

## Oldest Things On Earth

By Joy Aschenbach, National Geographic News Service.

WASHINGTON — Age: 3.8 billion years. Older than the oldest known fossils and dinosaurs. Almost as old as the Earth itself. Rocks lying just south of the Arctic Circle in Greenland are the oldest things ever found on Earth.

The only objects known to be older either landed here from space — meteorites — or were brought back from the moon. The rocks at Isua, a desolate region of southwestern Greenland, are considered by scientists to be the best-documented oldest rocks ever discovered.

To rank as oldest today, rocks must be at least 3.8 billion years old, part of the Earth's early crust. The designation "oldest" itself has aged more than a billion years in the last decade.

### Off By a Billion

"Then years ago 2.5 billion-year-old rocks were thought to be the oldest. Now we know that they were actually at least a billion years too young," said Dr. Joseph Arth, a research geologist at the U. S. Geological Survey.

The Isua rocks, which were first dated by Dr. Stephen Moorbath at Oxford University, have been recognized as oldest for about seven years, but geologists believe that there could be even older rocks — still unknown — somewhere on the 4.5 billion-year-old Earth. "Very old" rocks — roughly 3 billion years old or more — have been discovered in such diverse places as Zimbabwe, Australia, Siberia, and Minnesota.

But "Isua is the starting point for information about the ancient Earth", said geologist Robert F. Dymek of Harvard University. 15,764 — J. A. R — W

"Unraveling the details of the volcanic, sedimentary, and tectonic events that formed this complex geologic area will add substantially to our understanding of the early history of the Earth as well as the origin of the continents." The age of the Earth itself has been estimated from studies of meteorites and moon rocks.

Scoured by glaciers that left fresh exposures of rock, the region is a geologist's gold mine because it is the only place on Earth where so many ancient rocks are known to lie so close to

the surface. Ranging in age from 2.5 billion to 3.8 billion years, these rocks also have remained undisturbed and better preserved because they are located near the edge of a vast icecap.

"There is nothing but rocky rubble everywhere. It looks like a lunar landscape", said Dr. Dymek, who has camped out in the area—reachable only by helicopter — to collect hundreds of samples ranging from fist size to football size. His research is supported by the National Geographic Society, the National Science Foundation, and Harvard.

### Not Much to Look At

As old as they are, the Greenland rocks look like ordinary everyday rocks — subdued shades of gray, green, rusty red, and black. And their chemical makeup is similar to rocks formed at much later times in the geologic past.

This indicates, Dymek said, that the processes now operating at the surface of the Earth — from weathering to sedimentation and volcanic eruptions — were probably happening in a similar way then. For example, old metamorphosed basalt-type volcanic rocks at Isua are similar in chemical composition to rocks found on the ocean floor today. Slicing the rocks transparently thin for microscopic examination and X-ray analysis, Dymek is trying to determine how they were formed, the changes they have undergone, and what they were like originally.

"The Earth has had a long, checkered history. In the millions of years of its development, the rocks have been subjected to tremendous forces of heat and pressure and have been smashed beyond recognition," he said. "We are trying to reconstruct what happened."

So far his research at Isua indicates that the Earth's early crust may not have been as thin as scientists now think. The thickness of the crust is determined by the production of heat in the Earth. Some scientists have theorized that the Earth was so hot inside that the crust on top could not have been thicker than 3 to 5 miles.

In an Isua rock, Dymek said he found a mineral called kyanite that forms at geologically moderate temperatures and pressures deep within the Earth's crust. The presence of kyanite

raises the possibility, he said, that the crust at that time may have been as thick as it is today, about 15 miles or more.

### Signs of Life

The Isua rocks, first found when the Geological Survey of Greenland was mapping the region of the late 1960s, have been slow to yield their ancient secrets. They are being subjected to all sorts of tests by scientists in England, Germany and Denmark, as well as the United States.

At the University of Maryland, for example, scientists are trying to find signs of life in the rocks to better pinpoint the origin of life on Earth. Current scientific evidence indicates that some type of micro-organism existed on this planet at least 3.5 billion years ago.

The rocks at Isua, Dymek said,

indicate that some of the ingredients necessary for life to have formed, such as hydrocarbons, were here 3.8 billion years ago.

## P.C. Career Club

The Polk Central Chapter of the Career Exploration Club of North Carolina has organized for the year 1980-81 officers are: President, Joey Maddox; Vice President, Stacey Stephenson; Secretary, Suzanne Nelson; Treasurer, Missy Wilhelm; Reporter, Jill Weicker; Sentinel, Lisa McFalls; Sponsor, Mrs. Eloise T. Johnson.

For most activities at kitchen counters, a homemaker needs a work surface three inches below her elbow.

## 100 Years Of History



....This was once the home of William Gillette the famous actor. It later became "Thousand Pines Inn" which was a well known hostelry until it was reduced in size to again serve as a private residence a few years ago. It is perched on a gently sloped knoll and is surrounded by 2 acres of land with a magnificent view of the mountains. The sturdy, cedar shake shingled manse has rooms that are large and airy. It would be suitable for a family 'year round' residence or it could serve nicely as a summer retreat. A property with potential. Priced at \$150,000. (MLS No. 319). Ask for your own private tour today.

## TOWN & COUNTRY-KNOBLOCK REALTY



P.O. Box 906—937 S. Trade  
Tryon, N. C. 28782  
704-859-5806

P.O. Box 755 — Hwy. 108  
Columbus, N. C. 28722  
704-894-3531