Richardton and New Leipzig Meteorites Returning to North Dakota

By Ed Murphy

On the evening of June 30, 1918 (about 10:00 p.m. mountain time), the Richardton meteorite fell to earth on either side of ND Highway 8 about equidistance between the towns of Richardton and Mott (fig. 1). The fireball of the meteoroid, as it raced across the sky, was witnessed over an area of at least 18,000 square miles (fig. 2). A witness who was 130 miles to the southwest said, "*As it came down, it illuminated the landscape to almost the brilliancy of sunlight*." Witnesses closer to the fall area likened the sound of the meteoroid to an "*airship*" or motorcycle. The 200-pound meteoroid broke into at least 200 pieces perhaps at a height of 60 miles above the earth. The sound of the breakup was said to have been a "*fearful and terrifying noise,*" "*a deep tone thundering,*" "*a violent explosion that shook houses and rattled windows*." Leo Kern took shelter behind a telegraph pole and said he could hear pieces of the meteoroid fly through the air like "*whistling bullets*" and he heard some of these pieces strike his barn.

On August 2, John Muggli of Richardton wrote to the University of North Dakota, acting as a broker on behalf of two farmers who were willing to sell specimens of the Richardton meteorite. State Geologist A.G. Leonard was in the field during the summer and did not receive the letter until late September. Later that fall, Leonard sent a specimen, that he received from Muggli, to George Merrill, Head Curator of Geology at the Smithsonian. Merrill verified it was a stony meteorite, but interestingly enough noted that it was quite weathered and that it probably belonged to an earlier fall, that is, it was not the Richardton meteorite.

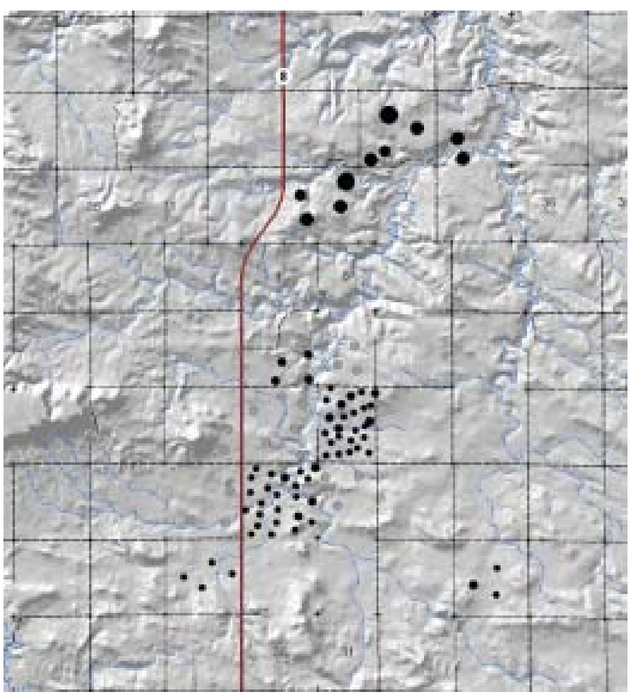

Figure 1. The relative size and position of Richardton meteorite specimens along ND Highway 8 about half way between Richardton and Mott. Specimens were collected along a northeasterly trending area that is eight miles long and four miles wide.

Leonard was attempting to purchase specimens of the Richardton meteorite when he received a letter dated November 10, 1918 from T.T. Quirke. Quirke, a professor of geology at the University of Minnesota, had been sent out by that department to investigate the fall. There is evidence that John Muggli contacted Quirke when he was unable to reach Leonard. Quirke's handwritten letter to Leonard, as he returned to Minneapolis by train, is somewhat apologetic in tone, which is understandable because Quirke had been a graduate student in the department of geology at the University of North Dakota and had worked directly under Leonard until he graduated in 1913. He was obviously concerned that Leonard would look unfavorably upon his collecting in North Dakota when he wrote, "*I started suddenly on the trip or I should have advised you of it in case you cared to accompany me or to save us the expense by doing the work yourself. So far as I know your interests are not very keenly addressed to meteorites and I hope you will not consider me an invader on your bailiwick.*" Quirke was familiar with both the geology and the people of western North Dakota having mapped the geology of the Killdeer Mountains for this Master's thesis.

Leonard replied immediately (November 12) with a long letter, but unfortunately we do not have a copy of that letter in our files. We do have a copy of Leonard's December 11, 1918 letter to Quirke where he asks if he can purchase one meteorite for $50 (the amount that Dean Babcock could spare from the university's museum fund) and another for $15 to $20 that would go to the geology department. Quirke was

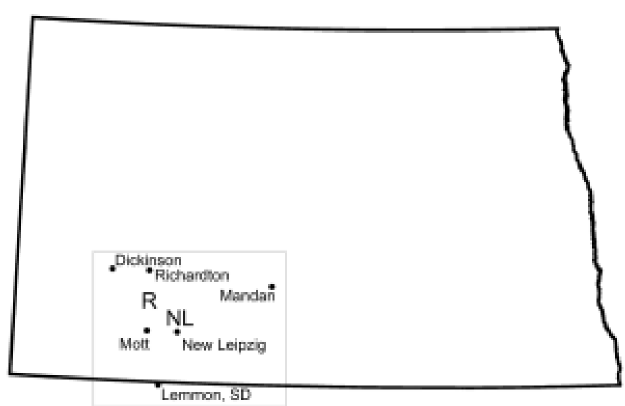

Figure 2. The area within which the Richardton meteorite (R) was witnessed is outlined. The position of the New Leipzig meteorite is shown by NL.

able to sell him one specimen for $50 and another for $12. Quirke had obtained 17 specimens by late November, 1918 and was still purchasing Richardton specimens from the Muggli's in the early 1920s. Quirke sold three specimens to the Smithsonian.

In 1936, Daniel Buckwitz, Jr. discovered a 44-pound iron meteorite while constructing a farm-to-market road on his farm nine miles north of New Leipzig (fig. 3). Buckwitz and his fellow workers thought the rock looked unusual and was very heavy for its size, roughly the size of a small loaf of bread (11 x 6 x 5 inches). The following year, the Smithsonian purchased the New Leipzig meteorite for $150. Buckwitz called the meteorite sale *"a blessing from Heaven and I thank God for it."*

In 1918, Quirke was apparently paying anywhere from $5 to $25 per pound, depending upon the asking price and the quality of the specimens. The Smithsonian paid about $3.40 per pound for the New Leipzig meteorite in 1937. A year later, State Geologist Howard Simpson quoted a fair price for a Richardton specimen at $1 per pound. In 1967, Eastern Meteorite Investigations out of Alexandria, Virginia was offering to purchase meteorites at $18 per pound. Meteorites may now sell for more than $300 per pound, some substantially more so.

In 1998, Nels Forsman (Professor of Geology, University of North Dakota) and I wrote a Survey publication on North Dakota meteorites. We wrote the report to help people identify meteorites in the hope that more would be found in North Dakota. We placed a colored photograph of the Richardton and Drayton meteorites on the cover of the report because we thought it would help people identify meteorites in the field. The meteorite publication greatly increased the number of specimens that were brought to our office for identification. Unfortunately, these have all turned out to be "meteor-wrongs" and it has become clear to me that people need to be able to see meteorites in person to help them know what to be looking for in the field.

With this in mind, in 2001, the ND Geological Survey and the State Historical Society of North Dakota sent a letter requesting that the Smithsonian return two specimens of the Richardton meteorite and the New Leipzig specimen to North Dakota so we could exhibit them in the ND State Museum (Heritage Center). We chose these because the Richardton is a stony meteorite, the most common type, and the New Leipzig is an iron meteorite. Although very different in overall appearance, they exhibit several characteristics that are shared by all meteorites. Unfortunately, the Smithsonian denied our request. We were about to approach our congressional delegation for assistance with this matter when the terrible events of September 11, 2001 occurred and we decided that our delegation had more important matters to attend to.

In 2005, the long-planned Corridor of Time exhibit began to move forward. Once again, the Department of Mineral Resources and the State Historical Society of North Dakota sent a letter to the Smithsonian requesting a loan of the Richardton and New Leipzig meteorite specimens, this time for display within the Corridor of Time exhibit. In the context of this display, this would afford people not only the opportunity to familiarize themselves with meteorites, but also for us to place these meteorites into the context of the asteroid impact and dinosaur extinction theory. For a second time our request was denied, but this time we had involvement from Senator Byron Dorgan. After several meetings and communications between Senator Dorgan and his staff with the staff of the Smithsonian, the Smithsonian agreed to a three-year renewable loan of the New Leipzig specimen with the State Historical Society of North Dakota. In the meantime, they had informed us that many of their specimens of the Richardton meteorite were on loan from the University of Minnesota. In 1966, the University of Minnesota had loaned nine specimens to the Smithsonian. So, I contacted E. Calvin Alexander, Jr. (Professor of Geology and Curator of Meteorites) of the Geology Department at the University of Minnesota. Alexander had assisted Forsman and me some years before when we were writing our publication on meteorites. In

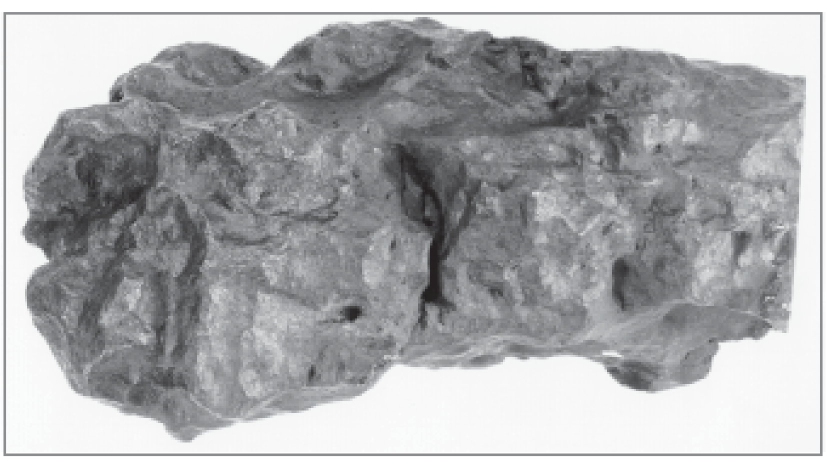

Figure 3. A side view of the New Leipzig meteorite. The iron meteorite measures 11 x 6 x 5 inches. Photograph courtesy of the U.S. Natural History Museum (NMNH specimen no. 1210, S.I. negative number 1631D).

response to our request, that the University of Minnesota consider loaning North Dakota two specimens of the Richardton meteorite for display in the Heritage Center (fig. 4), Alexander responded, "*This sounds like an excellent idea to me. I have checked with the Department Chair, W.E. Seyfried, Jr., and he is supportive. The Richardton Meteorite shower has played a significant role in Meteorite Science and it seems singularly appropriate to have material from it on display at the ND State Historical Society or the ND Geological Survey*." Alexander's sentiments reaffirmed those made almost 90 years earlier by T.T. Quirke in a letter to A.G. Leonard "*...one of my pet ideas is that every State University should pursue an exhibition of specimens of all the meteorites which have fallen within its own borders.*" Although these specimens are going to a state museum rather than a state university, we feel very confident that T.T. Quirke would approve.

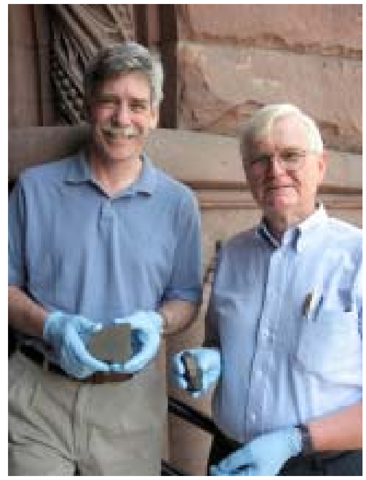

Figure 4. University of Minnesota Department of Geology and Geophysics Chair William E. Seyfried, Jr. (left) and Professor and Curator of Meteorites E. Calvin Alexander, Jr. (right) hold specimens of the Richardton meteorite that the University is loaning to the State of North Dakota for display in the ND Heritage Center.

The World's Largest Meteorite

By Lorraine Manz

The world's largest known meteorite was found in 1920 on the Hoba West farm near Grootfontein in northern Namibia. The then owner of the farm is said to have come across the object quite by chance. While plowing one of his fields, the farmer heard a loud metallic scraping just before his ox-driven plow came to a complete halt. The obstruction, as he soon discovered, turned out to be a 66-ton meteorite.

The Hoba meteorite, as it was later named, remains where it landed about 80,000 years ago. It measures almost 9 x 9 feet and is just under 3 feet high. Compositionally it consists almost entirely of a solid solution of about 83% iron and 17% nickel (taenite), which places it within a rare class of meteorites called ataxites.

Another remarkable feature of the Hoba meteorite is that it left no crater or any other signs of impact when it arrived on Earth. One possible explanation for this is that it entered the earth's atmosphere at a very shallow angle and was slowed so much by atmospheric drag that it was essentially in free-fall. In addition, its flat shape may have caused it to skip across the earth's atmosphere in the same way that a flat stone, thrown at a low angle, can be made to skip across water.

The Hoba meteorite, with Lorraine Manz for scale. The Namibian (then South West African) government declared the Hoba meteorite a national monument in 1955 to protect it from vandalism.