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1892

KARAZIN: METEOROLOGIST OR METEORURGE?

In this essay we will talk about Karazin, a man of many talents, not as a meteor*ologist* but as a meteor-*urge*. The difference between a meteorologist and a meteorurge may be defined as follows: the ultimate objective of the first is to predict famine, and the second takes as his task – and incidentally, only as the *first step* of the task – *salvation from famine*. Unfortunately, the word *urge* was corrupted by mystics and acquired the connotation of *witchcraft* – arcane, supernatural acts, unseen influences of spirits – and not the clear, open, comprehensive exercise of reason on the blind forces of nature.

While attempting to manufacture saltpeter, an idea occurred to Karazin: potassium nitrate could be made with electricity captured from the atmosphere's highest strata by specially constructed balloons, which would be anchored to the earth with metallic cables. On the 9th of April, 1814, Karazin wrote about this to Arakcheyev, residing in Paris at that time. Among other matters, he mentioned: "If the

experiment, as I hope, conclusively confirms my hypothesis about extracting electricity from the stratosphere, it will signal the invention of a *new*, unprecedented weapon in the hands of humankind. Water, air, fire, muscles of living beings, tension, and expansion of certain bodies are still considered to be regulated by natural forces, some of which we have managed to harness and replicate in machines. Consider, your excellency, the consequences of mastering the massive amount of electrical energy scattered throughout the atmosphere and bending it to our will." Subsequently Karazin expresses hope that through the medium of electricity, humans *"will attain the ability to determine the state of the atmosphere, producing rain at will."* Intrigued, "Arakcheyev showed Karazin's letter to the renowned chemist Chaptal, an expert in the production of saltpeter, who unconditionally approved its contents." This opinion was echoed by the committee that Prince Gorchakov, head of the Ministry of Defense, appointed in 1815 in order to review Karazin's proposal of creating condensed explosives and saltpeter for military purposes. Professor Scherer, a chemist and member of the Imperial Academy of Sciences, responded to the committee that "according to his own observations, which he intended to publish, he saw no other explanation for the creation of potassium nitrate, even in the usual course of producing saltpeter, than the effect of atmospheric electricity. Finally, Karazin managed to get the attention of His Majesty Alexander Pavlovich himself, to whom Karazin conveyed a note about meteorology during the latter's tour through Kharkov in September 1817. His Royal Highness was particularly taken by the following words in the note: "The implementation of electricity from higher atmospheric strata for the benefit of humankind. The important invention presented herewith could be applied only at a small scale due to the inadequacy of resources. It accords with our age and Russia's glorious position within it. As a patriot, it would be a pity for me to see a foreigner stumble upon this very same idea." In response to the sovereign's request for further elaboration, Karazin submitted a new document in which he proposed – based on the fact that the higher one ascends in the atmosphere, the higher the

concentration of electricity – that the highest strata of the atmosphere "consist of a perpetual upheaval, like a sea in stormy weather, from the arriving and departing oscillations of electric currents.... Why is it impossible to think that humanity can tame electric power as it has tamed animals, water, wind, and fire? It all depends on reaching the source of the power and creating a channel for directing it for this or that purpose, according to our will. But the source in this case is the farthest height of the atmosphere; metallic cables may serve as the channels, and balloons as anchors for holding down the ends of the cables at a constant height." Recalling the salient chemical properties of electricity, Karazin warns that "the largest electric machine, clad in strips of metal foil and sailing through the heights of the atmosphere, will be a child's toy vis-à-vis a mid-sized zeppelin, comparable with a miniature model sailboat set against an English battleship on its course. Man in all his ingenuousness can never replicate the immeasurable scale of nature. He can only hope to discover the best ways to implement her resources." That is to say, humanity is not meant to compete with nature, but only to regulate her. "Experiments conducted with the proposed equipment will undoubtedly be astounding. The results may include the following. 1) The most accurate information about the factors of changing atmospheric conditions. This data, combined with general meteorological observations, would open the way for transforming meteorology into an exact science, i.e., a science as capable of calculating and predicting the weather in given places at given times as astronomy is accurate in predicting eclipses.... Our country has a distinct advantage in realizing this vision.... No other kingdom is endowed with such breadth and variety of landscapes for conducting such experiments as our Russia. 2) The achievements of chemistry and technology... In the north, manufacturing and industry will be powered naturally by harnessing the sun's energy. 3) Benefits of land management." This proposal was forwarded to the academy of sciences, where Nikolai Fuss interpreted its contents at the members' conference. Fuss concluded that quite a few methods already existed for harnessing electricity in amounts sufficient "for

fulfilling all technical demands," and that "most, if not all, of Karazin's supposed predictions were nothing more than hypotheses without any proof." Therefore the 20,000 rubles Karazin had deemed necessary for conducting his experiments "would be spent in vain," Fuss concluded. Although precisely this conclusion was marked by an anonymous penciled comment – "Russia won't go very far on Fusses like these" – nevertheless Fuss' opinion prevailed, and Karazin's project, which would have provided humanity with real power to eradicate suffering, remained untested. Incidentally, "a project for manufacturing an acid to power Leppikh's zeppelin, capable of carrying enough passengers and explosives to blow up all the fortifications or personnel of the greatest military powers" was awarded 40,000 rubles.

Thus "the representatives of Russian science conclusively rejected the Karazin proposal; they did not notice what was original and productive about it." It is worth noting that Karazin's thoughts stood so far out of the mainstream that they may even be inaccessible to our contemporaries. Theories and projects pertaining to Karazin's areas of interest are viewed suspiciously by, and elicit scant response from, the worldly trade and industrial sectors that hold the public captive and condition it to such an extent that people cannot conceive of a common task to rally around; they are in fact repelled by any task that requires collective effort; after all, Karazin's plans would have required exactly such a collective effort involving everyone, all of humanity from all walks of life.

Considering that the military has recently begun to incorporate aircraft, it would be easy to attach the equipment proposed by Karazin to the existing infrastructure to carry out experiments. But I doubt if we will have the patience to await the results; in order to eliminate errors and arrive at the correct conclusions in projects such as Karazin's, it is first necessary to apprehend the genuine importance of its subject matter. Alas, in Karazin's own words, "the relevance of the subject may not be fully comprehensible to ordinary citizens and bevies of magazine critics," i.e. neither to those who are expected to make reasonable judgments nor to those who, living in cities and

captives in the rhythms of urban life, have lost the ability to understand the meaning of *the interdependence between sentient beings and the blind, unfeeling forces of nature*. And this interdependence – which we are compelled to acknowledge as unavoidable, preordained, superseding all the achievements and vanities of modern man – is the primal riddle that humanity, whether consciously or unconsciously, has been attempting to solve. In antiquity, the awareness of the *meaning* of this interdependence was encoded in the myth of the Sphinx, which asked passers-by to solve riddles; the wrong answer would cost the human interlocutor his life, while the Sphinx would die if the riddle was solved. As the whole of humankind is about to face the Sphinx, it is consequently obliged to work towards a solution to the riddle, i.e. to marshal all its current resources and seek additional ones in order to resolve its differences with the blind, intractable forces of nature that herald nothing but death in all its different manifestations. Intractable nature, precisely because it is intractable, is an agent of death; ignorance is the gravest sin, punishable by death. However, as darkness and gloom melt away before light, this blind force will disappear when light floods *each and every* human life emerging on earth – instead of remaining limited to a small minority, where it loses its innate properties and appears as a mere gleam. As long as one social group commands some knowledge without possessing any power, and the other wields some power but remains largely ignorant, the knowledge of the former will not be genuinely capable of regulating power, while the blind actions of the latter will necessarily be ineffective and repetitive despite all humankind's pride at possessing so-called cognition, which hardly deserves its name. A spark from the electrical generator may have all the properties of a lightning bolt, its crackle may possess the characteristics of thunder, but producing this tiny discharge does not make us Jupiters or free us from that deity's power. Even Karazin's brand of redirecting thunder, when it becomes ubiquitous and is carried out according to plan, will only be a step, the first step, towards the regulation of blind meteorological processes of the planet.

Humanity is faced with two choices. Acknowledge that life is evil and aim towards self-destruction (Buddhism), or, if life is good, then within this acknowledgment lies the motivation for restoring it, which is exactly the same as the Christian tenet of resurrection; surely the goal of transforming the blind forces of famine, plague, and death into life-affirming ones should unite all of us. To consider destruction good (as Count L. N. Tolstoy preaches) is the same as believing that there is no good; it is equivalent to Buddhism, which considers life evil; this means renouncing Christianity, which only the most ignorant would confuse with Buddhism.

The very forces of nature ask to be regulated by humans, and show them where to begin this task. As long as maritime powers, originating in countries with temperate climates and nurturing skies, dominated world history, the question of regulating meteorological phenomena could remain on the margins; but from the moment when land-based powers with extreme climates that fluctuate suddenly between drought and cloudbursts entered the scene, this question began to demand a solution. And if in Russia it had not emerged at the center of attention until now, this was only because we lived under the epistemological yoke of countries for which it was not urgent. Moreover, the solution demands methods and approaches that are not available to our role models. It is necessary to change the very foundations of producing knowledge and make the new paradigms universal, omnipresent, and eternal, to unify all experimental knowledge into one. Fortunately, while blind nature, afraid of its own extinction, begs for the unification of all rational forces – and rational forces, armed with weapons of mass destruction, unwillingly consider both the imperative of disarmament and its impossibility – the opportunity arises to remake the greatest evil into the greatest good. People who can band together to fight in the army, i.e., as a unified mass according to a given plan, can easily fulfill the primary criteria of a great common task: ubiquity and universality. The only remaining step is to bring meteorological observations into the sphere of peaceable military exercises, to test not only the

American method of creating rain with explosives, but also Karazin's project, and all the other ways of acting on nature *that will emerge as soon as they receive the close, intensive attention long due to them.*

First published in Russian: 1892
Translation by Anindita Banerjee