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Baron Toll

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the point of view of technique, marked an immense advance on all previous work of the kind. It must be remembered, also, that these world-maps are by no means the only important productions of the Alsatian cartographer, whose European maps are, in their way, no less noteworthy.

BARON TOLL.

By Prince KROPOTKIN.

THE Russian papers announce the return to St. Petersburg of the engineer M. I. Brusneff, one of the members of the expedition of Baron Toll who went with the party of Lieut. Kolchak in search of the head of the expedition in Bennett island. M. Brusneff had received from Baron Toll the order, in case the *Zarya* should not reach Bennett island, to come to meet him with a party. Accordingly he started, with five sledges and sixty dogs, from Ust-Yansk on February 24, 1903, for New Siberia. This would seem very late, but it appears that the hunters never start before April. M. Brusneff was accompanied by a sailor, Tolstoff, and five native hunters. On March 14, N.S., they reached the Great Lyakhoff island, and there divided into two parties. Tolstoff, with three hunters, went to Koteln'yi, while Brusneff, with the others, took the way of New Siberia, which they reached on March 24. Five days later M. Brusneff and his party started on for Bennett island, but they met an open sea, and were compelled to return. The end of March and April were given to the arrangement of stores of provisions. On May 3 Tolstoff joined Brusneff on New Siberia, after having searched the western and northern shore of Koteln'yi, as also the north-eastern shore of Thadéeff island. Both, having no means of crossing the sea, remained where they were, continuing to search along the nearest shores in the expectation of Baron Toll's appearance. On August 12 Lieut. Kolchak came to join them in a boat, and on August 15, after having taken some provisions from Brusneff, he sailed towards Bennett island with six men.

Although Bennett island, M. Brusneff writes, is 140 versts (93 Eng. miles) from New Siberia, Lieut. Kolchak succeeded in making the passage in two days, owing to the absence of ice and a good wind, instead of the twenty-two days which it took Baron Toll. He stayed only two days on Bennett island, and, having found the documents left there by Baron Toll [their translation is given further on], he returned. In two days he reached Cape Voznesenie, in New Siberia, and, following the coast for another three days, joined Brusneff, who was then 17 miles from Cape Visoki. On August 26 Lieut. Kolchak went to Koteln'yi.

On September 2 Brusneff left, with his dog-sledges, with the intention of making the round of the coasts of New Siberia. This was hard work, as the sledges had to be dragged over a snowless soil, and the party advanced only about 7 miles a day. With all that, Brusneff was the first who made the full circuit of New Siberia. No traces of Baron Toll were seen. This time was also given to collecting a supply of reindeer-meat, and while they waited for the sea to be frozen, the party prepared warm clothing and boots, made out of reindeer-fur, for the return journey. As to the party (that of Lieut. Kolchak) on Koteln'yi, they had to feed for two months on white bears, which also appear in numbers on the eastern coast of New Siberia, but chiefly in September.

The Blagoveschensk strait, on the western coast of New Siberia, was frozen on December 1, and three days later M. Brusneff and his party began their return

journey. The ice was still very thin, and for 20 miles they had it only one inch thick, although the polar night had already begun. Next day, M. Brusneff was on Thadéeff island, where he found Tolstoff's party, and they immediately resumed the journey. On December 19 they were already at Kazachie, where Lieut. Kolchak had also arrived a few days before.

Brusneff brought back rich zoological, geological, and botanical collections, and made meteorological observations throughout. As to Lieut. Kolchak, having learned at Irkutsk that the war had begun, he left to join his post in the far East.

M. Brusneff is of the opinion that Baron Toll must have perished on his journey from Bennett island to New Siberia. He must have there met with an open sea which it was impossible to cross at such a dark and cold season of the year, on account of the "grease" (*salo*), or floating ice in formation on its surface. He had provisions for only a fortnight, and the party must have suffered severely from want of warm clothing. Having killed on Bennett island only six reindeer, they could not have prepared enough clothing for the four men. And they could not winter on Bennett island, as they had no provisions for that, and would have had no fuel.

Of the papers left by Baron Toll on Bennett island, and discovered by Lieut. Kolchak, the following is a translation of the more important, communicated by the Secretary of the Expedition Committee, V. L. Bianchi, to the Russian press:—

"In company with the astronomer, F. G. Seeberg, and two hunters, the Tungus Nicholas Diakonoff and the Yakut Vassili Gorokhoff, on June 7 * I left the winter harbour of the *Zarya* (Nerpichiya Bay of Kotelnyi island). We followed the northern coasts of Kotelnyi and Thadéeff islands, keeping our course towards Cape Visoki on New Siberia. On June 13 I took the course towards Bennett island. The ice was pretty broken. On June 25, three miles from Cape Visoki, the ice was definitely broken. Preparing to take to our *baidaras* [leather boats], we killed our last dogs. From here we were carried on an ice-floe, for four and a half days, 48 miles in the desired direction. Then, having noticed that our ice-floe had drifted 10 miles southwards, we left it on July 31, and after having covered the remaining 23 miles in our *baidaras*, landed on August 3 on Bennett island, at Cape Emma.

"According to the survey of Seeberg, who has also determined the magnetical elements both here and on the journey—in ten places in all—Bennett island is a plateau, not higher than 1500 feet. By its geological structure it appears as a continuation of the plateau of Middle Siberia, which is built up, here also, of very ancient marine deposits (Cambrian), pierced by irruptions of basalt. In places one finds, under the sheets of basalt, deposits of brown coal with relics of vegetation, namely conifers. In the valleys of the island, bones of mammoths and other Quaternary-period animals, washed out of the deposits, are found occasionally.

"As to the present inhabitants of Bennett island, they are, besides the temporary visitor, the walrus, the polar bear and the reindeer. A herd of some thirty of the latter wandered on the rocky feeding-ground of the island. We fed upon them, and made out of their skins the fur cloth and the boots required for the winter journey. The following birds stay here: two species of *Somateria*, one sand-snipe, one bullfinch, and five species of gulls, including the roseate one.

"As for migratory birds, we saw one eagle which flew south to north, one

* I suppose that all dates are given in Baron Toll's statement in Old Style, and therefore add to them thirteen days.—P. K.

falcon which flew north to south, and geese whose flock went also north to south. Owing to fogs, we could not see the land wherefrom these birds came; neither could we see Sannikoff's Land, any more than during our last navigation.

"We are going to leave here the following instruments: a reflecting circle with artificial horizon, a Krause's inclinor, the anemometer, the photographic apparatus 'Norah,' and some others.

"To-day we are going southwards. We have provisions for fourteen to twenty days. All in good health. $76^{\circ} 38'$ N. lat., $149^{\circ} 42'$ E. long.

"(Signed) BARON E. TOLL.

"Bay of Paul Köppen on Bennett island,

"October 26 [November 8], 1902."

This is the last that has been heard of the indefatigable explorer of the far North, to whom science owes already so much concerning the physical conditions of the Arctic Regions during recent geological periods. The remarks which we find, even in the above short sketch of Bennett island, are in themselves of the greatest value. They show that the same old continent, which we see on the Vitim and in North-Western Mongolia, once extended far beyond the present northern limits of Asia; and that the relics of this continent have now, in the far North, the same character as I saw on the Vitim; namely, a backbone of old, probably Cambrian, crystalline rocks, levelled in the course of ages to the plateau form, and covered in places with relics of Tertiary woods (I found on the Vitim near the Holoï, petrified wood, which Fr. Schmidt identified as *Cypressinoxylum aleuticus*); these relics, in their turn, are covered with Post-Tertiary layers of basaltic lavas. Consequently, even in this high latitude (beyond $76^{\circ} 38'$), possibly at the northern extremity of what was then an immense continent, which spread from Middle Asia north-eastwards, coniferous trees used to grow during the Tertiary period; a result the importance of which every geologist will appreciate.

No news having been heard of Baron E. Toll for the nineteen months which have elapsed since he left the above document on Bennett island, we must admit, with the deepest sadness, that little hope now remains that we shall ever see the two gallant explorers, Toll and Seeberg, with their faithful hunter-companions, returning in our midst to hear our admiration of their work.

P. KROPOTKIN.

REVIEWS.

EUROPE.

GEOLOGY OF AUSTRIA.

'Bau und Bild Oesterreichs.' By Carl Diener, Rudolf Hoernes, Franz E. Suess, and Victor Uhlig. Also published in four parts separately, viz. 'Bohemia,' 'The Eastern Alps,' 'The Carpathians,' and the 'Austrian Plains.' Vienna: F. Tempsky; Leipzig: G. Freytag. 1903. Pp. xxiv., 1110.

THE names which appear on the title-page of this work are in themselves a guarantee of excellence. Each of the authors has taken charge of a district with which he is especially familiar, and the result is of that high standard which might have been expected. With the great advance which has been made by descriptive or regional geology during the last fifty years, it is no longer possible for one geologist to master the detailed stratigraphy of more than a small part of the European continent. A compendium of this kind, giving an account of all that has been done to elucidate the structure of a certain area, becomes more and more