

Another set of stamps depicting 'ice vessels' was issued on 15 November 1978 as part of a ship series which started four years ago. The most recent set features four widely different ships: *Chief Justice Robinson*, built in 1842 for the Toronto-Niagara River winter passenger run; *Northern*



FIG 1. First four stamps in series depicting Inuit way of life.

Light, which provided the steamer service between Prince Edward Island and mainland Canada from 1876 to 1888; *St Roch*, an Arctic supply ship from 1928 to 1948 (she also sailed through the North-west Passage twice); and *Labrador*, a diesel-electric icebreaker serving as an Arctic patrol vessel between 1954 and 1958. The face value of these stamps is 14 cents.

LETTERS TO THE EDITOR

MINERAL EXTRACTION IN THE SOVIET ARCTIC

Madam, The article 'An outline of mineral extraction in the Arctic' by P. Miles and N. J. R. Wright (*Polar Record*, Vol 19, No 118, 1978, p 11-38) was a highly useful review of the increasingly significant mining operations within the Arctic. As editor of *Soviet Geography*, I was particularly pleased to see such an important part of the article devoted to activities within the Soviet Arctic. Unfortunately, included in the discussion of these activities was a number of factual errors which you may wish to call to your readers' attention. Much of the information that follows is taken from the News Notes section that appears regularly in *Soviet Geography* and is based on reports of current mining and other economic-geographic developments in the Soviet press.

In discussing mining activities in the Soviet Union's North West Economic Region, the authors rightly stress the significance of the new Soviet-Finnish iron-ore project of Kostomuksha in

Karelia as a future supplier of the iron and steel mill at Cherepovets. Unfortunately, because of a confusion of similar names, this ore project is mistakenly identified on the accompanying map with the village of Kostamuksha, 280 km to the south. The ore centre of Kostomuksha is situated close to the Finnish frontier, at 64°50'N, and is shown in its approximate location by *The Times Atlas* (though with a garbled spelling). Soviet maps have not shown the new ore centre because it had not yet received urban status, which is usually identified with industrial activity. However, this status was bestowed on Kostomuksha in November 1977, and it can be expected to appear on Soviet maps henceforth.

In another nomenclatural confusion, the authors refer to nickel-copper mining complexes both at Nikel' and at Pechenga in the Kola peninsula. Actually there is only one mining centre in this area. It is officially known as *Pechenganikel'* (Pechenga Nickel Complex), after the small Barents Sea port of Pechenga, but the mine is at the town of Nikel' in the interior. Furthermore, the so-called Zhdanov mine and concentrator is at the nearby town of Zapolyarnyy, not at Nikel', as seemingly suggested in the article.

In both map and text, the authors associate the mining of niobium, tantalum and other rare metals with the apatite centre of Kirovsk. The rare metals are actually mined on the other side of the Khibiny mountains, at the separate mining town of Revda, about which little is published in the Soviet press because of the security aspects attached to rare metal production.

The article suggests some confusion concerning oil production in the Timan-Pechora region of the Komi ASSR. Text and map correctly refer to Ukhta as a centre of production, but they also identify the town of Pechora as an oil producer, and that is erroneous. The Pechora province in general has been identified with oil and gas, but the town of Pechora specifically is not involved in oil production. On the other hand, the authors might have mentioned the importance of the new oil fields of Usinsk and Vozey, north of Pechora; these fields are finally operating after a slow start, as reported in *Soviet Geography* (December 1975).

The treatment of the west Siberian gas fields appears to be based in part on outdated information and does not seem to do justice to this increasingly important source of Soviet natural gas. (The west Siberian oil area, of course, falls outside the Arctic, as defined.) The main producing gas fields in west Siberia are Medvezh'ye, which began operation in 1972, and Urengoy, which, as the authors indicate, followed shortly after publication of their article in 1978. But they err in assuming that two other northern 'super-giant' fields, Yamburg and Zapolyarnyy, have also been linked to the pipeline system and have started production. These are still being held in reserve for later development. The same is true of a field identified as Tarko-Sale, which is in fact not a very significant element in the gas reserves. Recent Soviet sources, as reported in the *Soviet Geography News Notes* of January 1976, indicate that instead of proceeding farther northward with their gas development, the Russians first intend to develop gas fields between Urengoy and the more southerly oil fields. Both pipelines and a railway from the south are under construction in accordance with this development strategy.

In an odd slip, the section on the important Noril'sk copper-nickel complex of east Siberia mentions the Yarega titanium deposit. This Yarega is none other than the Yarega oil deposit previously mentioned in the discussion of the Timan-Pechora region of the north-west region; the titanium ores, not yet commercially exploited, underlie the oil-bearing formation.

These points notwithstanding, it should be stressed that the authors have performed a useful service in pulling together the widely scattered information on Arctic mineral activities, including the Soviet developments.

In view of my own personal interest in Arctic mineral developments in the Soviet Union, I would be pleased to provide any additional information to the authors in future work.

Yours faithfully,

Theodore Shabad

19 August 1978

Madam, The gist of Theodore Shabad's criticism appears to be that we did not take into consideration the News Notes in *Soviet Geography* for up-to-date information. We did consult *Soviet Geography*, but unfortunately some of the more recent issues were not available to us. On the other

hand, we used a wide range of alternative, sometimes unpublished sources which, it now emerges, presented a different picture. Shabad would presumably agree that such differences are not uncommon when dealing with information about the Soviet Union.

We will comment on the individual points raised in Shabad's letter in the order mentioned.

Kostomuksha. We soon realized that there was some confusion about the spelling of this site, for which no source available to us gave a precise map location. Unwisely, perhaps, we relied on the Soviet atlas that provided the base-map for the figures and, given the spelling uncertainties noted, assumed fairly reasonably that the new iron-ore centre was at the village of Kostamuksa as located by that atlas; if Shabad's information is correct, it now appears that the proper location is provided in *The Times Atlas*.

Pechenga. If Shabad's remarks are correct concerning the nickel-copper mining complex at Nikel', they certainly resolve a terminological ambiguity that had struck us in accounts of these mines. Sources regularly speak of the 'Pechenga deposit' and the 'Pechenga complex' without making it clear that the actual mining activities are not centred in Pechenga.

Kirovsk. We are grateful for the information about Revda, but consider that Kirovsk is a close enough location for the rare metal mines (about which nothing further seems to be known) in a small-scale article attempting briefly to describe the main mining operations active in the Arctic.

Pechora province. In the course of geological research, after having submitted the article, we began to realize that our coverage of the oil and gas industry of the Soviet Arctic was inadequate and some of our sources out-of-date. Thus although the Pechora province has been extensively explored for hydrocarbons, we agree that there are no currently productive oil wells near the town of Pechora, although there are small nearby gas fields. Similarly, we realized that there are oil fields at Usinsk and Vozey, but did not know they had started production; this is, of course, a rather serious oversight, considering the great importance of these fields.

West Siberian gas. Had we seen the News Notes in *Soviet Geography* of January 1976, we would have realized that the development strategy for these gas fields had altered radically since the sources (1965, 1974) that we were forced to rely on.

Yarega. The 'transportation' of the Yarega titanium deposit from the Komi ASSR to east Siberia is none other than a gross error inherited from the original report by us on which this article was based, which resulted from a misreading of one of our sources.

The article as a whole, avowedly only an 'outline' of Arctic mineral extraction, represented a stage in a research project which for us continues. In that spirit we welcome Shabad's corrections and additional information.

Yours faithfully,

P. Miles and N. J. R. Wright

22 September 1978

MONTHLY TEMPERATURE SUMMARY FOR BRITISH ANTARCTIC SURVEY STATIONS

[Information supplied by D. W. S. Limbert, British Antarctic Survey, Cambridge.]

Station	Air Temperature (°C)														
	Grytviken (South Georgia) (88903)			Faraday (Argentine Islands) (88952)			Halley (89022)			Rothera (89062)			Signy Island (88925)		
Year/Month 1978	Mean	Extreme Max	Extreme Min	Mean	Extreme Max	Extreme Min	Mean	Extreme Max	Extreme Min	Mean	Extreme Max	Extreme Min	Mean*	Extreme Max	Extreme Min
June	-0.5	+10.5	-8.5	-5.2	+6.9	-16.9	-24.5	-13.1	-44.4	-8.7	-0.1	-19.9	-4.8	+9.2	-17.6
July	-2.3	+9.9	-11.7	-17.9	-1.6	-33.3	-28.7	-10.4	-45.2	-19.5	-6.7	-29.4	-13.4	+3.5	-30.5
August	+1.6	+9.5	-6.6	-12.7	+4.5	-35.0	-25.0	-10.7	-44.3	-14.7	+1.6	-36.0	-7.1	+6.2	-25.3
September	+3.5	+14.6	-6.2	-7.7	+3.2	-35.1	-26.6	-7.5	-47.7	-7.8	+3.7	-36.0	-2.9	+7.4	-24.8

* Mean = $\frac{1}{2}$ (mean + mean min)