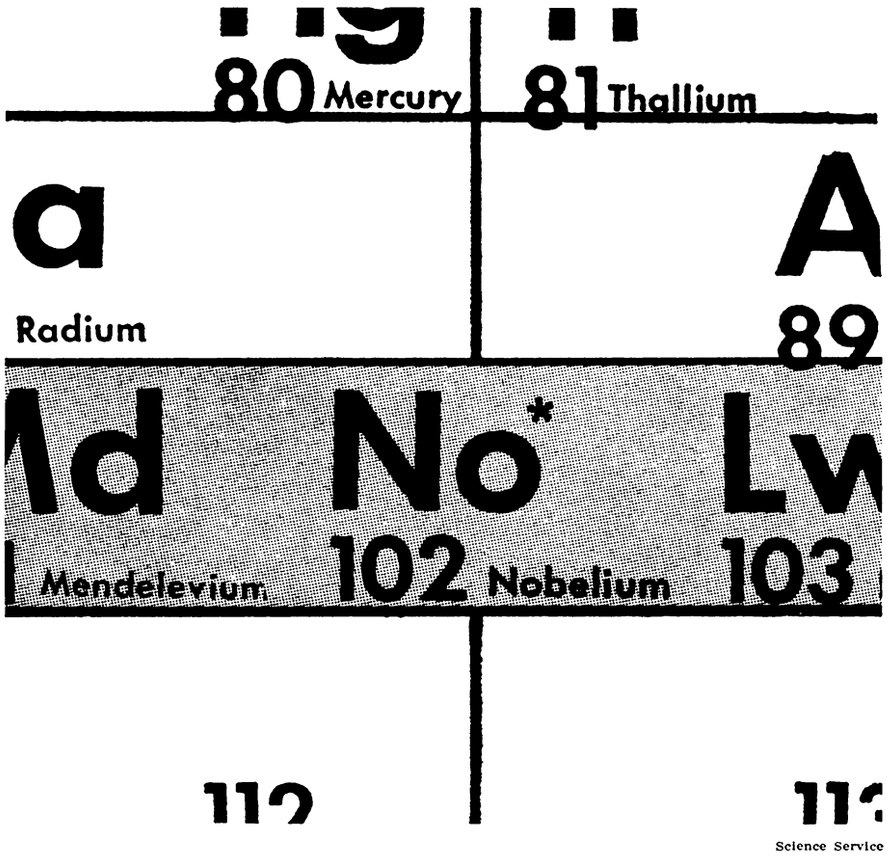
was to have been deposited in the World Data Centers in both Washington and Moscow. It is unlikely, however, that the information would have told the Soviets much new about the Arctic Ocean which, near their shores, at least, has been pretty much a Russian lake.

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 Severnaya 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 icebreakers.

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. ◈



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 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 nondiscoverers, 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 degree of use of this honorable name in numerous text books and scientific writings throughout the world," the element has been "renamed" nobelium.

Russian scientists, also attempting to duplicate the synthesis of the reportedly new element, started work in the fall of 1957. In the late summer of 1958, Dr. Georgy N. Flerov of the Dubna Laboratory near Moscow reported that the Russians had also produced an isotope of element 102, but confirmation is lacking.

The Berkeley team making the 1958 report on element 102, in the first PHYSICAL REVIEW LETTERS dated July 1, consisted of Drs. Albert Ghiorso, Torbjorn Sikkeland, John R. Walton and Nobelist Glenn T. Seaborg, now Chairman of the Atomic Energy Commission. ◈

PERSONALITY AND INTELLIGENCE

Rare Study Tracks Half a Lifetime

An astronomer tracks the stars through the centuries; a psychologist has trouble tracking people through childhood, much less a lifetime.

Subjects get lost; investigators die or move, others feel little inclination to follow their fellow human beings for years on end—all of which makes study based on years of observation of the same subjects a rare thing in the social sciences; though no method yields more fertile evidence on growth and development.

A few such studies exist: among them Project Talent, a 10-year-old study with 440,000 students and the Harvard University child-rearing study with some 300 children, now about 30 years old, and the 38-year-old Berkeley Growth Study.

The Berkeley project offers an unusually complete set of records on the personal and mental growth of some 54 children born in 1929.

Over the years, Dr. Nancy Bayley, recipient of the American Psychological Association's distinguished scientist award in 1966, has conducted some 3,000 interviews with her subjects; more data has been collected by colleagues.

The Berkeley study forced a basic revision in psychological theory with its revelation that the vaunted Intelligence Quotient is not set at birth, but can be enhanced or depressed in early childhood.

Of the original 74 babies, 11 dropped out the first three years. From then until they were 18 years old, the children were seen regularly at least 40 times each. But to do the 36-year testing, Dr. Bayley had to locate all the children again—a major task which often inhibits psychologists from ever beginning such a study.

Dr. Bayley located all but two of the 63, most of whom still lived in California, and was able to test 54 of them. For reasons of objectivity, the actual interviews were done by two independent researchers not familiar with the group.

Last week, Dr. Bayley, still at the University of California in Berkeley, summed up the latest series of tests on her now 38-year-old subjects before the annual meeting of the A. P. A.

One basic conclusion: You can't tell a girl's I.Q. by the way she acts. At 16, an intelligent girl has one personality; at 36, she has another altogether.

Boys, on the other hand, maintain a fairly consistent relationship between personality and intelligence from about the age of four.

Another conclusion: A boy's mental growth depends a good deal on his mother's treatment of him, while girls tend to return to their innate genetic potential in adulthood, more or less unaffected by early family life.

Dr. Bayley, now a white-haired, soft-spoken woman, was a pediatrician in 1929 when she selected the group of healthy, full-term babies from a Berkeley hospital. They came from white, English-speaking families, but covered all income levels. As adults, the subjects range in education from three to four years of schooling to a degree in medicine.

Part way through the study, said Dr. Bayley, it became evident that boys and girls could not be lumped together in either their mental or emotional development.

"Again and again we found that correlations between the boys' behavior and their mental growth were quite significant. But the only thing we could find to correlate with the girls' I.Q.s was the intelligence of their mothers."

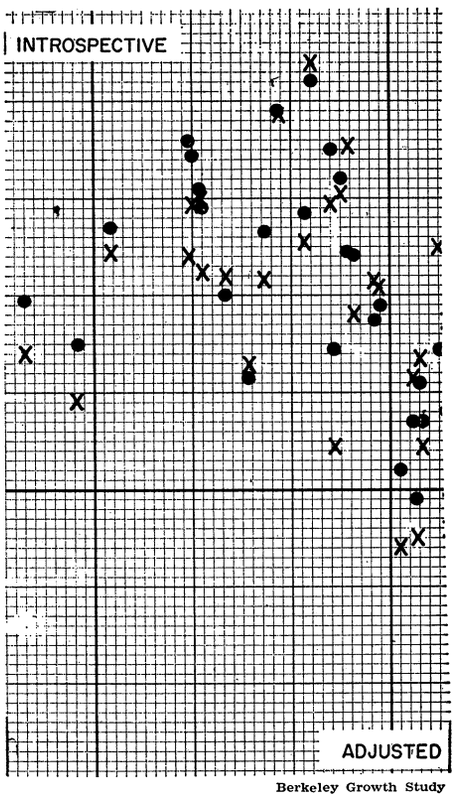
Generally speaking, the personality of an intelligent man falls in the introspective rather than expressive range. He tends to be critical, socially perceptive, wide-ranging in interests and concerned with philosophical problems. And he hasn't changed much since he was a teenager.

Rebellious teenagers, Dr. Bayley found, whether bright or dull, indicate mental ability by their means of expression. The more intelligent talk rebellion, the less intelligent act it out.

Similarly, less intelligent men are impatient and impulsive, prone to vent hositilities and unable to delay satisfactions.

Between the extremes fall personality traits such as: withdrawn, distant, gregarious, calm, talkative, ability to fantasize or think in unusual ways—which appear to bear little relation to intellectual ability.

For women 36 years old, the personality pattern is similar though much less pronounced. Intelligent women tend to be thoughtful and insightful; less intelligent women are conventional, bland, vulnerable and anxious—female counterparts of the male's impulsiveness and lack of control. Cheerfulness, poise and gregariousness have little to do with intellect.



Male intelligence at 16 and 36.

The curious fact about women lies in their complete switch from the teenage years. At 16, conventional, somewhat negative girls are often intelligent while thoughtful or gregarious girls tend not to be.

In other words, a gifted teenage girl has such attributes as a weak ego and a thin skin, said Dr. Bayley. She is not candid nor is she interested in the opposite sex.

"It may be," says Dr. Bayley, "that the emotional turmoil of adolescence is more disruptive of the girls' than of the boys' mental processes."

Negative qualities also show up at other times in the girl's life. Unhappiness at the age of one relates somewhat to a high intellect later in life. The opposite was found to be true for boys.

Whatever the explanation for such female personality vagaries, they seem