The Fossil Frontier

National Park Service
U.S. Department of the Interior

John Day Fossil Beds
National Monument

Paleontologists (from left) Furlong, Stock, Merriam, and Chaney

Paleontology became popular in the 19th century. Thomas Jefferson told Lewis and Clark to look for living giant sloths in the west. The term 'paleontology' was coined in the 1820s to describe the new branch of science dedicated to the study of ancient life. Charles Darwin published On the Origin of the Species in 1859, giving voice to a new idea that plants and animals evolve by way of natural selection in an ever-changing world. A growing awareness for the long age of the earth riveted minds from university halls to street corners. Scientists sought fossils to answer difficult questions about the nature of life.

The Oregon Discovery

Thomas Condon

In 1862 gold was found near present-day Canyon City. While guarding wagons of gold destined for ships on the Columbia River, Union calvary troops noticed fossils along the way. They collected what they could and took their fossils to Thomas Condon, a congregationalist minister in The Dalles. Condon was well known to locals as an avid geologist. Condon recognized the importance of the fossils and joined the soldiers on their return to the fossil beds. It was here in a world of colorful eroded gullies and pinnacles that Condon found a stunning abundance of ancient life. He returned to the area frequently, eventually hiring men to help prospect for him. In what is now the Blue Basin area of the Sheep Rock Unit, he found so many fossils that he named part of the valley The Cove. He even sent some of the fossils he found to prominent east coast paleontologists. These paleontologists were tantalized by the potential for their own great finds just waiting for discovery. The word was out; there were fossils in Oregon!

Aggressive Competition

E.D. Cope and O.C. Marsh

In 1870, Condon loaned a box of fossils to world-famous scientist Othniel C. Marsh of Yale University. Marsh was known as America's first professor of Paleontology. Marsh was particularly interested in a small skull of a three-toed horse Condon had found. Understanding the mystery of the horse family tree was a passion for Marsh.

Yale University launched an expedition led by Marsh in 1871. Guided by Thomas Condon, Marsh only worked in The Cove for a week. By the end of that week, Condon grew disappointed by Marsh's apparent lack of interest in the fossil beds. Without telling Condon, he secretly lured Condon's prized collectors, Leander S. Davis and William Day, into working for him. Attracted by the better pay Marsh offered, they sent hundreds of prime specimens East over the next 15 years. Marsh wanted to expand Yale's growing paleontology collection with Oregon specimens and he took the credit for their discovery.

Othniel Marsh had many rivals. Chief among them was Edward Drinker Cope, a brilliant young scientist with influential friends at the Academy of Natural Sciences in Philadelphia. Cope and Marsh were both famous and had reputations to protect. With access to ample resources to fund their work, when one of them made a find, the other was never far behind. Cope heard of the John Day specimens streaming into the Peabody Museum at Yale and refused to be outdone by Marsh. Cope decided to collect in the Pacific Northwest himself. In 1878 he sent dedicated collector and friend Charles Sternberg to collect in The Cove. Sternberg spent the winter there. He endured many hardships but he collected fossils constantly. Sternberg sent excellent specimens back to Cope's laboratory in Pennsylvania using his own recently invented technique of wrapping fossils in a protective jacket of burlap and plaster. These specimens are still kept at the American Museum of Natural History in New York.

What became of Condon's box of fossils? Condon pleaded for years for their return. Marsh asked for a little more time to study them. By then Marsh had already named the little horse that Condon found *Miohippus* and proclaimed it the missing link of the horse family. Thomas Condon never received credit for the find and he never got his box of fossils back.

The Princeton Disaster

By 1889, the John Day Fossil Beds had been explored for over 25 years. New discoveries kept coming. Professor William Berryman Scott was determined to find his own fossils in The Cove for the collection at Princeton. Led by Leander Davis, the famous local expert who had earlier worked for Condon, Marsh, and Sternberg, Professor Scott and his team amassed one and a half tons of fossil material. He credited their success to Davis, "whose knowledge of the country and the fossil beds was very exact." At Princeton, the fossils were stored in the cellar of Nassau Hall on campus. Tragically, during a refitting of the heating system, workmen stole or destroyed all but a few pieces. Professor Scott was devastated by the loss which "would not be possible to duplicate in our time."

Paleontology Evolves

Merriam and Miller excavating an entelodont skull

A new paleontologist, John C. Merriam, entered the scene at the turn of the 20th century. He had a more careful research mindset than his predecessors. Merriam wanted to place the John Day fossils in their proper geological, chronological, and paleo-ecological context. His perspective was that fossils could tell a more comprehensive story if their burial location in geologic strata was carefully documented. He wanted to connect ancient animals to each other and the ancient ecosystems in which they lived.

Merriam proposed and launched a prospecting expedition for the University of California in 1899. This was the first major prospecting expedition for a west coast university. Graduate students Frank Calkins and Loye Miller accompanied Merriam as they pioneered the deliberate and careful survey method of fossil collection. For three decades, UC Berkeley sponsored expeditions to the region, usually led by Merriam himself. The John Day fossils found on these expeditions were the foundation of the University of California's new Museum of Paleontology.

Discovery after discovery, Merriam's respect for the complex natural history of the John Day country grew. However, Merriam's began to be concerned about the protection of the fossil beds. Casual collectors and natural erosion were taking a toll. He also wanted to share these amazing discoveries with the world. Over time, he felt that the fossil beds should become a paleontology park.

Preserving Oregon's Past

"It might be well for the government to...establish here a national park . As time goes on the value of these (fossil) beds will be recognized."

Blue Mountain Eagle editorial
Dec. 1, 1916

Today, strict laws regulate collecting in national park areas. However, in the early years there were no laws protecting the fossils. Anyone could collect them on public land. Concern for the protection of these fossils grew over time as specimens disappeared.

Beginning in 1927, several critical areas were set aside in the John Day Basin as state parks. Robert Sawyer, a member of the Oregon State Highway Commission, supported the acquisition of land for state parks along the newly developed highways. Both Sawyer and Samuel H. Boardman, the first appointed state parks superintendent, played significant roles in building new state parks at Sheep Rock, the Painted Hills and Clarno.

Dr. Merriam worked closely with Sawyer and Boardman and initiated the effort to set aside land for state parks in the John Day Basin once the U.S. Congress passed the Recreation and Public Purposes Act. He also proposed buying parcels of private land anytime one became available to protect areas with scientific and scenic value.

State parks officials worked from 1935 to 1965 to assemble land in critical areas. They transferred public domain land using the Recreation and Public Purposes Act as a preferred method of building the state parks. *Education inspired through interpretation* was identified as the main purpose for the state parks. During this time, the national significance of the John Day Fossil Beds was recognized as deserving National Monument status. Oregon gave three of its state park units to the National Park Service in 1975. The goal was to protect them, provide for scientific research, and promote public understanding of the world class paleontological resources of Oregon. A few years after the park was established, the National Park Service hired its very first paleontologist, Dr. Ted Fremd, to begin on-site research.

The Fossil Future

Scientists now use GPS equipment to document fossil locations.

Thomas Condon prospected in a wild and largely unknown land when paleontology was new. Science had only just begun to explore the world and develop a new understanding about how it worked. Today paleontology is a complex and rewarding science. Advanced equipment and techniques reveal more from fossil discoveries than Condon could have ever imagined when he wandered these hills. Condon's richly colored fossil beds are now known to be remnants of ancient soils, forests, prairies, and stream beds formed from volcanic ash, lava flows, mudslides, and even pieces of uplifted ocean floor. Evolution is understood to be fact. Discoveries here show how species evolved over 40 million years. Research in the monument has revealed an amazing array of local and global changes in Oregon's distant past such as climate fluctuations, extinctions, and the emergence of new species.

As for paleontologist Thomas Condon, while national fame eluded him, he was recognized for his pioneering work. Named Oregon's first State Geologist, he later became professor at the University of Oregon. Today, the national monument's state of the art research facility bears his name. It has now been over 150 years since he first laid eyes on those first fossils in a Union soldier's knapsack and grasped their significance. Perhaps he would find it fitting that his name is attached to a building where his beloved fossil beds are actively researched and the story of Oregon's ancient life is shared with so many.