see also Goldman 1993, 1996; Stites 1978).

[35] Serebrovskiy did not mention Ivanov by name but wrote about "enormous success" of artificial insemination in stud-farming.

obtained from a certain recommended source, which is crucial for the accomplishment of the selection plan. . . . It will be necessary to inculcate the view that the disorganization (*sryv*) of this complex project designed for many generations ahead is an antisocial and amoral deed, unworthy of a member of Socialist society" (Serebrovskiy 1929, 15, 18).

In 1935, Muller would develop a strikingly similar plan in his book *Out of the Night* (Muller 1935; see Adams 1989; Carlson 1981). Muller would also stress the importance of liberation of women in order to realize a wide-scale program of artificial insemination. At the same time, the outstanding men, not women, were to play the main role in the rapid improvement of human race. Serebrovskiy wrote of especially "valuable and prominent progenitors," claiming that from one such progenitor it would be possible to obtain 1000 or even 10,000 children. Muller estimated this number at 50,000. "How many women," he claimed, "in an enlightened community devoid of superstitious taboos and of sex slavery, would be eager and proud to bear and rear a child of Lenin or of Darwin!" (Muller 1935, 113, 122).

In this respect, the rhetoric of male scientists contained the hidden assumption of gender inequality, which, in fact, might cause opposition from women if somebody were to implement one of these radical projects in the Soviet Union. At the same time, the Commission on Interspecific Hybridization of Primates totally ignored the possibility that women volunteers might become personally involved with their children. Although required to act "consciously," the women were supposed to play passive roles, subject themselves to the male experimenter and, apparently, relinquish their rights over possible offspring. Women volunteers would have to sign a contract with the administration of the Sukhum station and agree to live for one year under the condition of strict isolation. According to the contract, the gynecologist, a female doctor, was to live with the women in the same rooms.

Ivanov's experiments were to be kept secret "until their results would be clear," and until that moment, neither he nor other commission members would publish anything or even mention the topic publicly. O. O. Topchiyeva, a gynecologist and daughter of one of Ivanov's friends, agreed to work on the project (Topchiyeva to Ivanov, 5 June 1929, *IP* 392). Ivanov also found at least one volunteer, G., from Leningrad, who wrote to him on 16 March 1928: "Dear Professor, . . . With my private life in ruins, I don't see any sense in my further existence . . . . But when I think that I could do a service for science, I feel enough courage to contact you. I beg you, don't refuse me . . . . I ask you to accept me for the experiment." Ivanov corresponded with G. further, obviously intending to use her in the experiment. Meanwhile, somebody at the station subjected Tarzan's sperm to microscopic examination and found viable spermatozoa. The experiment had to be postponed once again, however, due to Tarzan's unexpected death from brain hemorrhage in June 1929. "The orang has died, we are looking for a replacement," Ivanov cabled to G. The Station placed orders for purchases of new apes and in summer 1930 received

five chimpanzees. A further delivery of anthropoids was scheduled for the following summer.[36]

The ongoing cultural revolution in Russia made Ivanov's experiments ideologically acceptable, yet it also entailed certain risks for him personally. Ivanov was just one of the "old" specialists then in danger of being subjected to political criticism and repression. Indeed, in May and June 1930, Ivanov was attacked at a series of public meetings at the Experimental Veterinary Institute, where he had a small laboratory. In a pattern typical of the time, the critique was mounted by two young associates, Orest Neyman, a communist and an administrative worker, and Viktor Milovanov, Ivanov's assistant and former pupil. The language of accusations – "sabotage and wrecking" – was standard for the campaign against old specialists. A more specific accusation alleged defects in one of the catheters designed by Ivanov for artificial insemination in farming and demanded the withdrawal of the instrument (see *IP* 709–713, 749, 889, 896).

In parallel developments, other important participants in the hybridization project also encountered political problems, which were apparently independent from each other, except for the fact that they all occurred in the turbulent and violent period of the cultural revolution. By the end of 1930, Shmit, Serebrovskiy, and Levit lost their positions and influence in the Communist Academy and in the Society of Materialist Biologists (*ARAN* 351-1-62; also see *Za povorot* 1931). Gorbunov's political fortunes suffered after his boss, the chairman of the Council of People's Commissars, Aleksey Rykov, was accused of organizing, together with Nikolay Bukharin, a rightist deviationist faction within the Bolshevik Party. In December 1930, a loyal Stalinist, Vyacheslav Molotov, replaced Rykov as the head of the Soviet government. Gorbunov was dismissed from his government post simultaneously and disappeared for a while from the public arena.

At about the same time, on 13 December 1930, Ivanov was arrested by the secret police, convicted of having created a counterrevolutionary organization among agricultural specialists, and exiled for five years to Alma-Ata, the capital of the Kazakh Republic.[37] One of his main accusers, Neyman, succeeded him as the head of the laboratory at the Veterinary Institute, a rather common practice of the time. In letters to his son from exile, Ivanov attributed his arrest to Neyman and acolytes. His exile, however, came towards the end of the cultural revolution that had, in fact, brought universal suffering, disorganization, and chaos, along with vigorous attempts to rapidly change Russian society. On 23 June 1931, Joseph Stalin publicly criticized the

[36] For correspondence between G. and Ivanov see *IP* 297 and *IP* 349; on new deliveries of apes, see Fridman 1967, 115–116; on the examination of sperm and Tarzan's death, see Tobolkin to Ivanov, 30 June 1929, *IP* 1010 and L. Woskresenskiy, the scientific director of Sukhum station, to Yerkes, 30 November 1929, Yerkes papers, box 63, fld. 1195; also see Shervinskiy's Papers, Materials about organization of the station, *Semashko Institute*, 28-12-1.

[37] See the letter from the Central Archives of KGB to the Institute for the History of Science and Technology, 7 June 1991d, no. 10/AN-464, Archives of the Institute for the History of Science and Technology, the Russian Academy of Sciences, Moscow; also see Ivanov's letters to his son in *IP* 298.

excesses of "specialist baiting" after which the tide reversed and many old specialists started returning to positions of prominence. On 1 February 1932, Ivanov had his civil status restored and was allowed to live again anywhere in the USSR. His health, however, had deteriorated in prison and in the harsh climate of Central Asia. Ivanov died in Alma-Ata from a stroke on 20 March 1932, "one day before the scheduled departure to Moscow, and then, to the health resort," according to the obituary (Rusanov 1933). His personal quest for producing a hybrid between humans and apes had ended.

Had Ivanov lived several more years, he might have managed to return to his position and his laboratory at the Veterinary Institute, but would have hardly been able to continue his experiments on crossing humans and apes. The radicalism of the cultural revolution gave way to Stalinist culture that laid increasing stress on "order" and hierarchy. Traditional family values and mores returned to prominence, abortions and homosexuality were criminalized, and divorces made very difficult. The Communist Academy was closed in 1936. Former cultural revolutionaries disappeared too. Many – including Gorbunov, Levit, and Levin – perished during the Stalinist purges of 1936–38, while others – like Serebrovskiy – had to adapt to the new system of values. In the later Soviet culture, Ivanov would be remembered for his work on artificial insemination in farming – which continued later in the Soviet Union, although perhaps not on the scale he had dreamt of – and for his pre-revolutionary experiments on interspecific hybridization in Askania-Nova, but not for his project with primates.

The primate station in Sukhum – in retrospect, the real and lasting accomplishment of Ivanov's African expedition – operated throughout the rest of the Soviet period and even greatly expanded after World War II, with the number of monkeys reaching 773 in 1957, and 2018 in 1966 (Fridman 1967). Since 1932 the station became part of the Institute of Experimental Medicine, and from then on, research focused on various biomedical topics and on Pavlovian studies of higher nervous activity (see *Trudy* 1949). Later, some experiments were done there in connection with the Soviet atomic and space programs. American scientists were able to visit the station during the Khrushchev years, and their reports prompted the United States government to create the regional network of Yerkes primate stations (Bourne 1971, 115–116). However, nobody tried again to propose doing a hybridization experiment there, and even intra-specific artificial insemination was never again performed on Sukhum primates (Fridman 1967; Lakin 1949). Unfortunately, the station did not survive in post-Soviet times, when Sukhum – the capital of the self-proclaimed Abkhaz Republic – became in 1992 the scene of severe fighting between the Georgian and Abkhazian paramilitaries.

Conclusions

Following Ivanov's death, interest in hybridization between human beings and apes persisted for several decades, although his expedition and experiments were almost

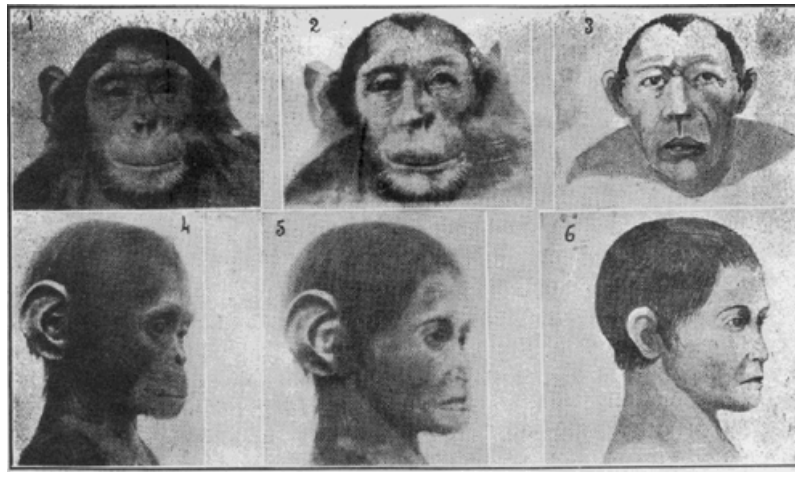

Fig. 6. "Photographs of the hybrid," which a Mexican author obtained by superposition of photographic images of man (right column) and chimpanzee (left column). (Alfonso L. Herrera in Cuadernos de Cultura, 1933, vol. 82, p. 16)

completely forgotten (see fig. 6). In 1929, the German anthropologist Hans Weinert mentioned rumors circulating among those who worked with primates that some unidentified researcher had crossed human and ape and was secretly growing a hybrid baby somewhere in tropical Africa. Weinert ridiculed the rumors but believed in the possibility of hybridization between human and chimpanzee (Weinert 1929; idem [1932] 1944, 169–171). Even in the 1960s, Ramona and Desmond Morris wrote about "hints and rumors from several sources" that hybridization had been "in fact already carried out secretly in Africa and elsewhere." Ironically, they referred to the stories as "no more than the last quasi-scientific twitchings of the dying mythology," while believing at the same time that such attempts might be undertaken in the near future (Morris and Morris 1966, 82).

It is remarkable that, despite the rapid expansion of primate science after World War II (Schultz 1971; Haraway 1989), artificial insemination was not used with non-human primates for more than forty years after Ivanov's experiment. When artificial insemination was for the first time successfully applied to apes, it was expected that it would serve the purpose of preserving endangered species of anthropoids, and would become an important tool in the study of sexual physiology and endocrinology of primates (Sellers 1972; Martin, Graham and Gould 1978). At about the same time, discussing the perspective of cloning man, the famous American geneticist and Nobel prize winner Joshua Lederberg noticed that "the issue of 'subhuman' hybrids may arise first . . . there is enormous scientific interest in organisms whose karyotype is augmented by fragments of the human chromosome set, especially as we know so little in detail of man's biological and genetic homology with other primates" (Lederberg 1966, 531).

Professor Charles L. Remington, whom I cited at the beginning of present paper, worked out the detailed plan for the conduction of artificial insemination of chimpanzee females with human sperm. He suggested that in case of success, the hybrid infants should be "bottle-raised" "in one of the National Regional Primate Laboratories." Since man and chimpanzee have different number of chromosomes, "the hybrid will be largely but perhaps not totally sterile." Further crosses might follow, leading to a wider range of hybrids: "If a hybrid were successfully backcrossed to *Homo*, the new offspring would of course be 0.75 *Homo*, and very interesting legal and ethical questions would then arise. Backcross hybrids, incidentally, would be likely to have substantially higher fertility than F1 [first generation] hybrids. If a hybrid were successfully backcrossed to the pongid species, on the other hand, backcross hybrids would raise even fewer questions of legal humanness than would the F1 hybrids" (Remington 1971, 463–464).

It is likely that these experiments have never been carried out, but one cannot be certain that the issue of "sub-human hybrids" will not re-emerge in the future. Although hybridization by means of artificial insemination is not very probable, the construction of viable organisms with "hybrid" karyotypes (i.e., the incorporation of human chromosomes or large fragments of them into the animal genome, and vice versa) looks achievable. These alarming possibilities of modern biomedical science bring a new perspective to Ivanov and his unusual work.

It is not very easy to make a compelling argument – ethical or legal – why such experiments should be banned. However, the entire story of Ivanov's attempt – not only its obviously immoral part, the plans to experiment with African women without their knowledge and consent – arouses a feeling of deep aversion. It is not completely clear where the feeling comes from. Part of it may be linked to the residual belief in the sanctity of biological, racial, or social hierarchies and borders. If one takes these borders as "natural" and "eternal," the objections against blurring them in nature would be especially strong. The most notorious racist of the twentieth century, Adolph Hitler, expressed indignation even about hybridization between different animal species, believing that intermixture always leads to degeneration. "The State," he also wrote, "is called upon to produce creatures made in the likeness of the Lord and not create monsters that are a mixture of man and ape" (Hitler [1927] 1939). On the other hand, the refusal to take these borders as unchangeable allowed Marxist biologists in the Soviet Union, Levit, Serebrovskiy, Levin, and others, to support the experiments on hybridization between human and animal. Is it possible to disagree with them without siding with the proponents of the "organicist" understanding of society?

The border that separates man from animal is, in fact, a product of social and cultural construction. In this story, it appears in different forms: as a boundary between the European metropolis and African colonies (Section 3), between the white and black races in Africa (Section 4), between male experimenters and female volunteers (Section 5), and between the small Communist avant-garde and the huge "uncultured masses" whom the Bolsheviks wanted to change without themselves

being changed (Sections 2 and 5). For a long time, "nature" and its divisions were used to sanction the divisions between people, developmental differences and social hierarchies. The belief in "natural order" and borders justified inequality and subordination in human societies. If this argument is no longer accepted, what does it mean for our beliefs about nature and its divisions? Should we continue to view the borders between species as "given" and therefore preserve them as important conventions? Shall we assume that these borders have independent moral value?

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