

British names of the Kuril volcanoes

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Abstract

Among the names of the Kuril volcanoes, five names are associated with British explorers of the Kuril Islands – William Broughton, John Milne and Henry James Snow. The article presents brief biographies of these researchers, highlights their contribution to the study of geography, geology, wildlife of the Kuril Islands and the ethnography of the Ainu people who inhabited them. The names of volcanoes that are connected with these researchers are also described.

Keywords: Kurile islands. William Broughton. John Milne. Henry James Snow. Broughton volcano. Ebeko volcano. Milna volcano. Nemo volcano. Snow volcano.

If you look at the names of the Kuril volcanoes, it becomes immediately clear that the vast majority of them are Ainu and Russian. This is not accidental. The famous Soviet volcanologist Georgy Stepanovich Gorshkov, who studied the volcanoes of the Kuril Islands after the war and, on behalf of the Volcanology Laboratory of the USSR Academy of Sciences, developed a project for naming the main Kuril volcanoes, wrote: *«Until 1875, the predominant names of all natural objects on the Kuril Islands were Ainu¹ and Russian. Russian, Ainu and other pre-Japanese names that existed before 1875, known for more than a hundred years and fixed in Russian and foreign literature, are a matter of historical and scientific justice After the islands were transferred to Japan, the Japanese replaced, and partially distorted the old names, and Japanese or Japanized names prevail on all modern maps...the issue of historical and scientific justice is the restoration of old Russian, Ainu and other pre-Japanese names that existed before 1875, known for more than a hundred years and enshrined in Russian and foreign literature.»²*

There are 68 surface volcanoes on the Kuril Islands, 36 of which are active. In addition, 102 underwater volcanoes have been identified. According to seismologists, 12 giant eruptions have occurred here over 45 thousand years. Calderas appeared during them, the island cover, climate and landscape changed, tsunami waves formed. During the time at which the events were documented, amounting to about 300 years, 29 strong eruptions occurred. In the last century, the volcanoes of the northern and central islands were active.

Five names from this series – volcanoes Broughton, Ebeko, Milna, Nemo and Snow – are closely associated with three famous British researchers of the Kuril Ridge, who left a bright trace on the maps of not only the Sakhalin region, but also the world - navigator William Robert Broughton, geologist and seismologist John Milne and hunter of sea otters, seals, whales and marine seals and a member of the Royal Geographical Society - Henry James Snow or, for friends, just Jim Snow. All of them were very extraordinary figures, and their activities were not always unambiguously evaluated by their contemporaries. And yet, they were all pioneers.

Since the article is not specialized, and volcanology, as a branch of geology, operates with specialized scientific terms, we will explain some of them for the inexperienced reader. (Fig. 1).

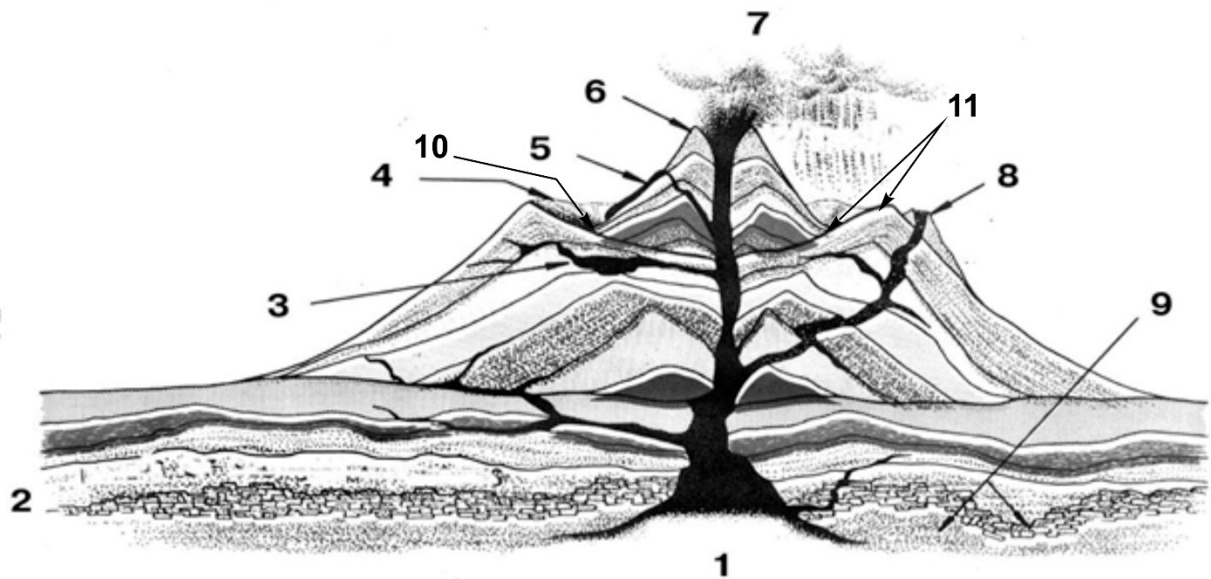


Fig. 1. The section of a typical volcano: 1- plutonic rocks, 2- sedimentary rocks, 3- a crack that can develop into a new (parasitic) crater, 4- somme – the arc-like shaft of the caldera of an older volcano preserved after a failure or explosion, 5- lava flow, 6- a young volcanic cone, 7- volcanic outbursts ash and other material, 8 - parasitic crater on the slope of the main one, 9 - the foundation of the volcano, 10 - atrio - ring valley between the somme and the young cone; 11- caldera – a cirque-shaped depression formed as a result of the explosion of the ancient cone and the collapse of its walls.

1. William Broughton – Broughton Volcano (Broughton Island).

William Robert Broughton was born in 1762 in Gloucestershire. In 1774 he joined the Royal Navy. Participated in the US War of Independence on the side of Great Britain.

In 1791, William Robert Broughton was a member of George Vancouver's expedition exploring the Pacific coast of Canada. Broughton himself, in particular, visited and described the mouth of the Columbia River. On November 21, 1791, while commanding the brig Chatham, Broughton discovered an archipelago located approximately 680 km southeast of the main part of New Zealand and named it after his ship. In 1793, Broughton returned to Great Britain, where he was given command of the sloop Providence and was to join the ships of the next Vancouver expedition and go to the shores of North America. The most common version is that, not having had time to the meeting place, William Broughton decided not to look for Vancouver ships, but to independently determine the goals of his voyage, although this went against the traditions of the Royal Navy.

According to other sources, he had instructions from the Admiralty to "accurately" describe the islands of Urup, Iturup and Kunashir and explore the mouth of the Amur³.

After a meeting with the ship's officers, Broughton decided to begin exploring the shores of North Asia. In early October 1796, Providence arrived in the Kuril Islands area and spent 3 weeks there. During this time, the expedition traveled from the shores of Hokkaido to the island of Marikan (Simushir). Sailing was hampered by difficult weather conditions. As a result, Broughton got only a general idea of the Kuril Islands, which was displayed on its map (Fig. 2).

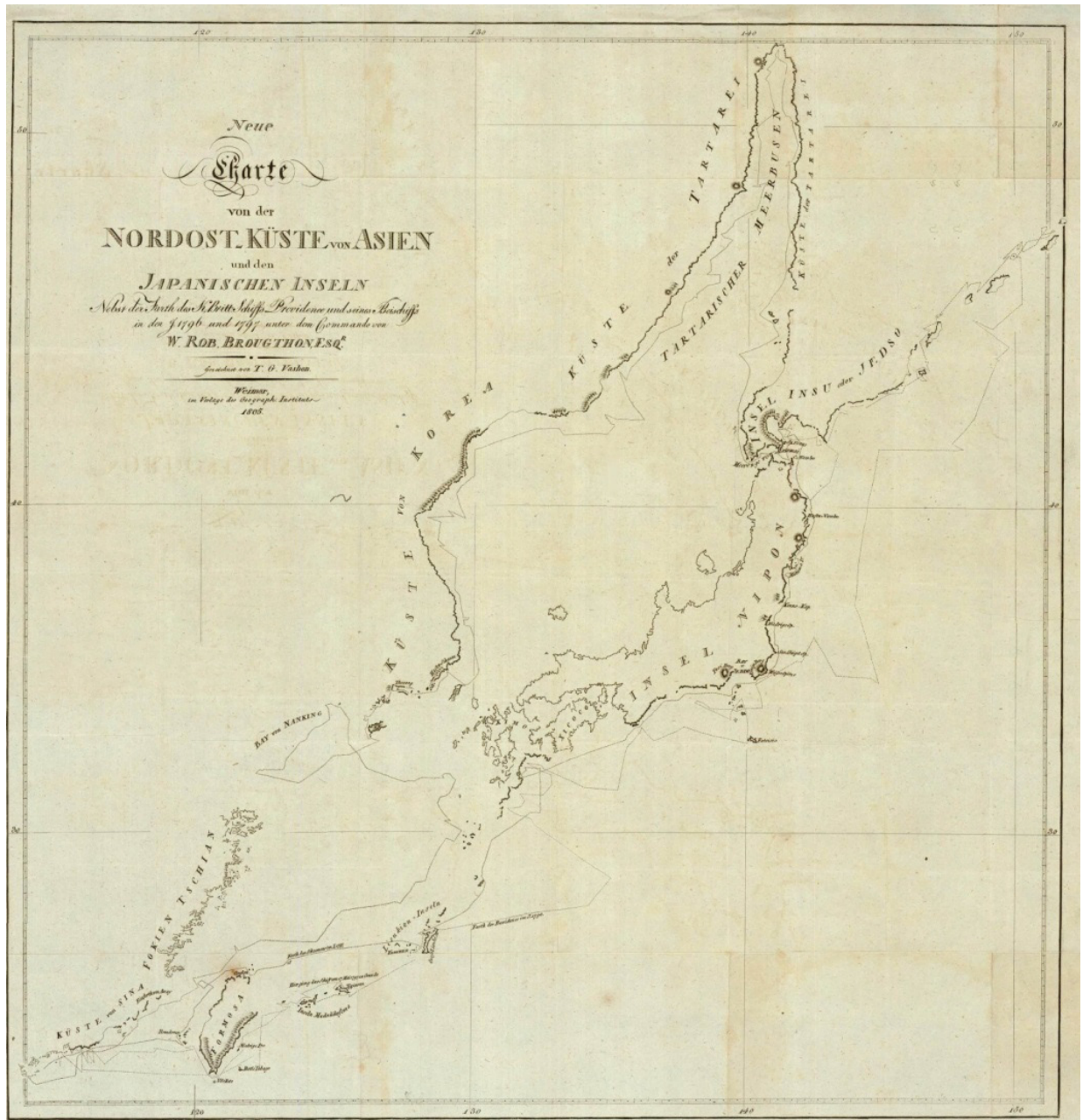


Fig. 2. Broughton's map "N.E. Coast of Asia and Japanese Isles..." in the German translation of the description of his voyage from the 1805 edition.

If you look at the map of Broughton, you can see that in the area of the Southern Kuriles you can see the island of Shpanberg, some obscure fragments of the coastlines of Kunashir,

Iturup, Urup and Simushir without any names. In his description of the voyage, information about the Kuril Islands is very scarce, what to do, he was also hampered by constant fogs. Broughton paid more attention to the description of Ainu. All the more valuable are the remarks and descriptions of Vasily Mikhailovich Golovnin, who followed in the footsteps of Broughton and analyzed his observations in detail (Fig. 3).

On October 16, Broughton reached Simushir and studied it on the 17th, he determined the coordinates of Simushir, found a harbor convenient for large ships to enter in the north and discovered a new island, which was later named after him: «*Centre of Marukan southern part N. 38' E., and Round Island N. 40.'*»⁴

In 1810, I. I. de Traverse⁵, in an assignment to V. M. Golovnin, wrote descriptions of the Kuril Islands: "*From the Kuril Islands, we know with satisfactory accuracy the position of the northern islands of this ridge, that is, from Alaida Island to Rashaua Island, or the 13th, but the position of the southern islands is little known. When we passed between the islands of Raukoke and Matua, we saw to the SW an elevated land, which I considered the northern tip of the island of Ketoy. There should still be some small islands between Rashaua and Ketoy. La Perouse and Broughton have seen islands in this country. The latter placed a small island in latitude 47 °25' on his map, but does not mention it in his journal, which is generally written very darkly, and often the description of places does not resemble the map attached to it. The length of the islands of Ketoy and Urup (called the Company Land by the Dutch) is quite determined by La Perouse and Broughton, although there is a difference between both, but the eastern shores of these islands have not been explored by anyone, as well as the eastern shores of the great island of Iturup, called the States Land by the Dutch in 1643. La Perouse in 1787 and Broughton in 1796 passed one of the western shores of this island. There is still great uncertainty in the reasoning of the islands of Kunashir and Iturup and near them, as well as about the southeastern shores of Ezo or Matmai, from the cape I named Shep, in latitude 45°12', and in longitude 217°30' W to the channel that separates this island from Iturup. And so it would be very important to investigate these parts in detail in order to finally have full news about the position and number of all the Kuril Islands. The latest investigations of Captain Broughton have only increased the uncertainty of the situation of the southern Kuril Islands, for it is contrary in many ways not only to the investigation of the Dutch in 1643, but also to the news received through Spanberg, Laxman and lieutenants Khvostov and Davydov. From the voyage of Captain Broughton, however, we know that he, during the continuation of his voyage near these islands, for the most part, endured storms and, consequently, his search does not deserve such a power of attorney as could be made by the investigation of a skilled navigator.*"

Of course, there is no doubt about the navigational skill of such an experienced navigator as Captain Broughton. Errors in determining the coordinates are due only to the imperfection of the navigation devices of that time.

In 1811, Broughton Bay was not easily discovered by Vasily Golovnin: *"On May 24, from midnight to 10 o'clock in the morning, the wind was moderate from S, then calm until noon; after noon 1 and 2 o'clock again it blew quietly from the south side, and then it calmed down completely and the calm lasted until 12 o'clock in the morning; the weather was cloudy with frequent intervals of sunshine. At dawn, not being able, due to the contrary wind, to walk along the eastern shore of the Simushir, we descended and went to its northern tip to at least inspect it; approaching the NO cape of this side of the island, we determined the correct bearing of the mutual position of this cape and the hill Prevot (pic Prevot), located almost in the middle of the island, which was so named by La Perouse. Prevost Peak from NO Cape Sumushir lies at SW 44° 10½ miles. Being opposite the middle of the north side of the island, we saw a narrow entrance to the harbor, seen by Captain Broughton, and to which he sent a boat for inspection." This well-known bay in the north of Simushir, was also fixed on the map of Vasily Golovnin and still bears his name Broughton Bay: "At 3 o'clock I sent navigator Khlebnikov ashore to inspect the Broughton Bay, and myself with the sloop tacked before entering the Diana Strait ... I must not leave without remark, in honor of the English captain Broughton, that the position of the western shore of the Simushir, which he saw, despite the late time of his voyage (in the middle of October, old style) and the gloominess of the climate, is well defined."*⁶

Vasily Golovnin named the "Little Round Island" described by Broughton in his honor - Broughton Island and traced the route of this navigator, making a number of discoveries in this area. *"This last one should be the same little round island (Little round island), so named by Broughton, who walked around it in gloomy weather without seeing his other two neighbors, of whom he does not mention anything in his journey, and did not assign them on the map; this island I will henceforth call Broughton's Island."*

In December 1796, Providence arrived in Macau. Here Broughton received an order from the Admiralty, dissatisfied with the captain's arbitrariness, to surrender the ship and disband the team. In the future, Broughton purchased a schooner, on which he decided to continue exploring North Asia. In September 1797, Broughton entered the Tatar Strait and reached Moneron Island on September 8, 1797. During the following week, Broughton tried to pass the strait to the northwest in order to find out the geographical location of Sakhalin, but on September 16, 1797, he stopped trying to find the strait between Sakhalin and the mainland. As a result, the researcher came to the conclusion that Sakhalin is connected to the mainland by sandbanks and the passage of the ship is impossible further. In his report, Broughton noted: *"Our soundings still decreasing to less than two fathoms, when it became expedient to tack. At this time we plainly discerned very low land extending over the N.E. part of what the master had conceived might be a passage leading to the sea: the nearest part bore from us N.E. by E. three or four miles, and from thence to North within the south point of Chapman's Bay (so named from the master) was a continuation of sand banks partly dry, with some of them just appearing by ripples upon the surface. We were now fully convinced there was no opening to sea in this direction, the whole being closed by low land, which we could plainly distinguish at intervals; behind the low land at a considerable distance we observed some high land in a N.E. direction. If any*

river empties itself into this bay, I should suppose it very inconsiderable, as we had no appearance of any tide, not any signs to lead us to suspect there were any rivers on the coast. As the matter had represented the bay unfavourable, even supposing we could get there, which I deemed from the shallow water leading to it impracticable, without great risk of the vessel; and there being no prospect of any inhabitants to get information of, respecting the country, induced me to lose no more time, as the equinoxes were approaching, but proceed to the southward, down the gulf we were at present so totally embayed in, before the bad weather could materially affect us.”⁷

Broughton drew partly hasty, and partly completely correct conclusions from the information of his predecessors and his own observations at his disposal: *"The strait between Matsmai and Japan is about 60 versts, or 34 geographical miles broad, and has a very strong current, as have almost all straits between the Kuril Islands. This country seems to have got the name Jeso or Yeso, from the hairiness of its inhabitants. Eso in Dutch has the same signification as Esau. ... It does not seem that the Breskes⁸ ever passed through the Straits of Sangaar, as she was cast away on the north part of Japan attempting it. Jezo or Insu, instead of being parcelled out into small islands, is one connected land, divided from Japan by the Straits of Sangaar, and from Island Sagaleen to the North by the Straits of La Perouse. The Kuriles, instead of being comprehended under Jeso, are distinct islands, extending from the N.E. part of Yeso to Kamchatka.”⁹*

I.F. Kruzenshtern¹⁰ mentions several times in his "Reise um die Welt...": *"... the importance of the information received by Broughton about the currents in the Kuril Islands: "There is not much to say about the currents of this sea, we were the first Europeans to sail on it. La Perouse and Broughton bypassed its small space adjacent to the Kuril Islands to the 47th degree. Broughton, who entered the Sakhalin Sea through the strait, called Pico by the Dutch, sailed from the 44th to the 47th degree, near the southern Kuril Islands. Here he found the difference of his observations from the ship's account, then from 12 to 15 miles to S, then the same to N. The currents in the vicinity of all these islands are strong and irregular; greater and lesser strength depends primarily on the width of the straits.”¹¹*

An important, and almost the most famous result of William Broughton's expedition for Russians, was the confirmation of La Perouse's erroneous opinion about the existence of an isthmus between Sakhalin and the mainland. In geography, the opinion about the peninsular position of Sakhalin has been confirmed.

With this categorical statement, he misled I.F. Kruzenshtern: *"Upon our arrival in Canton, I was not a little pleased to find Captain Broughton's journey, which was published during our absence. Anyone can see from it that my proposals on the connection of Sakhalin with Tartary are completely confirmed. Captain Broughton, who had a small vessel that sailed no deeper than 9 feet, extended his voyage from the south side to the north between Sakhalin and Tartary 8 miles further than La Perouse, where the depth was two fathoms, and found that the channel ended in a bay jutting into the ground for three or four miles. He ordered to*

*circumnavigate this bay on a rowing vessel and made sure that it was surrounded everywhere by low-lying, sandy shores, so that there was not the slightest sign of a passage anywhere. So, here the limit of the great Gulf of Tartary is open to them. But would there, regardless of this, have escaped from the prudent Broughton and his attentive assistant Chapman, to whom he entrusted to explore this bay, or a narrow channel somewhere; in that case, they would inevitably have noticed the current. But Broughton says clearly that the perfect calmness of the water surface in this place served for him as proof that the coast is not interrupted anywhere, therefore, the space of water existing between Sakhalin and Tartary is nothing but a vast bay. There is no need to test the gravity of the sea water with this. So, now it has been completely proved that Sakhalin is connected to Tartary by a low-lying sandy isthmus, and there is a peninsula, not an island. Why does justice require that the Strait of Tartary, signified on maps since the time of Laperuze's journey, be depicted and called the Gulf of it, although it is very likely that Sakhalin was once, or maybe even in recent times, an island, as it appears on Chinese maps, but that the alluvial sands of the Amur River connected it with the mainland earth."*¹²

Regarding the situation of Sakhalin, Broughton absolutely convinced all European captains that it was impossible for sea vessels to pass through the Tatar Strait. In a few decades, in the Crimean War, this will save the Russian squadron, pursued by the Anglo-French fleet, from destruction. The naval commanders of these countries did not even think about the possibility of the passage of Russian ships through the Tatar Strait. The merit of the Russian navigator Gennady Ivanovich Nevelsky is that he refuted the erroneous conclusion that Sakhalin is a peninsula, and proved that the mouth of the Amur is accessible for the sea to military vessels. He himself wrote about it very modestly. He saw his task as *"to positively resolve whether the entrance to the estuary from the Tatar Bay is not blocked by shoals"*, i.e. to extend the study to the south beyond the limits of Captain Broughton's research. William Broughton in 1797 entered the Tatar Strait from the south, hoping to pass through it to the north. But his assistant Chapman, sent to investigate to the north, announced that there was no strait, since Sakhalin was supposedly connected by an isthmus to the continent. That is why G. I. Nevelskoy believed that the existence of the Southern Strait would be proved only when it would be possible to pass from the north to the area in which Broughton operated. From July 19 to July 26, 1849, Nevelskoy and his companions on a boat trip, *"using a fair wind, descended along the shore of the estuary through the Southern Strait to latitude 51 °45', i.e. about 5 miles beyond the limit of Captain Broughton's research, and returned to Cape Peri, determined the entrance from the estuary to the south,"* and he noted that *"the channel, from Cape Vazse to Cape Pronge and further along the estuary to S heading, brought us out of the river at depths from 10 to 4 fathoms, through the Southern Strait to the Tatar Bay."*¹³

Let's come round to the fate of Broughton. He returned to Britain in February 1799. Later, as part of the Royal Navy, he fought against France during the Napoleonic Wars and took part in the battle of the Basque Raid in April 1809. In August—September 1811, he participated in the expedition of the British fleet to Java, undertaken with the aim of capturing this Dutch colony. During this operation, Broughton was temporarily promoted to the rank of Commodore.

After his retirement, Broughton resided in Italy. William Robert Broughton died in Florence and was buried in Livorno.

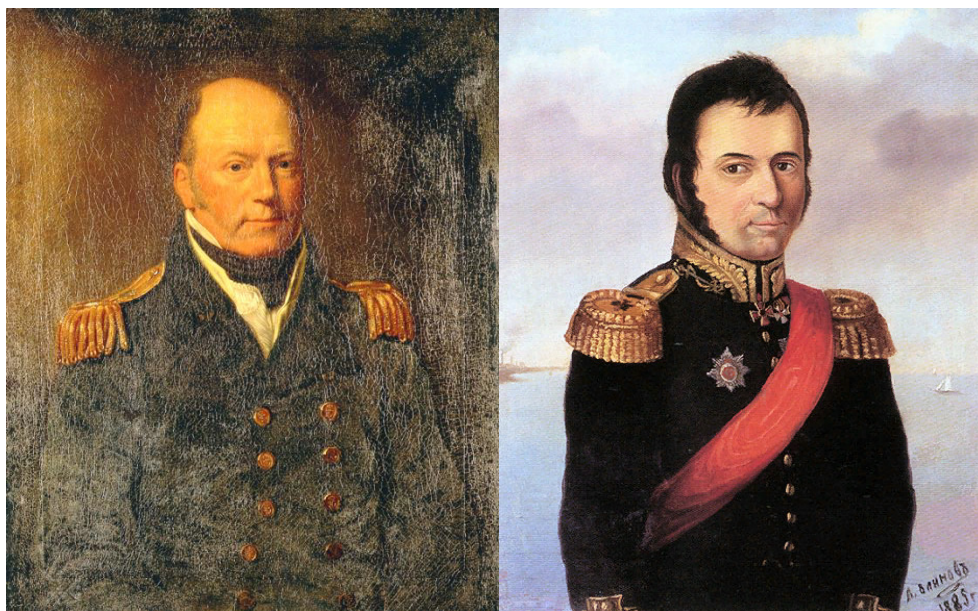


Fig. 3. Captain William Robert Broughton. The British School, the National Maritime Museum¹⁴ and Vice Admiral Vasily Mikhailovich Golovnin. Portrait by L. D. Blinov, 1885¹⁵.

It remains to add that the author's description of travel was first published in 1804 in London: *A Voyage of Discovery to the North Pacific Ocean: in which the Coast of Asia, from the lat. of 35° north to the lat. of 52° north, the Island of Insu (commonly known under the name of the Land of Jesso,) the North, South and East Coasts of Japan, the Lieuchieux and the Adjacent Isles, as well as the Coast of Corea, have been Examined and Surveyed Performed in His Majesty's Sloop Providence, and Her Tender, in the Years 1795, 1796, 1797, 1798.* By William Robert Broughton, then, in 2010 - *William Robert Broughton's Voyage of discovery to the North Pacific, 1795-1798* edited by Andrew David; with an introduction by Barry Gough. Farnham, Surrey; Burlington, VT. Ashgate for the Hakluyt Society, 2010.

In Russia, the island of the Great Kuril Ridge, a mountain on this island, and a bay on Simushir Island are named in honor of William Broughton. Other places: Broughton Island, 14 km northeast of Port Stephens in New South Wales, Australia; Broughton Island in the group of uninhabited Snares Islands, New Zealand; One of the arms of the Dusky Sound Fjord on the South Island of New Zealand; the Broughton Archipelago, the island of the same name and the Strait near the Queen Charlotte Strait in British Columbia, Canada.

The memory of the navigator William Broughton is repeatedly immortalized on the world map. There are four Broughton Islands alone. In Russia, the island of the Great Kuril Ridge, a volcano on this island, as well as a bay on Simushir Island are named in honor of William Broughton. In Australia, Broughton Island is located 14 km northeast of Port Stephens in the

state of New South Wales. In New Zealand, Broughton Island is part of the uninhabited Snares Islands group, one of the arms of the Dusky Sound Fjord on the South Island of New Zealand. In British Columbia – the Broughton Archipelago, the island of the same name and the strait near the Queen Charlotte Strait, streets in the Canadian cities of Vancouver and Victoria in British Columbia, Canada, etc.

Broughton Volcano (Broughton Island)



Fig. 4. Broughton Island and Volcano. Photo by the author, 2022.

Quite rightly, volcanologist Georgy Gorshkov extended the name of the island to the volcano in 1948: ***"Single volcanoes on small islands are given the name of the island, because in this case the volcano and the island are inseparable."***¹⁶

What we understand today as Broughton Island is the surface part of an extinct volcano with the remains of a crater on top, the highest point of which reaches 800 m above sea level (Fig. 4). The diameter of the crater is approximately 750 m . The eastern part of the island is steeper, precipitous, and on this side the crater is destroyed. The western slopes are also heavily eroded and break off to the sea with high ledges. The circumference of the volcano is 11 km, and the area is 7.32 km². The surface of the volcano is complicated by many parasitic cones. The rocks of the island are basalts. There is an extensive underwater terrace around the island. Of all the islands in the Western Zone of the Great Kuril Arc, only the volcanoes of Avos and Broughton have not been active over the past 12,000 years. The peculiarity of the island-volcano is that it is surrounded by a magnetic anomaly 3.7 kilometers wide, the strongest in Russia¹⁷.

The slopes of the volcano break off to the rocky beach with sheer walls; only in some places the latter give way to gentle slopes with live stone scree. Sheer cliffs and stone scree make walking around the island very difficult, almost impossible. Almost vertical cliffs up to 274 m high are known. The northeastern part of the island is notable for the presence of two streams flowing down steep cliffs with drinkable water.

Due to the steepness of the rocky surface, there is very little vegetation on the island. Small grassy meadows of cereals and herbs are only on terraces near the shore, which have a small angle of inclination. Various lichens and mosses are developed on rocky surfaces, but, despite this, in some areas there are cedar trees, as well as wild flowering plants that can survive in rocky terrain. In the underwater part of the island, sea cabbage thickets literally cover its eastern and western parts. There are sea lion rookeries on the island in the northern and southern parts. Sea otters and seals have also chosen the island. Gulls, puffins, mallies (*Fulmarus glacialis*) and guillemots (*Uria*) nest on the cliffs, falcons, wagtails and crows settle just above. There are great depths near the shore, but the approach to it is difficult, since the island is surrounded by underwater rocks, which increases the likelihood of damage to ships. Ships can be anchored with easterly and southeasterly winds at the Kamome rock, which means Seagull, to the northwest of the island. The islands of the Black Brothers - Chirpoi and Brother Chirpoev are located 20 km south-east.

2. John Milne – Ebeko Volcano (Paramushir Island)

John Milne (jap. ジョン・ミルン 俄語) is a very remarkable figure, and he can be described as a bright representative of the encyclopedic scientists of the Victorian era (Fig. 5). He was born on December 30, 1850 in Liverpool. The only child of John Milne of Milnrow, he grew up in Rochdale and then moved to Richmond in London. He was educated at King's College London and then at the Royal School of Mines.



Fig. 5. John Milne.¹⁸

The breadth of his scientific interests is best indicated by his publications and reports. As a student, in 1871, he sailed to Iceland and explored the glacier Vatna Jokul. In the summers of 1873 and 1874, on the recommendation of the Royal School of Mines, Milne was hired as a mining engineer to explore Newfoundland and Labrador in search of coal and other mineral resources.

During this time, he wrote articles about the transfer of rock material by glaciers and the physical interaction of ice and stone and visited Funk Island, where he wrote another article about the recently extinct loon there. At the age of 23, he was elected a fellow of the Geological Society of London. In December 1873, Milne accompanied Dr. Charles Tilstone Beke¹⁹ on an expedition to determine the true location of Mount Sinai in northwestern Arabia and to verify the version of its possible volcanic origin in support of the biblical phrase: ***"But Mount Sinai was all smoking because the Lord descended on it in fire; and smoke ascended from it like smoke from a furnace, and the whole mountain was greatly shaken"*** (Exodus 19:18). Milne took this opportunity to study the geology of the Sinai Peninsula and donated the collection of fossils to the British Museum. This journey is described in detail in the book «The late Dr. Charles Beke's Discoveries of Sinai in Arabia and of Midian ...»²⁰ by Beke, which was illustrated by John Milne.

The spouse of Mr. Beke – Emily Beke, who published this book, noted Milne's invaluable help in carrying out this journey: ***"I must also state how great a relief it was to Dr. Beke to have been accompanied by so able a geologist and assistant generally as Mr. John Milne, as my husband frequently testifies. The illustrations are nearly all from sketches by Mr. Milne, whose valuable services as artist, geologist, botanist, and conchologist to the expedition, I have much pleasure in recording, though I regret that, owing to his absence in Japan, these reports have not had the benefit of his revision..."***²¹

Milne was hired by the Meiji²² government of the Empire of Japan as a foreign advisor and professor of mining and geology at the Imperial College of Engineering in Tokyo from 8 March 1876, where he worked under Henry Dyer and with William Edward Ayrton and John Perry. Partly from a sense of adventure and partly because he suffered from seasickness, he travelled overland across Siberia taking three months to reach Tokyo.

John Milne's eventful life path is described in detail by his biographers in books^{23 24} or more briefly in Celebrating the life and work of the Seismologist Professor John Milne 1850 – 1913.²⁵ We will focus on the events related to Japan and his research of the Kuril volcanoes.

Milne devoted a significant part of his research to the volcanoes of Japan. During the twenty years he spent there, he climbed more than fifty volcanoes. In 1878, John Milne toured all the islands of the Kuril Ridge and, based on observations from the ship, gave a description of volcanoes (Fig. 6). He counted 52 well-formed peaks, of which 9 were attributed to active volcanoes. In 1885 Milne visited Kunashir and Iturup. In 1886 he published a large summary of the volcanoes of the Kuril Islands, in which, in addition to his observations, he included data collected by the English fur trader Captain Snow, and all other literary data. According to Milne's summary, there are 23 extinct and 16 active volcanoes in the Kuril Islands. In the future, with the exception of Henry Snow's descriptions, no volcanological studies covering the entire ridge were carried out until 1946, and all subsequent volcanological reports were based mainly on Milne's work.

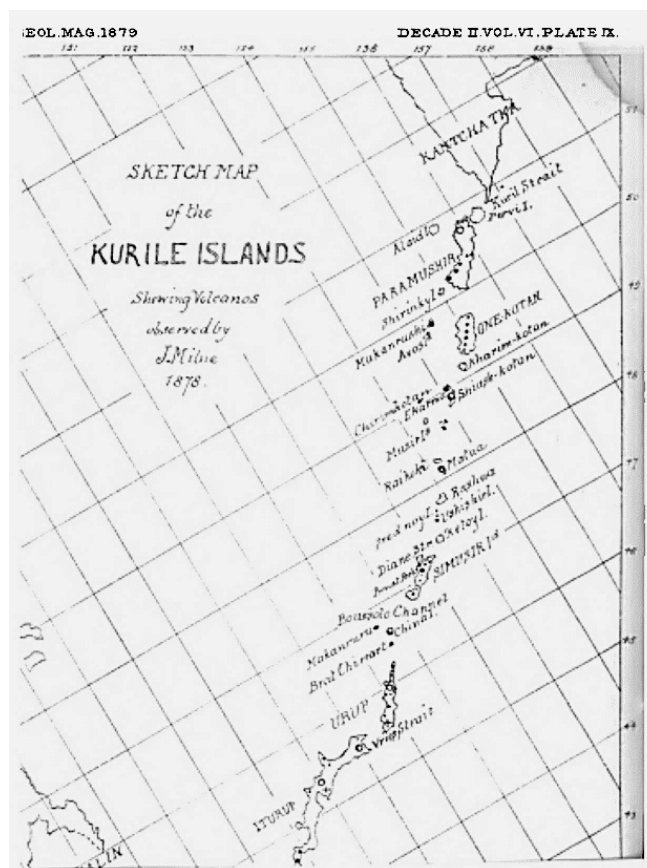


Fig. 6. Sketch map of the Kuril Islands by John Milne with volcanoes described by Milne (1878). Milne, J. 1879. A cruise among the volcanoes of the Kurile Islands. The Geological Magazine, n. ser., 6: 340. 1937. Pasting between pages 336 и 337.

During this period, his extensive research led him to abandon his belief in the generally accepted theory that seismic activity is a direct result of volcanic activity. Based on his observations, he made a revolutionary conclusion for his time: *"Most of the earthquakes that we experience do not originate from volcanoes and do not seem to have a direct connection with them. There are mountainous areas in the center of Japan where there are many active volcanoes, but there are no earthquakes in this area."*

In 1880, Sir Alfred Ewing, Thomas Gray and John Milne, all British scientists working in Japan, began to study earthquakes following a very large tremor which struck the Yokohama area that year. They founded the Seismological Society of Japan (SSJ). The society funded the invention of seismographs to detect and measure the strength of earthquakes. Although all three men worked as a team on the invention and use of seismographs, John Milne is generally credited with the invention of the horizontal pendulum seismograph in 1880 (Fig.7). Milne's instruments permitted him to detect different types of earthquake waves, and estimate velocities. In addition, the foreign professors trained Japanese students including Seikei Sekiya who would become, at the Imperial University, the first professor of seismology at any university in the world and his successor, Fusakichi Omori who refined Milne's instruments to detect and record finer vibrations. In 1881, he had married Tone Horikawa, daughter of Horikawa Noritsune in Hakodate (Fig.8).

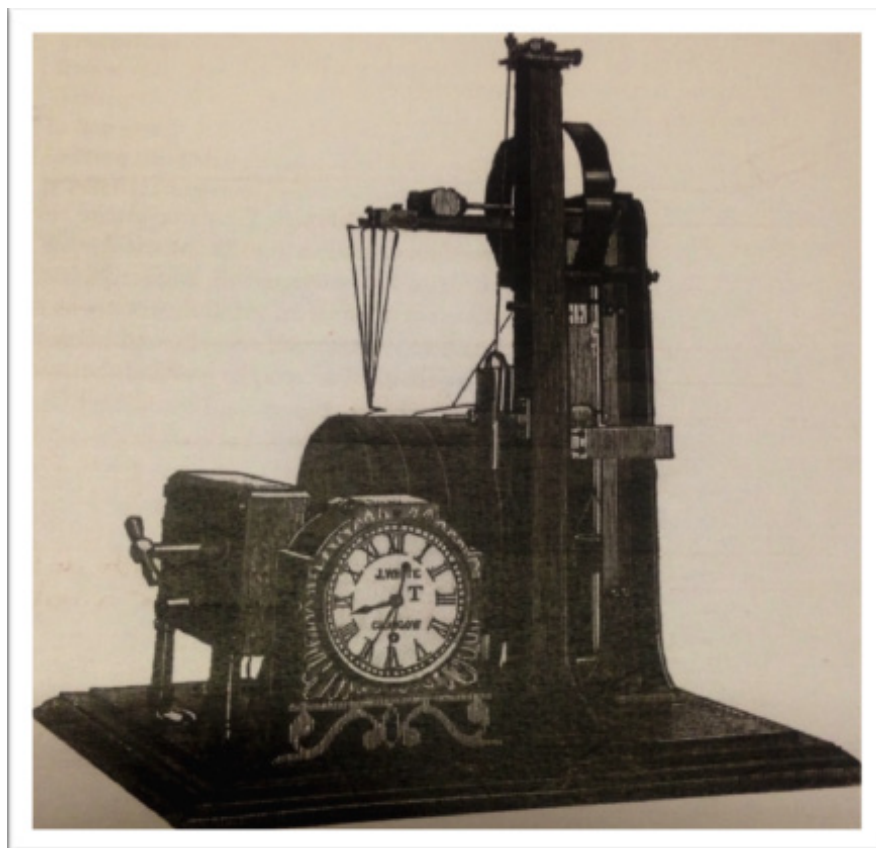


Fig. 7. Gray-Milne Seismograph ²⁶.

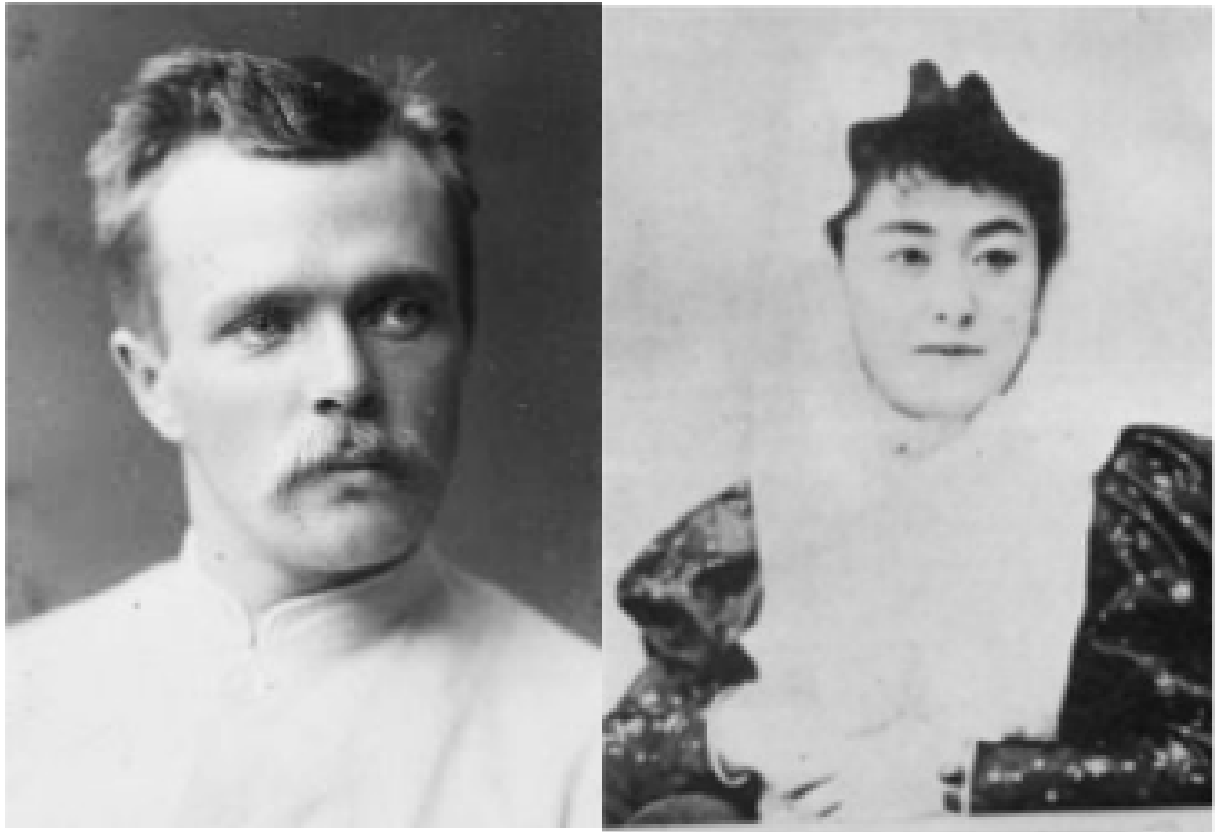


Fig. 8. John Milne and Tone Horikawa in 1895²⁷.

In June 1895, John Milne was ordered to attend a meeting with His Imperial Majesty Emperor Mutsuhito, after which he returned to England. Soon after his arrival, he learned that the Emperor had awarded him a rare award - the Third Degree of the Order of the Rising Sun and a lifetime pension of 1,000 yen. This was in recognition of Professor Milne's contribution to seismology during his long stay in Japan.

Beginning in 1882, Milne made a significant contribution to anthropology. By writing a seminal article, he helped develop theories of the origin of the Ainu of northern Japan and the prehistoric racial origin of Japan as a whole. For several years, he conducted excavations and presented the concept of Koro-pok-guru, associated with the ancient pre-Jain population of Hokkaido, Sakhalin and the Kuril (コロポツクル, コロポツク, koropokkuru, korpokkur) - in Ainu mythology, little men who lived underground and under the stems of a mother-and-stepmother or a squirrel, considered kamuyami (spirits, deities) of plants.- A.B.'s note). Koro-pok—guru comes from the Ainu words kor/koro — "coltsfoot" or "butterbur" (*Petasites*), pok — "under" and kur/kuru - "man", i.e. it is a "little people". The Ainu believed that the koro-pok-gurus inhabited their lands before their arrival. They were skilled fishermen, lived in pits with roofs made of the leaves of the white-tailed. According to the Ainu, their burrows, fragments of pottery and stone tools can still be found somewhere.

A long time ago, the korporakku were on good terms with the Ainu, sent them deer, fish and other game and exchanged goods with them. However, the little people hated being seen, so they quietly delivered their goods under the cover of night. One day, the young And decided that he wanted to see korpokkur in person, and set up an ambush at the window where their gifts were usually kept. When koropokkuru came up to put something there, the young man grabbed his arm and dragged him inside. It turned out to be a beautiful korporativkur woman who was so enraged by the rudeness of the young man that no one has seen her since.

The Ainu legend of their existence was apparently first told by Milne. He believed that their prehistoric sites were only in Hokkaido. As for the north-east of Japan proper, he maintained the tradition according to which prehistoric sites were attributed to the Ainu, who lived in pits and made stone tools and ceramics. He considered the inhabitants of the Kuril Islands, Sakhalin and southern Kamchatka to be a different race, but perhaps relatives of the koro-pok-guru. He anticipated the work of scientists who discovered various prehistoric cultures of Hokkaido and northeastern Japan in the excavated materials.

After a fire on February 17, 1895, his house, observatory, library and many of his instruments were destroyed. Milne left his posts on June 20, 1895 and returned to England with his Japanese wife, settling in Shide Hill House, in Shide, on the Isle of Wight, where he continued his seismographic research. He became an honorary professor at the Imperial University of Tokyo.

In 1887, Milne was elected a fellow of the Royal Society and persuaded him to finance the organization of 20 seismological observatories around the world equipped with his horizontal pendulum seismographs. Initially, his network included seven observatories in England, three in Russia, two in Canada, three on the east coast of the United States, and one in Antarctica. Then the number of observatories around the world increased to 40. For the next 20 years, the Milne Seismological Observatory was the world center for earthquake seismology. In 1898, Milne together with W. K. Burton published the book "*Earthquakes and Other Earth Movements*", which became regarded as a classic textbook on earthquakes. The need for international data exchange was soon recognized by Milne in his annual "*Shide Circular Reports on Earthquakes*" published from 1900 to 1912. This work was destined to transform into the International Seismological Summary – the global catalog of earthquakes for the period from 1918 to 1963. He delivered the Bakerian Lecture to the Royal Society in 1906 entitled *Recent Advances in Seismology* and was awarded their Royal Medal in 1908, the winners of which were Faraday and Kelvin. As a member of the Japanese Committee of Building, Milne participated in the development of the first practical codes for construction in earthquake-prone areas. In 1909, as a foreigner, he was awarded by the Emperor of Japan and elevated to the rank of shokunin²⁸. With good reason, we can call John Milne the father of modern seismology.

Prince Boris Borisovich Golitsyn²⁹ is often considered the founder of modern seismology in Russia, but he himself has repeatedly paid tribute to his colleague: "***Almost all the problems of modern seismology have been considered and studied by Milne, and he can be considered***

the real founder and popularizer of this new and important branch of geophysics"³⁰ and "He, together with Ewing, can rightfully be considered the founder of instrumental seismology, which is the foundation for various new seismological studies."³¹ (Fig. 9).



Fig. 9. John Milne and his wife Tone Harikawa with Russian seismologist Prince Boris Galitzin (leftward) looking at one of his seismographs on the Isle of Wight in 1911³².

Throughout his life, Milne was interested in many types of art. He drew well. Several of his drawings and watercolors have been preserved. He loved and understood classical and folk music, including Japanese.

Milne died of Bright's disease³³ on 31 July 1913 and is buried in St. Paul's Church, Newport. His Japanese wife Tone returned to Japan in 1919 and died in 1926. They had no children.

The volcano on Simushir and the bay on its Okhotsk Sea side are named after Milne.

Below are some watercolors by John Milne from the Hokkaido University Library, Collection of Northern studies (Fig.10-14).



Fig. 10. Alaid Volcano (Atlas Island)³⁴.



Fig. 11. Fussa Volcano (Paramushir Island)³⁵.



Fig. 12. Shumshu and Paramushir Islands from Kamchatka. The Ebeko volcano is smoking.³⁶

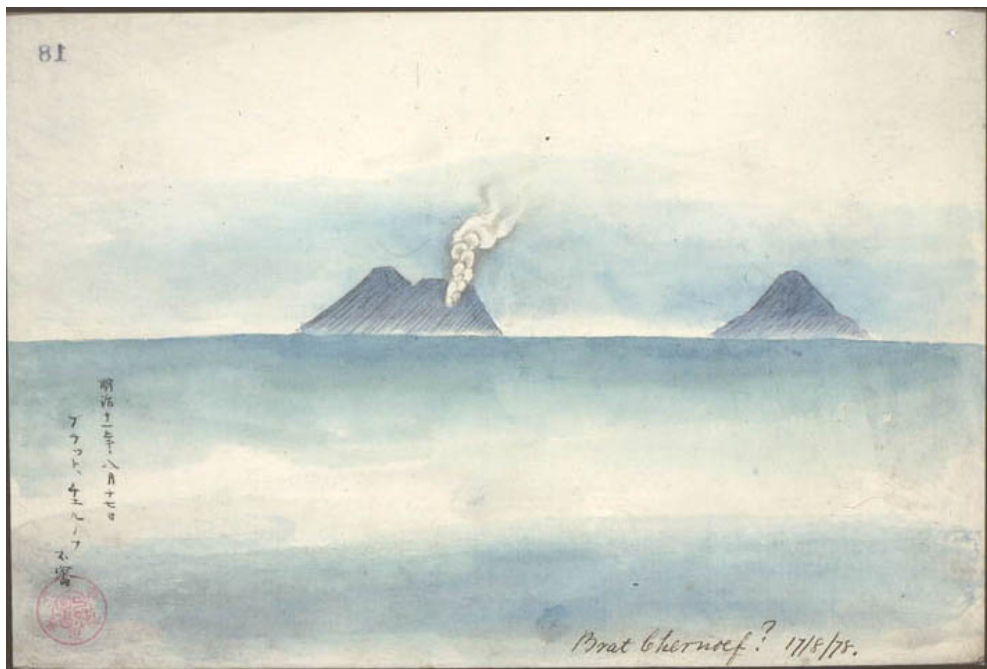


Fig. 13. Signed "Brat Chernoeff?" (Brat Chirpoev or Brother Chirpoev), but in fact – Chirpoy. Volcano Snow is smoking.³⁷



Fig. 14. Signed "Simushir?." It looks like the Miln volcano from the south ³⁸.

Ebeko Volcano (Paramushir Island)

It is located in the northern part of the Vernadsky ridge, about 7 km from Severo-Kurilsk.

The age of the volcano by geological standards is very "young" - 2-3 thousand years. In the annalistic history, he appeared almost all the time as active (Fig. 15). Ebeko is a symbol and probably the most significant and popular tourist attraction of Severo-Kurilsk – the administrative center, and in modern times, the only settlement of the Severo-Kurilsky district.

The activity of the volcano is extremely uneven. Volcanic eruptions have been recorded in 1793, 1859, 1934-1935, 1963-1964, 1967-1971, 1987-1991, when the volume of discarded material amounted to 450 thousand cubic meters; 2005-2009, 2016-2021. In April 2018, there was an eruption from three vents at once. On November 9 last year, Ebeko completed an eruption that lasted five years and "dozed off", let's hope that for a long time (*This phrase did not have time to settle in the text, as on February 7 of this year, the volcano woke up again. Ebeko does not want to doze in any way. - A.B.*).



Fig. 15. Ebeko volcano. Photo by Leonid Kotenko³⁹

The Ebeko group includes three well-defined and two already heavily eroded cones. Ebeko itself is a cone with a height of 200-220 m (abs. otm. 1037 m), strongly elongated in the meridional direction with three contiguous craters at the top, which are elongated by a chain from north to south. The dimensions of all three craters are approximately the same: the diameter along top of the ridge is about 300-350 m, the diameter of the bottom is about 200 m. The summary size of the summit crater is 350 x 800 m. On the eastern and western slopes there are two open amphitheatres, representing, apparently, lateral explosive craters, greatly expanded by subsequent erosion; the same smaller crater with a small lake is on the northern slope. The entire complex volcanic superstructure is encircled by a semicircular ridge of the destroyed somme of ancient Ebeko. The bottom of the southern summit crater is uneven; its depth reaches 70 m. In the eastern part of the crater floor there is a powerful group of solfataras depositing sulfur, and in the center of the crater there is a large bubbling spring that ejected (in 1952) together with gases jets of hot water (93 °). In the north, this crater is partially cut off by the next, middle crater filled with a lake, the level of which is 40-50 m below the bottom of the first crater. In the western half of the crater on the shores and from the bottom of the lake there are numerous powerful solfataras that deposit sulfur. There are also many floating wells, niches and tunnels, inside of which liquid sulfur is bubbling. Waters of the crater lake before the 1963 eruption they had a beautiful turquoise color with a milky tinge: after the eruption, the color of the water became dirty due to the mass of ash that got into the water. Fumarole gases rising from the bottom of the lake create the illusion of boiling water, although the water temperature in the most heated areas in 1953 did not exceed 62°C. The prevailing water temperature in the lake was at the same time 30-35°C. The local population loved to swim in the lake, forgetting about the treachery of the volcano. There were also terrible tragedies: in 1951, the children went swimming, there was a release of boiling water and two girls died.

Since 1956, the water temperature in the lake began to gradually fall and by 1959 it was set at about 20°C; at the same time, the water level in the lake also fell by 11 m. The depth of the lake is approximately 20 m. Currently, the lake is replenished due to a nearby snowfield. To the south and above there are several large fumaroles, from which the products of the giant's vital activity escape with a whistle.

The last, northern crater is in close contact with the middle one, there is almost no bridge between them. The bottom of this crater is gently inclined to the north, and here, at the northern wall of the crater, there is a small cold lake shaped like a crescent moon. Solfatars and boiling springs are found both on the outer slopes of the cone and at the bottom of the lateral explosive craters. The maximum temperature of the solfatary gases at their exit to the surface in 1959 was 144°C. The prevailing temperature is 98-120°C. Steep sulfur cones or hollow pipes usually grow above the solfatary outlets, gases come out of the tops of which under strong pressure, and molten sulfur boils inside. Streams of liquid sulfur often flow out of solfatars. The composition of fumarole gases is dominated by carbon dioxide, hydrogen sulfide, sulfur dioxide and hydrogen chloride are found in noticeable quantities. The waters of the crater lake have a strongly acidic reaction (pH = 3) and contain a significant amount of chlorine and sulfate ions. Numerous lava flows descend from the foot of the Ebeko cone in a westerly direction. These streams completely flooded the sources of the trough valley of the Gorshkov River, stretching 3.5 km from the cone. One of the lava flows passed into the neighboring valley of the Yurieva River.

Ebeko is the only active volcano in the Vernadsky Ridge. Its eruption in 1793 is known. In September 1859, during the eruption of Ebeko, thick sulfur vapors covered the neighboring island of Shumshu, causing nausea and headache among residents. The last strong eruption occurred in 1934-1935. In September 1934, frequent earthquakes began to be felt on the island of Shumshu, and on October 5, dark clouds of ash rose for the first time over the crater, which previously emitted only white steam. On October 12, the release of ash increased significantly, and ashfall was observed on Shumshu. On October 17, clouds of ash with sulfur dioxide covered the entire island of Shumshu. December 28 marked the strongest explosion since the beginning of the eruption. In June — August 1935, curly clouds of gases with ash rose to a height of up to 1.5 km above the crater. Liquid sulfur was pouring out of cracks on the slope of the cone. The explosions occurred from a meridional crack at the bottom of the middle crater, which was dry before the eruption. The lake appeared only after this eruption. Lava flows did not pour out, but "bread crust" type bombs were thrown out in large numbers. The eruption ended in the fall of 1935. In March 1963 on the northern wall of the amphitheater, embedded in the eastern slope of the cone, an explosion occurred and a small vent with a diameter of 2-3 m was formed. Gases escaped from this vent with great pressure, carrying out a relatively small amount of ash. By the summer of 1963, the tension of the gas jet had weakened, and in July gases were quietly released from the new vent. There is an «Unexpected volcano» near Ebeko. This name was given to it by Academician Gorshkov, initially considering it one of the side craters of Ebeko.

After the end of the eruption in 1973, a hot lake with a temperature of 30 to 80 degrees appeared in the Active funnel of the Middle Crater. And during the 1987-91 eruption, the lake disappeared, briefly appeared in 2005, and by 2009 it had disappeared again. At the same time,

the July fumarole field appeared as a harbinger of the eruption, which is now completely to this day), but since July 2018, volcanic bombs of up to 50 cm in size have been released at a distance of up to 1000 meters from the Active funnel. And by September, the Active Funnel itself ceased to exist (in late August – early September, the epicenter of the eruption shifted to the Western vent, the Active funnel was filled with the products of the eruption, a new cone was built around the new crater. In August-September 2018, there were particularly strong emissions, and with a tailwind, stones weighing 3-5g (3-4 cm) flew to the city. Near the active crater, rocks with a diameter of 2-4 meters flew out at a speed of 70 to 200 m/s. The forerunners of the last eruption were explosions of fumaroles. By the way, in the Soviet Union, the largest fumarole was considered a Large (vfk. Ebeko, 8 m).

The slopes of the volcano in its lower part are overgrown with Maksimovich alder (*Alnus maximowiczii*), which is replaced above by meadow grass with rare curtains of alder and polar willow. On the tourist trail to the top of the volcano are the upper reaches of the Matrosskaya River. On one of its shores there is an abandoned sulfur plant, which was built by the Japanese to melt sulfur extracted from the fumarole fields of the volcano. On the northeastern side of the volcano, at the level of 1018 m, there is an extensive fumarole field known as the "White Kluch" ("White Spring"). In one of his griffins, a reservoir is bubbling from gases accumulated on its surface. From the saddle begins the descent to the main attraction of Severo-Kurilsk – to the Yurieva River, descending from the volcano to the Sea of Okhotsk on the other side of the watershed. In its bed there are Verkhneyuryevsky hot springs (with temperatures from 20 to 99 degrees). This river carries 65 tons of iron, 35 tons of aluminum and 200 kg of gold dissolved in water into the Sea of Okhotsk every day. The acidity of some sources is off the scale, to put it mildly, but this is not always bad: for example, bears come there to get rid of parasites, leaving only their nose on the surface, partridges do the same. Seals, sea otters swim right into the river. People also take hot baths. According to rumors, water heals wounds, helps with eczema⁴⁰.

Despite the activity, the Ebeko hazard color code for aviation is the lowest - green (this means that the volcano does not pose a threat to aircraft). The picturesque surroundings of the volcano are still accessible to tourists.

It is known that the name of the volcano was given by John Milne. But what does this name mean?

As we already know, Milne was a very versatile person – a real encyclopedist of the late Victorian era. In 1878, John Milne toured all the islands of the Kuril Ridge and, based on observations from the ship, gave a description of volcanoes. He also gave the name to this unnamed volcano on Paramushir: *«An irregular mountain, forming the northern end of this group (now this group is called the group of volcanic centers of the Vernadsky ridge - A.B.), is giving off steam. It is covered with reddish scarps and patches of snow. As this mountain, which is remarkable as being one of the flickering embers of those internal fiery forces which raised the Kuriles, appears to be without name, either on the charts or amongst the inhabitants, I have ventured to name it Mount Ebeko. Three other high mountains may be picked out of the irregular collection which is presented at the northern end of Paramushir. These are chiefly noticeable for their conical truncated forms and curvatures. From near the entrance to*

the Straits they respectively bear S.S.W., S.W. by W., and W. by S.W. The N.W. side of Paramushir shows a mass of irregular mountains. With the exception of a few red and yellow patches or scarps, apparently marking the effects of fire, everything looks black.

Rising above these there are four remarkable mountains, which can be distinctly seen. Commencing from the north there is Mount Ebeko, which on this side presents the same irregular surface as it does when viewed from the Kurile Straits. It is easily to be recognized by the steam issuing from its summit.»⁴¹

And indeed, in Japanese, the mountain is still called Yo-yama⁴², and on old maps it often appeared under the name Ryuko-yama. The name Ebeko was confirmed by the Cartographic Commission named after Yu. M. Shokalsky of the Geographical Society of Soviet Union in 1947. It would seem that everything is simple! Of course, the name is from Ainu language. It seems to be all for it. And Milne's wife is Japanese, maybe even with Ainu blood in her pedigree.

Milne himself did not leave any explanations and hints in his articles and notes. Our inquiries on this matter to the British Museum Carisbrooke Castle and the County Archive in Newport on the Isle of Wight, as well as to the International Seismological Center (ISC), where Milne's records, photographs and other materials are stored, have not yielded results. In Russian publications, the version of the famous linguist, researcher of toponymy of the Sakhalin region Konstantin Makarovich Braslavets⁴³ deserves attention, who was of the opinion that the name comes from the Ainu word "Yabeka", which means "*mountain height or elevated land*". On the other hand, it is quite difficult to assume that Milne so "carelessly" conveyed the Ainu name by changing the "ya" to "e". In addition, he made it quite clear that the locals had no name for the volcano. And there are a lot of "elevated lands" in this part of Paramushir.

In the dictionary of a military doctor, a remarkable researcher of Ainu culture and their language, Mikhail Mikhailovich Dobrotvorsky, you can find other interesting variants, for example, "Ibe-kuku" – flame⁴⁴, "i-eboko" (and "i" is very short here)⁴⁵ – evil or malicious, which the nature of an active volcano is much better suited, or ibe – food, co – dirty, pollute⁴⁶, i.e. "polluting food".

In the Ainu-English-Japanese dictionary by Batchelor we can find the match "hepeku" - "to flare"⁴⁷.

In connection with the variant "Ibe-kuku" – "flame" or "Hepeku" – "flare", the interpretation of the name suggests itself as flaming, which echoes the description of the volcano given by Milne – "*one of the flickering embers of those internal fiery forces which raised the Kuriles.*"

And the author is almost inclined to these options, but...

In the book of our next person involved and fellow countryman Milne – Henry Snow "In Forbidden Seas", the author came across a description of his residence, after the wreck of the schooner on December 4, 1874 off the island of Iturup in the village of Furebetsu and a meeting with a very interesting character: "*All the coolies on the island were in the employ of Mr. Ebeko, a merchant owning the principal fishing-stations on the island. He promised that sixty coolies would come across next day in order to pack our provisions and whatever else we required, and take them over to Furebetsu. ... On New Year's Eve our old merchant friend,*

*Mr. Ebeko, brought us a tub of Japanese sake and some mochi. There was no sleep for anyone until the New Year had been ushered in; it is the Japanese custom. New Year's Day itself was spent in making calls and being called upon. The quantity of sake consumed was enormous, all the male population being more or less intoxicated, but good-natured withal. Just as we commenced dinner, old Mr. Ebeko and several of his assistants called on us. We asked them to join us, which they did with avidity, and our roast pork disappeared like magic. To begin with, the old merchant emptied the whole of the contents of our butter-dish into his soup, and ate it. Later on the Governor and all the officials returned our call of the morning, and we filled them up with " Old Tom," chocolate, tinned fruits, and similar delicacies. As the New Year festivities were kept up for several days, big inroads were made into our stores, and short-commons were threatened."*⁴⁸

It should be noted that the "old merchant" Mr. Ebeko was a very famous and powerful figure on the island's scale, and the new year was meant 1874/1875. In 1876, the English entrepreneur and ornithologist Thomas Blackiston⁴⁹, a great friend of Henry Snow, visited Iturup, where he discovered large settlements with the remains of ancient dwellings. John Milne, inspired by T. Blackiston's stories about his journey around Ezo (Hokkaido) and his discoveries of various antiquities, also became interested in the early history of the islands. He visited the Kuril Archipelago three years later, in 1878, and noted on Iturupe Island in the area of Bettobu (now Reidovo) is a large ancient settlement, numbering about 1,000 semi-underground dwellings, as well as ancient remains in the area of the village of Rubetsu (now Kuibyshevka), where he collected material - ceramics and stone tools. The Kuril Ainu of Shumshu Island informed Milne that these settlements were abandoned by the Koropokguru people – "*people living in earthen pits.*" On Iturup, Milne could have met Mr. Ebeko and, with a high degree of probability, used his services. Could Milne have named the volcano after the person who helped him? Definitely. This was a fairly common practice. So Snow called geographical objects by the names of Milne, Captain Kimberly and the same Blackiston. Presumably, Mr. Ebeko came from a noble senior (Toen) Ainu family, because he owned fisheries and led a large detachment of coolie porters. In this case, his name may be associated with the Ainu verb "ebe" (Dobrotvorsky, p.15), or "ibe" (Dobrotvorsky, p. 72) - which means "to eat" (to eat food).

It is quite possible that when visiting the volcano by Milne the name of the merchant Ebeko, and "one of the flickering embers", gave birth to an association between them in Milne's head and was reflected in the name of the volcano." Such associations are common for scientists.

3. Henry James Snow – Volcanoes Milna, Nemo and Snow.

Our next hero is an English captain and, importantly, an explorer who plowed the Kuril waters, a fur trader, poacher and adventurer Henry James Snow (1848-1915) (Fig. 16).



Fig. 16. Henry James Snow (right) with one of the companions on the background of sea otter skins. From the book *"In Forbidden Seas"*.

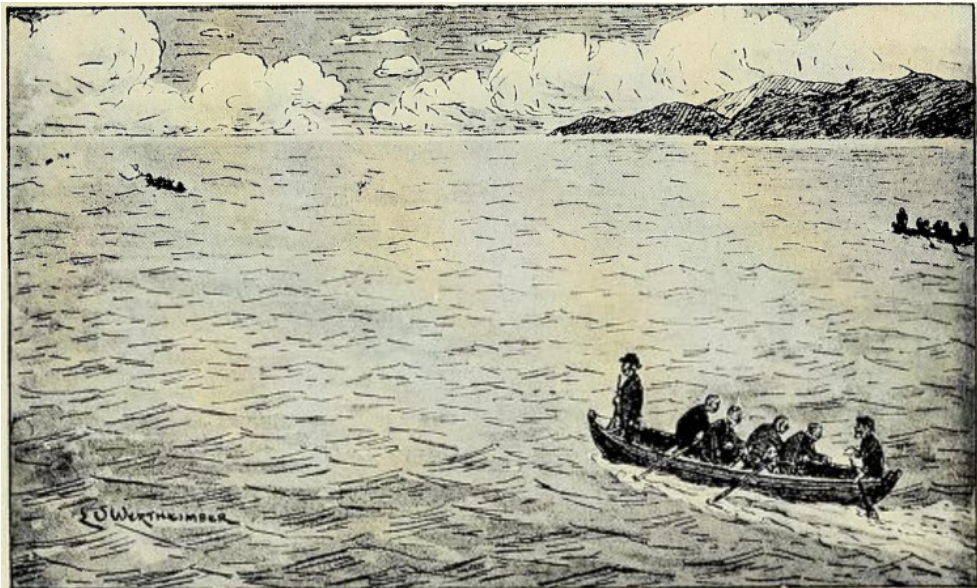


Fig. 17. "Running" a sea-otter. From the book *"In Forbidden Seas"*.

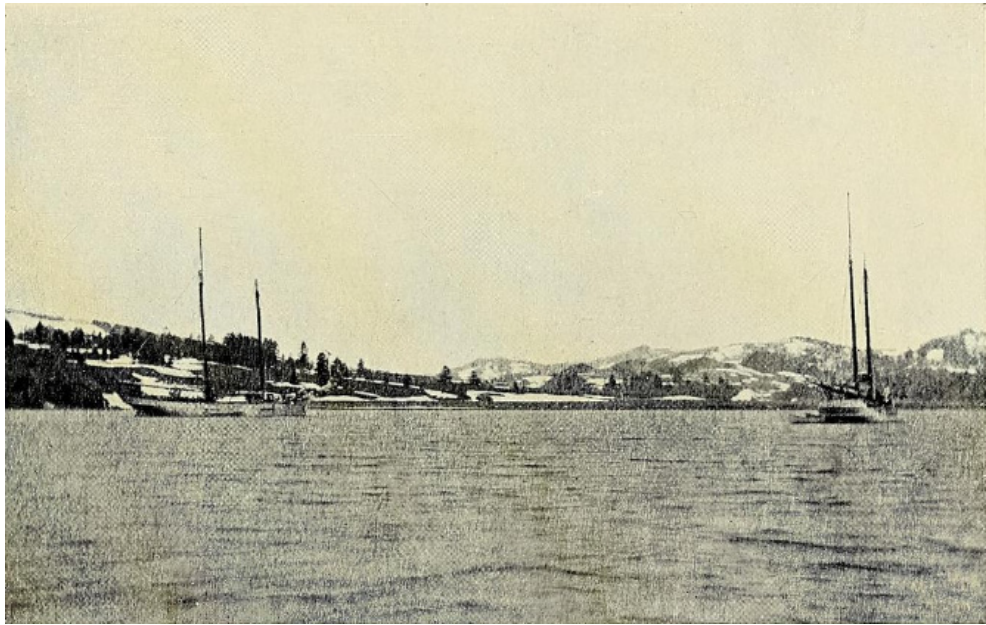


Fig. 18. Schooners “Nemo” and “Adele” on the raid. From the book *"In Forbidden Seas"*.

Snow carried out his raids in areas that were closed, either de facto or de jure, to sealers, as indicated by the title of his last book, *"In forbidden seas,"* London, 1910 (Fig. 17-18).

For sixteen seasons he was engaged in fishing, or rather, poaching seals and sea otters in the waters of the Pacific Ocean. Based in Yokohama, he traded on the Kuril Islands, the Shantar and Commander Islands, the Leeward Hawaiian Islands, Kruzenshtern, Lisyansky, Laysan, etc. Snow carried out his raids in areas that were closed, either de facto or de jure, to sealers, as indicated by the title of his last book, *"In forbidden seas"*⁵⁰.

Between 1875 and 1896, he sailed several times around all the Kuril Islands, which at that time were officially controlled by Japan (*According to the St. Petersburg Treaty of 1875 on the exchange of territories, Russia abandoned all the Kuril Islands in favor of Japan in exchange for Sakhalin Island. – A.B.*). He recorded his observations and based on them compiled a detailed physical and geographical description of the archipelago, describing the conditions of navigation in rough waters, as well as the flora and fauna of some islands. Snow's main work, “Notes on the Kuril Islands”⁵¹, was published in 1897. By the way, the preface to the book was written by John Milne, where he specifically noted: ***"In short, after shipwrecks, risks, and dangers, the escapes from which have often seemed incredible, independently of the geological, natural history, and general scientific notes which have been collected, Captain H. J. Snow, whilst sacrificing by his publications his own professional interests as a hunter, has entitled himself to recognition from all who navigate and patrol the fog-bound shores of the rocky Kurils."***⁵²

This book is a fairly detailed sailing directions of the Kuril Islands, which for many years served as a navigation guide for subsequent expeditions. In addition, Captain Snow left us quite detailed maps of the Kuril Islands with a considerable toponymic heritage, analyzing which, it can be noted that he mainly used Japanese and Japanized Ainu names from Japanese maps of the 90s. On Urup Island, for example, these are: *Nobunots, Iwari, Tokotan Bay, Tokotan,*

Pikaremoye saki, Yenrei Zan, To Yama, Arimui, Nobu, Itoientomo (Kastrikum), *Kombu se, Takematsu shō, Port Tavano* and distorted Latinized Japanese names – *Kusinots*. He often named geographical objects in honor of ships familiar to him, captains and just friends: *Cygnets Rocks* (Iturup Island), *Cape Kimberley, Blakiston Bay, Cape Little John* (Onkotan Island). In some cases, they used English-language definitions for naming notable objects: *Active Volcano* (Berg Volcano), *Twin Islets* (Bliznetsy - Gemini Islands), *Boat Passage, Old Village* (Aleutka settlement), *Sea Lions Rock* (Urup Island).

Snow studied and described in detail the fauna of the islands. In the preface to the book "In Forbidden Seas" he wrote about it like this: *"Whilst on my many hunting trips to the Kuril Islands, I took occasion to make notes on their physical features, their fauna, flora, meteorology, etc. ; also to make a survey of nearly every island on the chain. The results were embodied in my "Notes on the Kuril Islands," one of the extra publications of the Royal Geographical Society, for which work I was honoured by the Society with the Back Grant and Diploma. My charts were accepted and published by the Admiralty, and are those now in use. The "Notes" have since been translated and published in Japanese by order of the Japanese Government. By permission of the Royal Geographical Society, I have made extensive use of them in the first two chapters."*⁵³

Just like Milne, Snow also dealt with volcanoes. He described volcanic eruptions on Chirinkotan, Simushir, Chyornye Bratya (Black Brothers), Matua, in the northeast of Iturup and a sea earthquake to the west of the Srednego Islands in 1884. Also, he made descriptions of many volcanoes that were used in John Milne's summary: *"All the islands, with the exception of Shumshir, are mountainous and of volcanic origin. Active, dormant, or extinct volcanoes are found on every island, with the one exception mentioned. They range in height from 1,360 feet (Ushishir) to 7,640 feet (Alaid). Steam issues from the craters of at least twenty of these volcanoes, including no fewer than five on Yetorup. I have seen three of these volcanoes—one on the north-east end of Yetorup, in May, 1883; one on the Black Brothers, in June, 1879; and another on Simushir, in September, 1881—in violent eruption, and sending forth clouds of black smoke, rocks, and ashes, to a great height, accompanied by thundering noises which could be heard fifty miles or more away. Two others—Matau and Chirinkotan—I have seen slightly eruptive, the redhot lava simply welling over the crater lips, and running in small streams down the sides of the mountains."*⁵⁴

John Milne characterized Henry Snow as follows: *"Now, Captain H. J. Snow, who is the author of "In Forbidden Seas," is, from my point of view, a firstclass field naturalist, who by his collections and observations has added considerably to zoological and geological knowledge. I may add that he is also a keen surveyor, and his maps of the islands in these "Forbidden Seas" were so far back as 1895 published for the use of sailors by our Admiralty. ... By reason of their knowledge of these Forbidden Seas and our ignorance of them, in 1855 the Russian fleet was enabled to evade that of the French and English allies.*

H.M.S. Rattler was wrecked in these seas, and the Japanese man-of-war Tabor was totally lost. The disabling of several gunboats which have attempted to survey these islands, and the numerous wrecks of British and other schooners which are to be found along their shores, testify to the difficulties which surround the navigation of these waters before the advent of Captain Snow. The Royal Geographical Society were so impressed by the value of his work that they awarded him one of their annual grants, and approached the Lords of the Admiralty to obtain for its author substantial recognition. Had the work been carried out by one of our surveying vessels it would have cost this country many thousands of pounds. ... Among the signatories to the petition I see the name of the president of the Royal Geographical Society on behalf of the council, the Admiral of the Fleet, Rudyard Kipling, and those of many other well-known persons. Captain Snow gave up his working tools and received no recognition. I know that captains and admirals of British ships, like commissioners sent out to study seal fisheries, have sought and obtained valuable information from Captain Snow."⁵⁵

Snow was not only and not so much a naturalist and a disinterested servant of science, but also an adventurer-poacher. Based in Yokohama and recruiting seasonal sailors from port lumpens there, for seventeen years of hunting along the Kuril Ridge, he extirpated out almost all sea otters, and then switched to fur-seals when needed. Snow has been caught in Russian waters at least once. N.A. Grebnitsky, the governor of the Commander Islands, personally detained him. The schooner "Otome" was detained at the Commander Islands with 558 fur-seal skins and a pile of Winchester rifles. Having acknowledged the very fact of the illegal cropping of fur-seals at the Commander Islands (he did not know that there was a declaration of prohibition), he protested against the fact that he was personally detained. High officials of Vladivostok, Irkutsk and St. Petersburg exchanged lengthy telegrams and were at a loss to guess what to do with such a robber! As a result, he was released, the schooner was confiscated - and they began to puzzle over what to do with it now: if they tried to sell it at auction in Vladivostok, it could be bought for a negligible amount by the same Snow, who in this case *"would very easily pay for the violation he made in our waters."*⁵⁶

In the newspaper "Vladivostok" for August 14, 1888, in a note entitled *"The Battle of the Aleuts with pirates"*, the following was written literally: *"We are told that on March 15 to the island of Mednyi (Copper) (Commander Islands. – A.B.) The English schooner "Nemo", under the command of skipper Snow, who had already been arrested by the clipper "Razboynik" (Robber), approached, lowered three whaleboats with armed men, with the intention of attacking the sea otter rookery; the local Aleuts were met them with rifle fire in order to warn them not to approach the rookery. But the predators were not satisfied with the warning, took up their guns and engaged in a shootout with the Aleuts. The latter were protected and were behind the stones. The people of one whaleboat were shot. Seeing the failure, the other two whaleboats took him in tow to the ship and lifted him onto the deck. "Nemo" immediately left the island. They say that Mr. Snow himself was wounded more dangerously than others, whom the Aleuts immediately recognized him as soon as the boats began to stick to the shore."*⁵⁷

The astute reader has already guessed that the Nemo is, of course, Snow's own schooner. We will return to it and the volcano of the same name below.

Despite all his dark deeds, Snow became entrenched in history with his detailed maps (Fig. 19) and scientific descriptions, and our sailors immortalized his name by calling the Strait of Snow the strait between the islands of Chirpoy and Brat Chirpoyev, as well as the volcano on Chirpoy Island. Also, there are still many toponyms on the maps of the Kuril Islands, given by Snow to geographical objects of the islands.

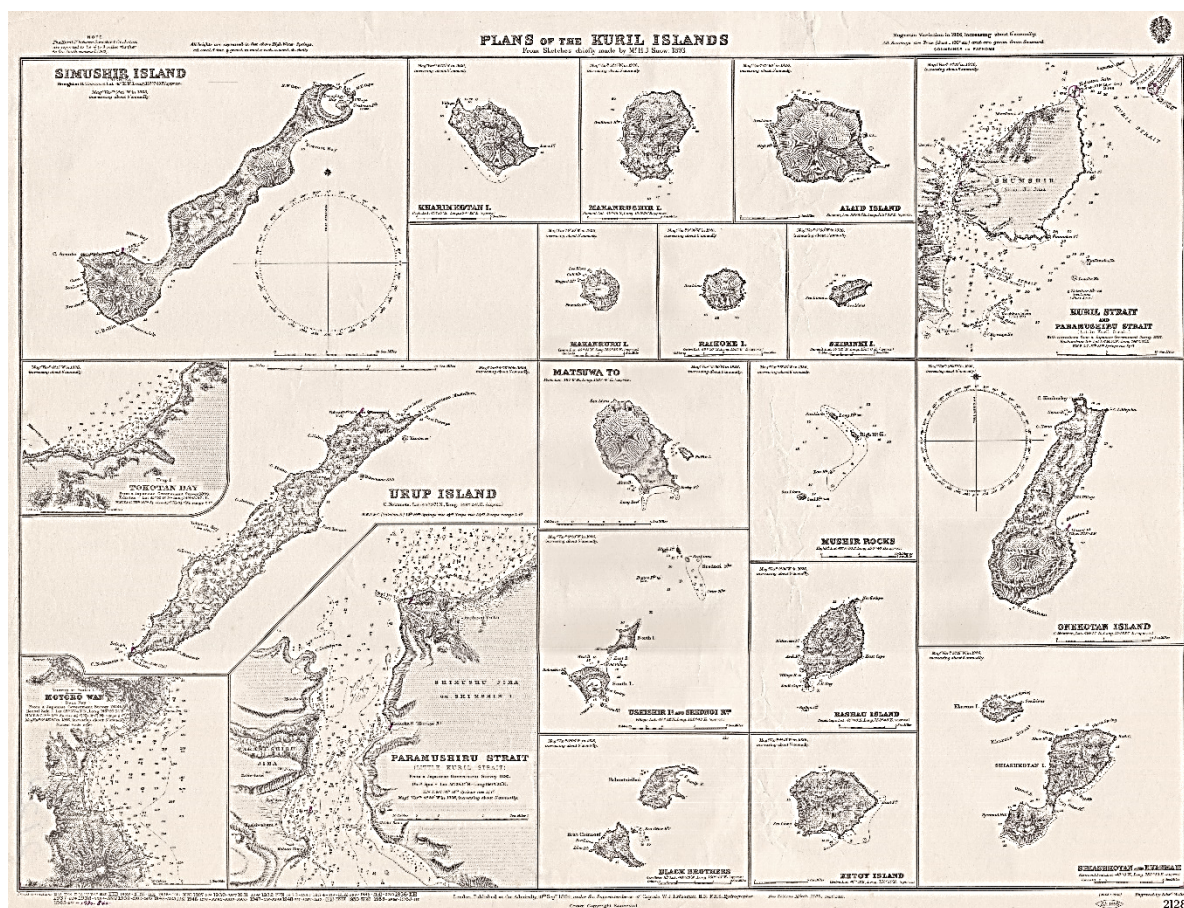


Fig. 19. «Plans of the Kuril Islands From Sketches chiefly made by Mr. H.J. Snow»: 1893. London. Published at the Admiralty, 10th Sept^r. 1894, under the Superintendence of Captain W.J.L. Wharton, R.N:F.R.S: Hydrographer. New Editions March 1895, Sept^r.1910. London. 1893». From the author's collection.

Milna volcano (Simushir Island)



Fig. 20. Goryashchaya Sopka Volcano (in the foreground) and Milna Volcano (in the background)⁵⁸.

The volcanoes Milna (Milne Volcano) and Goryashchaya Sopka (Burning Hill) form the southern tip of Simushir Island (Fig. 20). The first one is well preserved and is a two-headed volcano with an inner cone with a height of 1526 m. Lava flows are visible on the slopes, which in places protrude into the sea in the form of huge lava fields and several side parasitic cones. There is information about the volcanic activity of the Milna volcano dating back to the XVIII century. According to more accurate information, its eruptions occurred in 1849, 1881 and 1914.

It began to form about 2 million years ago as a stratovolcano with a diameter of about 10 km. Then, by an explosion directed to the south, the top of the volcano was destroyed and turned into a caldera with a diameter of 3 km, open to the south. Several tens of thousands of years ago, a central cone formed in the caldera. Its top is crowned with an extrusive lava dome forming the highest point of the volcano. On the northwestern slope of the Somme of the Milna volcano, a complex young volcano Goryashchaya Sopka grew up, the central extrusive lava dome of which has a diameter of 1 km and a height of 891 m. At the top, we can observe three merged explosive funnels. Currently, the Goryashchaya Sopka shows fumarolic activity.

The volcano was named by Henry Snow in honor of John Milne no later than 1881.

Nemo Volcano or Nemo Peak (Onkotan Island)



Fig. 21. Nemo Peak Volcano.⁵⁹

Nemo Peak is the central cone of a complex volcanic structure in the northern part of the Onkotan Island (Fig. 21). The formation of the central cone was preceded by three caldera-forming eruptions, the age of the oldest of them is 24.5-25.0 thousand years. The youngest volcano of Nemo Peak has the shape of a slightly truncated cone. The slopes of the volcano are covered with numerous lava flows, sometimes covered with detrital material. The correct appearance of the central cone is broken only in the northwest, where the remains of another, more ancient structure protrude, which are flowed by the young streams of Nemo Peak. Previously, the central cone was double, but then only Nemo Peak continued to effect. Intensive fumarole activity was noted at an altitude of 800 m. Volcanic eruptions occurred in the XVIII century; an eruption in 1906 is known.

The volcano does not pose a volcanic danger. With strong eruptions, ash clouds can be dangerous for air transportation. Space monitoring of volcanic activity is carried out, periodic surveys are carried out^{60 61}.

At the base of the Nemo volcano there is a Chiornoye lake (Black lake), crescent-shaped: 6 km long, 2 km wide and 110 m deep. At the WW II the Japanese had a hydroaerodrome here for large four-engine seaplanes. The lake is also famous for the fact that an endemic species of char lives in its waters.

It has long been known that Henry Snow gave the name Nemo to the bay, cape and volcano in honor of his schooner "Nemo"⁶². There is, however, another version that the name is given in honor of the popular character of the novel by Jules Verne "*20,000 leagues under the sea*" (1869-1870), - Captain Nemo⁶³. The most interesting thing is that both versions must be

true, the schooner "Nemo" turned out to be ... Russian, although it is quite possible, originally American-built. For example, according to First Mate William Brennan, we know that in March 1882, the schooner Nemo sailed from Japan to Sakhalin (Neva River, now Poronay), from there to Kamchatka, in September to Tyuleniy Island (Robben Island). The schooner was quite large and adapted for hunting, fishing and trading and carried 5 boats, a steam launch, 2 canoes and 32 people⁶⁴.

In 1882, Snow ordered a steamer in England, which, as it turned out later, was completely unsuitable for the purpose of hunting the sea beast. The attempt to re-equip it ended with a twofold increase in cost, and the subsequent freight by the Chinese did not even pay for the maintenance. Snow and his associates had to sell it at a heavy loss. While the transfer was being processed, it turned out that the law firm in London that processed the documents made a mistake in spelling the name of one of the partners, and due to the delay caused by this error, the sale was canceled. After everything was fixed, which of course took several months, it was finally sold at a much lower price than originally agreed.

After that, Snow and his companions used the remaining money to buy the Russian schooner Nemo, which was sold by order of the Russian consul to pay off her crew and pay off other obligations. Snow outfitted her for the hunting season of 1884, but in November he fell ill with typhoid fever, and his case was considered hopeless. However, thanks to the tireless care of those who cared for him, he pulled through. This was followed by new losses in business, but he was able to prepare Nemo for the hunting season of 1885. In April 1887 "Nemo" again headed for the Kuril Islands, and in 1888 It was spotted off the Commander Islands. Another of his schooners was arrested in those parts in those years. Due to the almost complete extermination of sea otters, Snow decided to switch to seals and whales as his main occupation. Nemo was large enough to be converted into an auxiliary steamer, and Snow decided to do this, as well as try to form a company and equip for whaling and seal hunter. Whalebone at that time cost about 2,000 pounds per ton. The company was created and made a flight, as a result of which about 1,600 seals were caught, which recouped the company's expenses by about 40 percent. The schooner Nemo ended her journey, having been wrecked on the Shantar Islands in 1904⁶⁵.

Snow Volcano (Chirpoy Island)

Snow Volcano is a small low domed volcano, about 400 m high, located on Chirpoy Island. It is located in the southern part of the island and is separated from the Chiornogo⁶⁶ Volcano by a shallow saddle. On its top there is a crater about 300m in diameter. Apparently, it belongs to the thyroid volcano. There is evidence, but without an exact date, about the eruption of this volcano in the XVIII century. In addition, Snow Volcano erupted in 1854, 1857, 1859 and 1879.



Fig. 22. Chirpoi Island. With sulfur fades on the slopes, the volcano Snow is smoking. Photo by the author, 2022.

Four cones are known on Chirpoi Island (Fig. 22). The first cone from the north — Chirpoy (691 m) — was destroyed by downthrow fault from the northwest; the crater part in the east, as well as the eastern half of the cone, has been preserved, but the slopes of the cone have been eroded. From the second cone, adjacent from the southwest to the first, only a small section of the southern slope has been preserved. The fault that cut off the volcanoes also lowered a 140-meter underwater terrace down here.

The other two cones — Chiornogo and Snow — are modern. The Chiornogo crater is located in the center of the island and is separated from the cone by a small saddle. The Chernogo cone forms a smooth, strongly truncated cone with a well-defined crater at the top. The diameter of the crater is 330 m, the ridge is flat, without recesses and protrusions, with only a slight rise to the north. The highest point of the ridge is 624 m above sea level. The inner walls of the crater have the appearance of a steep funnel with a slope angle of about 60 °; at a depth of 150 m there is a flat bottom with a diameter of 150 m. The slopes of the cone are smooth, without erosive potholes. The surface of the cone is covered with light debris, in places lava flows are visible, heavily covered with ash at the sources. A large wide stream descends from the crater along the western slope and reaches the coast of the Sea of Okhotsk. A series of streams flowed down the eastern slope. The longest stream, up to 3 km, descends along the northern slope, and then along the saddle with the Chirpoy cone to the east and, reaching the ocean shore, forms a protruding cape. At the foot of the Chiornogo cone from the east there are two side

craters; they have the appearance of miniature amphitheatres, from which lava flows poured out, forming a far-protruding cape Udushliviy (Suffocating).

Eruptions of the Chiornogo volcano were recorded in 1712 or 1713, in 1854 and in July 1857. It is possible that the eruption of 1854 attributed to the Chiornogo cone refers to the neighboring Snow cone. Currently, the cone of the Black shows a very active solfatar activity. Solfatar outlets are located at the bottom and along the walls of the summit crater. A powerful, linearly elongated solfatar group is located on the western slope near the summit, determining the presence of a closed radial crack.

Snow cone is rich in lava outpourings. Numerous powerful lava flows descend in all directions from the summit crater and from the holes at the base of the cone. Many streams reach the sea, and the entire southern part of the island, measuring 1 x 3.5 km, consists of merged lava flows. The last stream (1879?) descends from the summit crater in a southwesterly direction, having a width of 300 m at the source, and 2.5 km from the crater reaches the seashore. The dark rough cone of Snow presents a sharp contrast with its light, smooth neighboring cone of Chiornogo.

The Snow Cone was formed after 1770 (the sotnik (lieutenant of Cossack troops) Ivan Chiorny marked only one "burnt hill" on the island with a Chirpoy). The first information about the eruption of the volcano in June 1811 is found in Captain Golovnin. In May — June 1879, Captain Snow observed the outpouring of a large lava flow here, which reached the seashore and formed a new cape. On October 20, 1960, an eruption occurred; ash fell on the deck of a ship passing 12 km from the volcano. Currently, there is a weak solfatar activity in the vent. The last eruption occurred in November 2012, and activity was noted until October 2016.

The construction of the volcano has the appearance of a strongly truncated cone, on top of which there is a flat, saucer-shaped crater with a diameter of about 300 m and a depth of less than 10 m. In the northeastern part of the crater there is a well-shaped vent with a diameter of ~ 130-140 m and a depth of up to 50 m. The slopes of the volcano are covered with lava flows, many of which reach the seashore. Lava flows form a large part of the southern edge of the island, which will give it a specific appearance. This is how a Russian volcanologist Gorshkov describes this place: *"The chaotic accumulation of lava flows gives the southern part of the island a gloomy, wild look, which is emphasized by the complete absence of vegetation here."*⁶⁷

Snow Volcano was named at the suggestion of G.S. Gorshkov *"in memory of Captain Snow"*.⁶⁸

¹ The Kuril Islands were originally inhabited by the Ainu. In their language, "kuru" meant "a person who came from nowhere," from which their second name "smokers" came, and then the name of the archipelago. In Russia, the Kuril Islands are first mentioned in the reporting document of N. I. Kolobov to Tsar Alexei from 1646 years about the peculiarities of the wanderings of I. Yu. Moskvitin. Also, data from the chronicles and maps of medieval Holland spoke about the bearded Ainu inhabiting the islands.

The Ainu were engaged in gathering, fishing and hunting, lived in small settlements throughout the Kuril Islands, Hokkaido and Sakhalin. Until 1869, the Japanese lived only on the southern tip of the Hokkaido Island (Yeso or Yezo), where there was a small Japanese principality. The rest of the territory was inhabited by the Ainu, who even outwardly differed sharply from the Japanese: white-faced, with a strong hairline, for which the Russians called them "*hairy smokers*." It is known from documents that, at least in 1778-1779, Russians collected tribute from the inhabitants of the northern coast of Hokkaido.

² Gorshkov G.S. Names of volcanoes on the Kuril Islands. Proceedings of the All-Union Geographical Society Volume 80, Issue 2, 1948, p. 175 (in Russian).

³ Polevoy B.P. The discoverers of the Kuril Islands: From the history of Russian geographical discoveries in the Pacific Ocean in the XVIII century. Yuzhno-Sakhalinsk: Far Eastern publishing house: Sakhalin branch, 1982. - p. 169-170 (in Russian).

⁴ A Voyage of Discovery to the North Pacific Ocean: in which the Coast of Asia, from the lat. of 35° north to the lat. of 52° north, the Island of Insu (commonly known under the name of the Land of Jesso,) the North, South and East Coasts of Japan, the Lieuchieux and the Adjacent Isles, as well as the Coast of Corea, have been Examined and Surveyed Performed in His Majesty's Sloop Providence, and Her Tender, in the Years 1795, 1796, 1797, 1798. By William Robert Broughton. London, 1804.- p. 123.

⁵ **Jean-Baptiste Prévost de Sansac, marquis de Traversay** - in the Russian service Ivan Ivanovich de Traverse (July 24, 1754, Martinique — May 19, 1831, St. Petersburg province) was a naval commander, admiral of the Russian Fleet, commander of the Black Sea Fleet, the first governor of Nikolaev, the Minister of the Sea of Russia in 1811-1828.

⁶ Abbreviated notes of the Fleet of Lieutenant Commander Golovnin, about his voyage on the sloop Diana, for the inventory of the Kuril Islands in 1811. Available at: http://www.vostlit.info/Texts/Dokumenty/Reisen/XIX/1800-1820/Golovnin_5/text7.phtml?id=12335 (Accessed 17 April 2022) (in Russian).

⁷ A Voyage of Discovery to the North Pacific Ocean: in which the Coast of Asia, from the lat. of 35° north to the lat. of 52° north, the Island of Insu (commonly known under the name of the Land of Jesso,) the North, South and East Coasts of Japan, the Lieuchieux and the Adjacent Isles, as well as the Coast of Corea, have been Examined and Surveyed Performed in His Majesty's Sloop Providence, and Her Tender, in the Years 1795, 1796, 1797, 1798. By William Robert Broughton. London, 1804.- p. 302-303.

⁸ Correctly – **Breskens**. The yacht *Breskens* is one of the two ships of the expedition (the second is the flute *Castricum*) of the Dutch navigator Maarten Gerritszoon Vries van Harlingen, who was looking for the legendary golden and silver islands in 1643 and discovered the Southern Kuril Islands and the southern coast of Sakhalin. The yacht is named after Breskens is a harbour town on the Westerschelde in the municipality of Sluis in the province of Zeeland, in the south-western Netherlands.

⁹ A Voyage of Discovery to the North Pacific Ocean: in which the Coast of Asia, from the lat. of 35° north to the lat. of 52° north, the Island of Insu (commonly known under the name of the Land of Jesso,) the North, South and East Coasts of Japan, the Lieuchieux and the Adjacent Isles, as well as the Coast of Corea, have been Examined and Surveyed Performed in His Majesty's Sloop Providence, and Her Tender, in the Years 1795, 1796, 1797, 1798. By William Robert Broughton. London, 1804.- p. 90-91.

¹⁰ **Adam Johann von Krusenstern** (also **Krusenstjerna** in Swedish; Russian: **Iván Fyodorovich Kruzenshtérn**; 10 October 1770 – 12 August 1846) was a Russian admiral and explorer, who led the first Russian circumnavigation of the globe. Krusenstern was born in Haggud, Kreis Harrien, Governorate of Estonia, Russian Empire into a Baltic German family descended from the Swedish aristocratic family von Krusenstjerna, who remained in the province after the country was ceded to Russia. In 1787, he joined the Russian Imperial Navy, and served in the war against Sweden. Subsequently, he served in the Royal Navy between 1793 and 1799, visiting America, India and China. He was appointed by Tsar Alexander I to make a voyage to the Far East coast of Asia to endeavour to carry out the project. Under the patronage of Alexander, Count Nikolay Petrovich Rumyantsev and the Russian-American Company, Krusenstern led the first Russian circumnavigation of the world. The two ships, *Nadezhda* (Hope, formerly the British merchant *Leander*) under the command of Krusenstern, and *Neva* (formerly the British merchant *Thames*) under the command of Captain-Lieutenant Yuri F. Lisianski, set sail from Kronstadt in August 1803, rounded Cape Horn of South America, reached the northern Pacific Ocean, and returned via the Cape of

Good Hope at South Africa. Krusenstern arrived back at Kronstadt in August 1806. Both seafarers made maps and detailed recordings of their voyages. Upon his return, Krusenstern wrote a detailed report, *"Reise um die Welt in den Jahren 1803, 1804, 1805 und 1806 auf Befehl Seiner Kaiserlichen Majestät Alexanders des Ersten auf den Schiffen Nadeschda und Neva"* ("Journey around the World in the Years 1803, 1804, 1805, and 1806 at the Command of his Imperial Majesty Alexander I in the Ships Nadezhda and Neva") published in Saint Petersburg in 1810. It was published in 1811–1812 in Berlin; this was followed by an English translation, published in London in 1813 and subsequently by French, Dutch, Danish, Swedish, and Italian translations. His scientific work, which includes an atlas of the Pacific, was published in 1827 in Saint Petersburg. The geographical discoveries of Krusenstern made his voyage very important for the progress of geographical science. His work won him an honorary membership in the Russian Academy of Sciences. He was elected a foreign member of the Royal Swedish Academy of Sciences 1816 and to the American Philosophical Society in 1824. As director of the Russian naval school Krusenstern did much useful work. He was also a member of the scientific committee of the marine department, and his contrivance for counteracting the influence of the iron in vessels on the compass was adopted in the navy. Krusenstern became an admiral in 1841 and he was awarded the Pour le Mérite (civil class) in 1842. He died in 1846 in Kiltsi manor, an Estonian manor he had purchased in 1816, and was buried in the Tallinn Cathedral.

¹¹ A Journey round the World in 1803, 4, 5 and 1806. At the behest of His Imperial Majesty Alexander Pervago, on the ships of the Nadezhda and the Neva, under command of the Fleet a Captain-Lieutenant, now a Captain of the second rank, Kruzenshtern, the State Admiralty Department and the Imperial Academy of Sciences Member. Part Three. In St. Petersburg, in the Naval Printing House of 1812.- p. 176 (in Russian).

¹² Ibid.- p. 203-204.

¹³ A detailed report of G. I. Nevelsky on his historical expedition of 1849 to Sakhalin Island and the mouth of the Amur River Available at: http://www.vostlit.info/Texts/Dokumenty/China/XIX/1840-1860/Nevelskoj_G_I/pred1.htm (Accessed 17 April 2022) (in Russian).

¹⁴Portrait available at:

https://d3d00swyhr67nd.cloudfront.net/w1200h1200/NMM/NMM_NMMG_BHC2576.jpg (Accessed 17 April 2022).

¹⁵Portrait available at:

[https://megabook.ru/media/Головнин%20Василий%20Михайлович%20\(портрет\)](https://megabook.ru/media/Головнин%20Василий%20Михайлович%20(портрет)). (Accessed 17 April 2022).

¹⁶ Gorshkov G.S. Names of volcanoes on the Kuril Islands. Proceedings of the All-Union Geographical Society Volume 80, Issue 2, 1948, p. 173 (in Russian).

¹⁷ Gorshkov G.S. Volcanism of the Kuril Island arc. Moscow: Nauka, 1967.- p. 7, 48-49 (in Russian).

¹⁸ Portrait available at:

https://img0.liveinternet.ru/images/attach/c/4/81/513/81513762_large_JohnMilne.jpg (Accessed 17 April 2022).

¹⁹ **Charles Tilstone Beke** (10 October 1800 – 31 July 1874) was an English traveller, geographer and Biblical critic. Born in Stepney, London, the son of a merchant in the City of London, for a few years Beke engaged in mercantile pursuits. He later studied law at Lincoln's Inn, and for a time practised at the Bar, but finally devoted himself to the study of historical, geographical and ethnographical subjects. The first fruits of Beke's researches appeared in his work *Origines Biblica* or *Researches in Primeval History*, published in 1834. An attempt to reconstruct the early history of the human race from geological data, it raised a storm of opposition on the part of defenders of the traditional readings of the Book of Genesis, but in recognition of the value of the work, the University of Tübingen conferred upon him the degree of PhD. Between 1837 and 1838, Beke held the post of acting British consul in Saxony. From that time until his death, his attention was largely given to geographical studies, chiefly of the Nile valley. Aided by private friends, he visited Ethiopia in connection with the mission to Shewa sent by the Indian government under the leadership of Major (afterwards Sir) William Cornwallis Harris, and explored Gojjam and more southern regions up to that time unknown to Europeans. Among other achievements, Beke was the first to determine, with any approach to scientific accuracy, the course of the Abay River

(Blue Nile). The valuable results of this journey, which occupied him from 1840 to 1843, he gave to the world in a number of papers in scientific publications, chiefly in the *Journal of the Royal Geographical Society*. On his return to London, Beke re-engaged in commerce, but devoted all his leisure to geographical and kindred studies. In 1848 he planned an expedition from the mainland opposite Zanzibar to discover the sources of the Nile. A start was made, but the expedition accomplished little. Beke's belief that the White Nile was the main stream was, however, shown to be accurate by subsequent exploration. In 1856, he endeavoured, unsuccessfully, to establish commercial relations with Ethiopia through Massawa. In 1861-1862 he and his wife travelled in Syria and Palestine, and went to Egypt with the object of promoting trade with Central Africa and the growth of cotton in the Sudan. In 1865, he attempted to visit Ethiopia to negotiate from Emperor Tewodros the release of the British captives. On learning that the captives had been released, Beke turned back, but Tewodros afterwards re-arrested the party. To the military expedition sent to effect their release, Beke furnished much valuable information, and his various services to the government and to geographical research were acknowledged by the award of £500 in 1868 by the secretary for India, and by the grant of a civil list pension of £100 in 1870. In his 74th year he undertook a journey to Egypt for the purpose of determining the real position of Mount Sinai. He conceived that it was on the eastern side of the Gulf of Aqaba, and his journey convinced him that his view was right. It has not, however, commended itself to general acceptance. Beke died in Bromley, in Kent.

²⁰ The late Dr. Charles Beke's Discoveries of Sinai in Arabia and of Midian with portrait, geological, botanical, and conchological reports, plans, map, and thirteen wood engravings by Beke, Charles T. (Charles Tilstone), 1800-1874. London, Trübner & Co. 1878.- pp. 606.

²¹ *Ibid.*, p. XIII.

²² **Meiji era** (明治) - is an era of Japanese history that extended from October 23, 1868 to July 30, 1912. The name of the era was given by the motto of the reign (nengo) of Emperor Mutsuhito — "Meiji", which means "enlightened rule" (mei - light, knowledge; ji - rule). The Meiji era was the time of history the Empire of Japan, when the Japanese people moved from being an isolated feudal society at risk of colonization by Western powers to the new paradigm of a modern, industrialized nation state and emergent great power, influenced by Western scientific, technological, philosophical, political, legal, and aesthetic ideas.

²³ L.K. Herbert-Gustar and P.A. Nott, biography of Milne *John Milne, Father of Modern Seismology* in 1980 pp 120. ISBN 0-904404-34-X.

²⁴ Paul Kabrna "John Milne - the Man who Mapped the Shaking Earth" ISBN 978-0-9555289-0-3 Published by Craven & Pendle Geological Society in March 2007.

²⁵ Celebrating the life and work of the Seismologist Professor John Milne 1850 – 1913 Available at: <http://isleofwightsociety.org.uk/content/S634959377846229078/JM160101.pdf> (Accessed 17 April 2022).

²⁶ Moutinho S., Faria J., Vasconcelos C. John Milne, The Man Who Mapped the Shaking Earth: Vida e Obra de um dos Pioneiros da Sismologia. 1^o Encontro de História da Ciência no Ensino. UTAD 27 de maio 2015. – p. 56.

²⁷ Portraits available at: <http://isleofwightsociety.org.uk/content/S634959377846229078/JM160101.pdf> (Accessed 17 April 2022).

²⁸ **Shokunin** - literally means "master", "craftsman". But such a literal description cannot fully express the deep meaning of this concept. Shokunin is obliged not only to know his skills perfectly, but also to have a special social consciousness and position. Shokunin undertakes to work as well as he can for the good of the people. We are talking about the material or the spiritual — it does not matter, shokunin's responsibility is to fulfill his obligations in the best possible way. Shokunin is a way of life, a way of thinking, personal qualities — everything that affects a person's interaction with the world. Available at: <https://lifehacker.ru/shokunin/> (Accessed 17 April 2022).

²⁹ **Boris Borisovich Golitsyn** (February 18 (March 2), 1862 — May 4 (17), 1916), Prince, Privy Councilor, chamberlain – one of the founders of seismology, physicist, mathematician, geophysicist, creator of the electrodynamic seismograph (1906). In 1893 he presented his master's thesis "Research in

Mathematical Physics" for defense. The dissertation contained a number of fundamentally new provisions that were ahead of their time, and prepared the basis for the emergence of quantum mechanics. Nobel Prize laureate M. Planck wrote that the work of B. B. Golitsyn was a valuable gift for him. Head of the Physics Department of the Academy of Sciences (since 1896). Member of the Council of the Russian Geographical Society, Chairman of the Russian Physico-Chemical Society and Mineralogical Society, headed the Commission for the Study of Polar Countries and a number of other commissions and societies. Since 1912 — Chairman of the International Seismic Association (International Association for Seismology and Physics of the Earth's Interior (IASPEI)). In 1913, he was appointed director of the Mykolaiv Main Physical Observatory. He worked as the head of the Main Military Meteorological Department. He supervised the creation of the first seismic service in Russia, which by 1909 had put into operation seven seismic stations: in Pulkovo (central at the Academy of Sciences), Yuryev, Tiflis, Yekaterinburg, Irkutsk, Vladivostok and Baku. He stood at the origins of thermodynamics of radiation. B. B. Golitsyn's merits in the creation of Russian aviation are so great that he is often called the founder of the Russian air fleet. On his initiative, the production of airplanes began at the Russian-Baltic Plant in 1912, and I. I. was invited as chief designer. Sikorsky, who held this position until 1917, and later became the largest aircraft designer in the United States.

³⁰ Musson R. M. W. A history of British seismology Bull Earthquake Eng (2013) 11:715–861.

³¹ Golitsyn B.B. John Milne. Obituary. Izvestia of the Imperial Academy of Sciences. VI series, year 1913, volume 7, issue 13.- p. 769-770 (in Russian).

³² John Milne. Available at: <http://www.isc.ac.uk/about/history/milne/> (Accessed 17 April 2022).

³³ Bright's disease is a historical classification of kidney diseases, which in modern medicine will be described as acute or chronic nephritis.

³⁴ Image from Hokkaido University Library. Northern Studies Collection. Available at: <https://www2.lib.hokudai.ac.jp/hoppodb/contents/map/1/0D020110000000002.jpg> (Accessed 17 April 2022).

³⁵ Ibid. Available at: <https://www2.lib.hokudai.ac.jp/hoppodb/contents/map/1/0D020110000000001.jpg> (accessed 17 April 2022).

³⁶ Ibid. Available at: <https://www2.lib.hokudai.ac.jp/cgi-bin/hoppodb/record.cgi?id=0D020110000000003> (accessed 17 April 2022).

³⁷ Ibid. Available at: <https://www2.lib.hokudai.ac.jp/hoppodb/contents/map/1/0D020110000000018.jpg> (accessed 17 April 2022).

³⁸ Ibid. Available at: <https://www2.lib.hokudai.ac.jp/cgi-bin/hoppodb/record.cgi?id=0D020110000000017> (accessed 17 April 2022).

³⁹ Balakhovskaya K. All volcanoes of the Northern Kuriles Lecture, April 20, 2020. Photos by Kotenko L. Available at: http://www.helipro.ru/ru/blog/northern_kuril_islands (Accessed 17 April 2022) (in Russian).

⁴⁰ Ibid.

⁴¹ Milne, J. 1879. A cruise among the volcanoes of the Kurile Islands. The Geological Magazine, n. ser., 6: 340. 1937, p. 341

⁴² **Iō-Yama** (AMS series L 506 1:250,000; Ed. 1-AMS, NM 56-6 “Paramushiru-tō”, 1954); **千島硫黄山; Chishima Iōyama** (<https://en.wikipedia.org/wiki/Paramushir> (accessed 17 April 2022)).

⁴³ Braslavets K. M. History In names on the map of the Sakhalin region. Yuzhno-Sakhalinsk Far Eastern Book Publishing House Sakhalin Branch, 1983.- p. 129 (in Russian).

⁴⁴ Ainu-Russian Dictionary by M.M. Dobrotvorsky, Kazan: in the University Printing House, 1876, p. 72 (in Russian).

⁴⁵ Ibid., p. 71

⁴⁶ Ibid., p. 139.

⁴⁷ An Ainu-English-Japanese dictionary (including a grammar of the Ainu language) by Batchelor, John. Tokyo Methodist Pub. House. 1905. p. 144.

⁴⁸ In forbidden seas. Recollections of sea-otter hunting in the Kurils by Snow, Henry James, 1910, London, E. Arnold.- p. 91-92, 97.

⁴⁹ **Thomas Wright Blakiston** (December 27, 1832 – October 15, 1891), captain of the Royal Army, entrepreneur, engaged in shipping and timber processing. The Hokkaido Island administration often attracted him as a specialist engineer (Snow G.D. In Forbidden Seas. Recollections of sea-otter hunting in the Kurils by Snow, Henry James, 1910, London, E. Arnold.- pp. 67, 113, 121, 123, 124). A very versatile researcher. Blakiston explored western Canada with the Palliser Expedition between 1857 and 1859. In 1862, he sailed up the Yangtze River in China, going further than any Westerner before him. He spent the second part of his life in Japan and became one of the great naturalists of this country. Blakiston was the first to notice that Hokkaido animals are related to species from North Asia, and animals from Honshu in the south are related to animals from South Asia. The Tsugaru Strait (Sungarsky) separates the two islands, thus forming an important zoogeographic boundary known as the "Blackiston's Line". He later settled in the United States in 1886 and died of pneumonia in San Diego, California in 1891. Blakiston is buried at Green Lawn Cemetery in Columbus, Ohio. Author of the book "Japan in Yezo: a series of papers descriptive of journeys undertaken in the Island of Yezo, at intervals between 1862 and 1882" (Yokohama: Japan Gazette, 1883.- 119+VII p.). In honor of Blackiston, Captain Snow named a bay on Onkotan Island.

⁵⁰ In forbidden seas. Recollections of sea-otter hunting in the Kurils by Snow, Henry James, 1910, London, E. Arnold.- 303 p.

⁵¹ Notes on the Kuril Islands by Captaine H.J. Snow, F.R.G.S. London: John Murray, Albemarle Street, 1897. – 91p.

⁵² Ibid., Note by Professor John Milne, P.R.S.

⁵³ In forbidden seas. Recollections of sea-otter hunting in the Kurils by Snow, Henry James, 1910, London, E. Arnold.- p. VI.

⁵⁴ Ibid.- p. 1-2.

⁵⁵ John Milne In Forbidden Seas. Shide, Newport, Isle of Wight, January 30. "Nature", February 16, 1911, № 2155, vol. 85.- p. 510.

⁵⁶ Pasenyuk L.M. In old papers - the booming pulse of history. 1989. Available at: <http://geoman.ru/books/item/f00/s00/z0000097/st006.shtml> (Accessed 17 April 2022) (in Russian).

⁵⁷ Shkolina M.I. From the biography of skipper Snow. Notes of the Primorsky Branch of the Geographical Society of the USSR No. 1(XXIV), Vladivostok, 1965, pp. 128-129 (in Russian).

⁵⁸ Image available at: <https://www.marshruty.ru/Photos/Photo.aspx?Size=XL&AlbumID=11e7aaa0-66d4-4c48-9889-26c4a6f3ff74> (Accessed 17 April 2022)

⁵⁹ Image available at: <https://volcano.si.edu/volcano.cfm?vn=290320> (Accessed 17 April 2022)

⁶⁰ Gorshkov G.S. Volcanism of the Kuril Island arc. Moscow: Nauka, 1967.- p. 82-86 (in Russian).

⁶¹ Melekessev I.V., Volynets O.N., Antonov A.Yu. Nemo III Caldera (Onkotan Island, Northern Kuriles): structure, 14C age, dynamics of caldera-forming eruption, evolution of juvenile products. Volcanology and Seismology, 1997. No. 1. pp. 32-51 (in Russian).

⁶² Pyzhyanov F.I. Kuril Islands (Dictionary of the History of Geographical Names). Yuzhno-Sakhalinsk: GASO, 1998.- p.115 (in Russian).

⁶³ Balakhovskaya K. All volcanoes of the Northern Kuriles Lecture, April 20, 2020. Photos by Kotenko L. Available at: http://www.helipro.ru/ru/blog/northern_kuril_islands (accessed 17 April 2022) (in Russian).

⁶⁴ Fur Seal Arbitration: Proceedings of the Tribunal of Arbitration, Convened at Paris, Under the Treaty Between the United States ... and Great Britain, Concluded at Washington, February 20, 1892, for the Determination of Questions Between the Two Governments Concerning the Jurisdictional Rights of the

United States in the Waters of Bering Sea. Vol. II, Washington, D.C.: U.S. Government Printing Office, 1895.- p. 357-358.

⁶⁵ In forbidden seas. Recollections of sea-otter hunting in the Kurils by Snow, Henry James, 1910, London, E. Arnold.- p. 196-198, 218, 220, 252, 266.

⁶⁶ **Chiornogo Volcano** named after Russian sotnik (lieutenant of Cossack troops) and explorer of the Kuril Islands Ivan Chiorny (died 1772, Irkutsk).

⁶⁷ Ibid.

⁶⁸ Gorshkov G.S. Names of volcanoes on the Kuril Islands. Proceedings of the All-Union Geographical Society Volume 80, Issue 2, 1948, p. 175 (in Russian).