

Arctic Trip Frozen Out

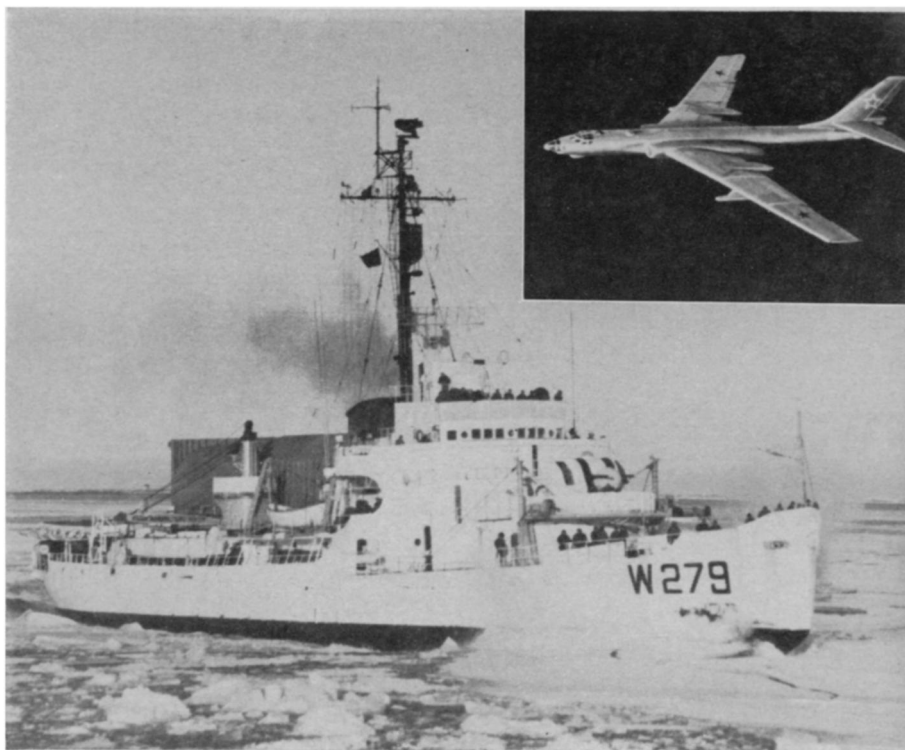
**Soviet hospitality
proves as cold
as the ice**

The largest, most modern, most powerful icebreakers in the world, including the 440-foot nuclear powered Lenin, belong to the Soviet Union. They are part of the price the Soviets pay for exploring and exploiting their thousands of miles of Arctic coastline.

Thus, there must have been a certain amount of self-satisfied smirking in Moscow between August 24 and 28 when two U.S. Coast Guard icebreakers, defeated by the Arctic ice, had to ask permission to cut through U.S.S.R. territorial waters on their way around the perimeter of the Arctic Ocean.

The Coast Guard ships, Edisto and Eastwind, both 269 feet long and conventionally, rather than nuclear powered, were attempting the first circumnavigation of the Arctic Ocean (SN: 9/9). From their rendezvous off Norway, they had gotten almost halfway around the Soviet side of the Ocean when they were stopped by wind-packed ice piled up against Severnaya Zemlya, a group of islands.

When helicopter reconnaissance flights failed to find open water or breakable ice, the two ships notified the Soviets of their intention to go through the Vilkitsky Straits between Severnaya Zemlya and the Taymyr Peninsula.



U.S. Coast Guard Photos

Icebreaker Eastwind on thinner ice, and Badger (insert). Tag in the Arctic.

At that point, whatever thaw there may have been in U.S.-Soviet relations froze over solidly. The Soviets replied that the 22 nautical mile wide straits were territorial waters. Since the U.S.S.R. claims a 12-mile wide territorial sea around its possessions, the straits easily qualify as 100 percent Soviet waters—although under maritime law, the right of innocent passage through straits connecting international waters is guaranteed.

Then, on August 28, in answer to a radioed message from the ships, the Iron Curtain slammed shut across the straits. The Soviets made it unmistakably clear that no U.S. Naval ship was going to get through.

The State Department issued a strong protest and sent a diplomatic note to the Soviet Foreign Ministry in Moscow denouncing the action, but both icebreakers turned back, their history-making effectively frustrated.

Though that was the end of the incident, it is not necessarily the end of the whole matter. The Soviets have not yet replied to the note, a State Department spokesman notes, but it is expected that they will “and we will go from there.” Until then, no other form of protest is planned. While the incident struck a sour note in U.S.-U.S.S.R. dealings, there will, in all probability, not be any change in our overall relations, he says.

The National Academy of Sciences, which spearheads our scientific relations with the Soviets, had no comment on the effects the incident may have on

those relations. Academy officials are reading press accounts with interest but have nothing yet to say on the subject.

The sourness of the turnback was intensified somewhat by the constant surveillance of the two research vessels by Soviet aircraft—Badger bombers. The planes, which have also followed other U.S. research expeditions into the seas near the U.S.S.R., kept the ships in sight almost from the moment they began the journey.

Despite the untimely end to their proposed 8,000-mile journey, the icebreakers did manage to collect a large amount of oceanographic data about a part of the world little studied by Americans. Most of the work, including studies conducted by scientists from the Universities of Washington and Southern California, was sponsored by the Office of Naval Research.

The principal area of research, according to the Coast Guard was physical oceanography—location and charting of water masses of the Arctic, Atlantic and Pacific Oceans. The manner and rate at which they mix in the Arctic strongly influences weather patterns all over the globe.

Every 200 miles, the ships stopped to gather water and plankton samples from pre-determined depths down to the ocean floor.

In addition, Edisto and Eastwind made continuous depth soundings, regular weather observations and, when time permitted, analyzed air and water samples for radioisotope contents.

All data from the circumnavigation

was to have been deposited in the World Data Centers in both Washington and Moscow. It is unlikely, however, that the information would have told the Soviets much new about the Arctic Ocean which, near their shores, at least, has been pretty much a Russian lake.

The debacle was quite unexpected, U.S. spokesmen admit, although the Coast Guard had had some warning that pack ice was unusually heavy this year. In 1965, the icebreaker Northwind had successfully rounded Sever-

naya Zemlya in open seas, but turned back in the course of its mission.

This, apparently, encouraged hopes that even if the ice cover was continuous, it could be easily broken., Operating data from the ships, which were built during World War II, was to be fed into the design of future ice-breakers.

Both the State Department and Coast Guard now seem ready to let the matter simmer quietly. No further protests nor any further attempt at Arctic circumnavigation are planned. ♦

Institute for Physics in Stockholm. Success in the undertaking was reported in a joint press release in July 1957, with scientific details of the experiment outlined in THE PHYSICAL REVIEW for Sept. 1, 1957.

Shortly thereafter, a team of scientists at the University of California in Berkeley attempted to repeat the synthesis of element 102, using the same technique the international group reported. Their efforts were unsuccessful. However, these negative experiments were "immediately followed in 1958 by experiments of a different character that were successful in producing and identifying an isotope of element 102."

Thus began the long, controversial story of the discovery, undiscovery and rediscovery of element 102. The international group, claiming the right of discoverers, christened the element nobelium, for the institute and its namesake, Alfred B. Nobel.

Within less than three months, and before any other laboratory had had time to check the results, the International Union of Pure and Applied Chemistry met and accepted the name—prematurely as it turned out.

It wasn't until the following year that the Berkeley group had a chance to undiscover nobelium, and then rediscover the element 102.

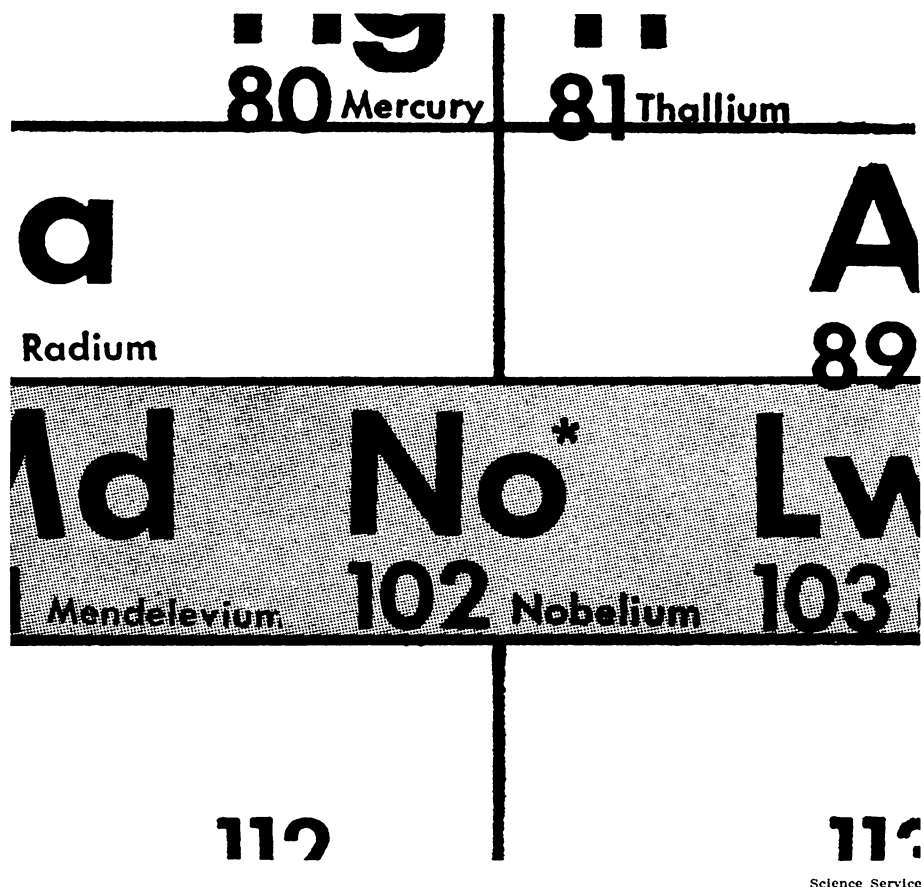
And ever since, the name nobelium has been in limbo. For a decade, the people who draw up charts of the periodic table of the elements, knowing that 102 had been named by non-discoverers, accompanied the name on the charts with an asterisk—the scar of its uncertain lineage.

But this is the year the asterisk comes off. In an article in the September PHYSICS TODAY, the Berkeley group, while giving up none of their rights as discoverers to name the element, acceded to the name the element has carried since 1957. Element 102 is now nobelium, unadorned. Asterisk-embellished charts are out of date.

"Recent experiments at Berkeley have made it possible to clarify the complex history of the discovery of the element 102 and to christen it with a new name—'nobelium' according to the article, 'The Search for Element 102'."

The suggestion is made by two members of the Berkeley team who originally undiscovered and then rediscovered element 102. Their carefully outlined history of the rocky road of element 102 makes it clear that, with their collaborators, they reached this conclusion only after "a great deal of thought." Some say they would have preferred the name "rutherfordium," for Ernest Rutherford, from whose laboratory in England they trace their traditions.

Because of the "passage of time and



The stigma comes off with the asterisk. Nobelium is legitimate.

NOBELIUM'S TORTURED TRAIL

Discovery, Undiscovery, Rediscovery

The man-made chemical elements, at the extreme upper end of the periodic table, are all heavier than uranium, the heaviest naturally occurring on earth. The privilege of naming a new element, natural or man-made, traditionally rests with its discoverer or discoverers.

Chemical identification, separating the new element from all previously known ones, was the classical test of all those discovered through number 101, including the first synthetic transuranium element, neptunium. There was, therefore, little doubt about the identification.

Beginning with element 101, the key test of the discovery has been

identification of radioactive isotopes of the element, all of which have very short lifetimes. The discovery of these elements—102, 103 (lawrencium) and a still-tentative 104—has consequently been much more difficult to prove, since they are based on synthesis and identification of one single atom at a time.

So it is with relief that most scientists greet this week's end to a 10-year controversy concerning the naming of element 102.

The first attempt to discover number 102 was made by a group of scientists from Argonne National Laboratory, the United Kingdom's Atomic Energy Research Establishment and the Nobel