

## UTD's GEOSCIENCES ROCK GARDEN

Stroll through the Rock Garden located between Founders and Founders North (cafeteria) and walk on Jackfork Sandstone - quarried from near Antlers, Oklahoma - that was laid down 315 million years ago on an ocean floor in what is now northern Pushmataha County, Oklahoma. Then, sit on a slab of 1.1 billion year old granite (# 9) from the Town Mountain granite quarry in central Texas near Marble Falls, Texas and enjoy the serenity and artistic display of the beautifully landscaped Geosciences Rock Garden. This slab of granite was left over from the quarrying activities by prison inmates in the 1880s to supply the granite for the Texas State Capital in Austin.

There are 19 large rocks of various shapes, textures, and colors displayed on custom-made stands. The rocks weigh from about 100 pounds to nearly 1 ton. This includes 6 sedimentary rocks, 6 metamorphic rocks, and 7 igneous rocks. Most (13) of the specimens came from Texas. The oldest rock on display is a metamorphic rock from Wyoming (# 1) that is 3.5 billion years old, or about 3/4 the age of the earth! It is a sample of the oldest known rock in the United States. The youngest rock on display is a sedimentary conglomerate (# 5) from west Texas that is only 1 million years old.

An unique metamorphic rock on display is a brecciated specimen (# 18) from Wyoming that formed from the heating (pyrometamorphism) of the overlying sedimentary rock layers (shale and siltstone). The natural burning of coal underground resulted in the heating, fragmentation, and collapse of the overlying sedimentary rock layers into the hot magma-like residue on the floor of the area formerly occupied by the unburned coal seam. The resulting rock looks like a volcanic breccia (composed of angular fragments of older rocks). An economically important sedimentary rocks on display is a large sample of a petroleum reservoir limestone rock (# 19) from near Uvalde, Texas in which the lighter hydrocarbons have evaporated leaving behind an asphaltic tar-like residue in the pore spaces and replacing fossil seashells. On very hot days, the asphalt oozes from the pores and forms "blisters" on the side of the specimen.

A plaque - attached to the base of each custom-made stand - gives the name, formation, age, and collection locality of each rock in the Rock Garden. The map of the Rock Garden gives the name and location of each rock in the Rock Garden. The accompanying written description for each rock in the Rock Garden gives its name, collection locality, brief formational history, age, and who collected it.

## ROCKS ON DISPLAY

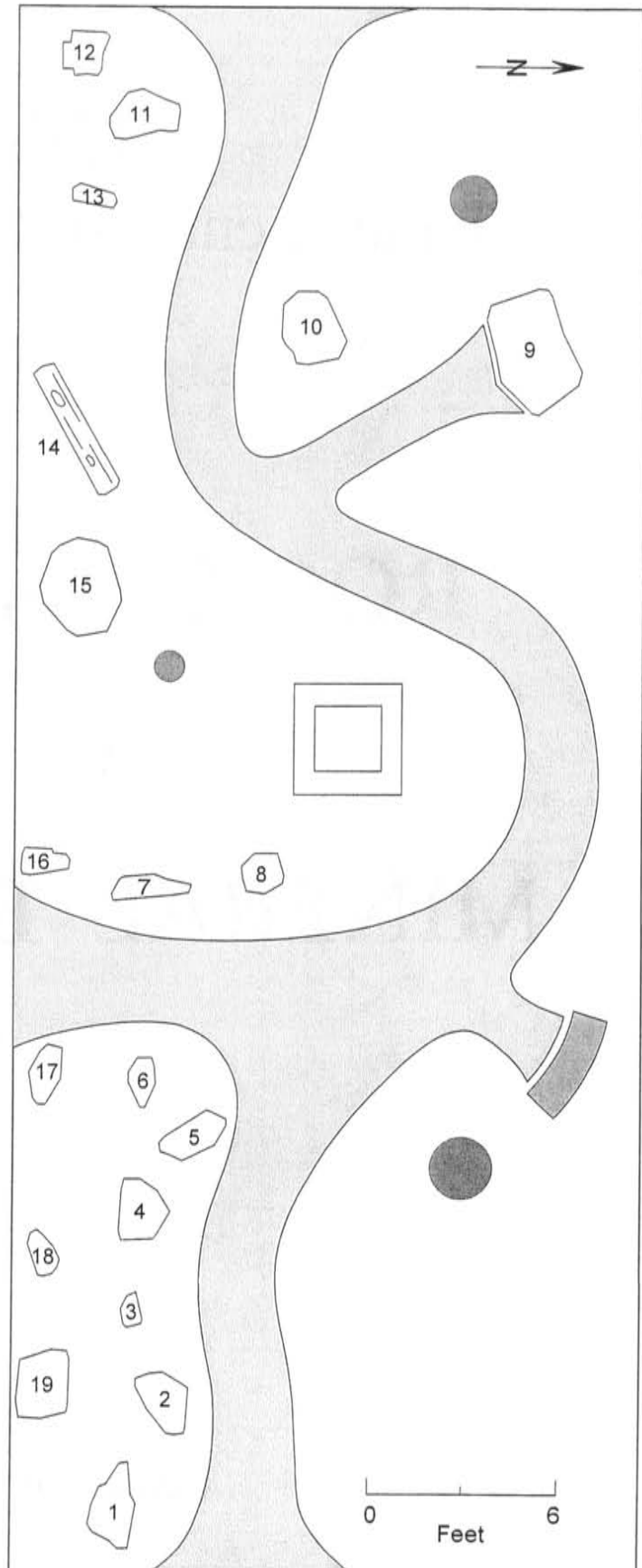
1. Gneiss
2. Glauconite-bearing Limestone
3. Xenolith-bearing Basalt Dike
4. Evaporite (anhydrite/gypsum/ calcite)
5. Perdiz Conglomerate
6. Riebeckite-bearing Granitic Pegmatite
7. Town Mountain Granite
8. Granite
9. Town Mountain Granite
10. Metaconglomerate
11. Coal Creek Serpentine
12. Calc-silicate Marble
13. Staurolite Schist
14. Petrified (silicified) Wood
15. Llanite (rhyolite porphyry) Dike
16. Microgranite Porphyry (quartz syenite) Dike
17. Stromatolite (fossiliferous - algal mat - limestone)
18. "Clinker" (pyrometamorphic breccia)
19. Asphalt-bearing Fossiliferous Limestone

 Rock

 Tree

 Bench

 Drain



## DESCRIPTION OF ROCKS ON DISPLAY



1. The sample of gneiss came from the Big Horn Mountains west of Buffalo, Wyoming. The rock was originally a sandy sedimentary rock before being metamorphosed. The gneiss is 3,500 million years old, about three-fourths the age of the earth, and the oldest rock in the United States. Collected by James L. Carter and Thomas E. Jenkins.



2. The sample of glauconite-bearing fossiliferous limestone is part of the Riley Formation exposed in Marble Falls, Texas. The specimen contains abundant fragments of trilobites (white streaks in the rock) and green trilobite fecal pellets. The rock is 530 million years old. Collected by James L. Carter.



3. The sample of xenolith-bearing rock came from a dike that cuts the Castner Formation. The Castner Formation is exposed on the Trans-Mountain Pass in the Franklin Mountains, El Paso, Texas. The xenoliths (foreign rocks) are fragments of the deep-seated Precambrian basement under El Paso, Texas. The rock is 1,080 million years old. Collected by James L. Carter and Patrick B. Tully.



4. The sample of evaporite rock is from the Castile Formation that is exposed west of Carlsbad, New Mexico. It formed when the Permian seas evaporated in west Texas and southern New Mexico. The rock is 254 million years old. Collected by James L. Carter and Frederick Fifer.



5. The sample of Perdiz Conglomerate came from south-southwest of Marfa, Texas. The rock formed from gravels washed from the Chinati Mountains. The rock is 1 million years old and the youngest rock on display. Collected by James L. Carter and Robert H. Rutherford.



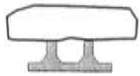
6. The sample of amphibole (riebeckite)-bearing granitic pegmatite came from the Trans-Mountain Pass in the Franklin Mountains, El Paso, Texas. The rock is 1,080 million years old. Collected by James L. Carter and Patrick B. Tully.



7. The sample of Town Mountain Granite came from a small quarry north of Llano, Texas. Rock from the quarry was used for tombstones. The rock is 1,100 million years old. Collected by James L. Carter.



8. The sample of red granite came from the Owl Creek Mountains south of Thermopolis, Wyoming in the Wind River Canyon. The rock is 2,200 million years old. Collected by Emile A. Pessagno, Jr.



9. The sample of Town Mountain Granite is from the quarry used to obtain granite blocks for the State Capital of Texas and is located west of Marble Falls, Texas. The rock is 1,100 million years old. Collected by James L. Carter.



10. The sample of metaconglomerate is part of the Marqueñas Formation that is exposed in the Picuris Mountains south of Taos, New Mexico. The rock is 1,700 million years old. Collected by Kent C. Nielsen and Ignacio Pujana.



11. The sample of Coal Creek Serpentine comes from south of Llano, Texas. The rock is 1,300 million years old and is the oldest rock in Texas. Collected by James L. Carter.



12. The sample of calc-silicate marble is part of the Castner Formation exposed along the Trans-Mountain Pass, Franklin Mountain, El Paso, Texas. The rock was originally a silty, clay-rich, limey sedimentary rock before being metamorphosed. The rock is 1,250 million years old. Collected by James L. Carter and Patrick B. Tully.



13. The sample of staurolite schist is part of the Rinconada Formation found in the Picuris Mountains south of Taos, New Mexico. The rock was originally a silty, sandy, sedimentary rock before being metamorphosed. The rock is 1,700 million years old. Collected by Kent C. Nielsen and Ignacio Pujana.



14. The sample of petrified (silicified) wood is from the Yegua Formation of southeast Texas. East Texas Ignite coal underlying the Yegua Formation is used to generate most of the electricity for the Dallas-Fort Worth Metroplex. The specimen of silicified wood is 45 million years old. Collected and donated by Mr. and Mrs. Henry D. Wilson of Dallas, Texas.



15. The sample of Llanite (rhyolite porphyry) came from a dike north of Llano, Texas. Llanite occurs only in Texas and is noted for its blueish quartz. The rock is 1,100 million years old. Collected by James L. Carter and Larry D. Sall.



16. The sample of microgranite porphyry (quartz syenite) came from a dike exposed on the Trans-Mountain Pass in the Franklin Mountains, El Paso, Texas. The phenocrysts (large crystals) are potassium-feldspar (orthoclase). The rock is 1,100 million years old. Collected by James L. Carter and Patrick B. Tully.



17. The sample of stromatolite (fossiliferous - algal mat - limestone) is part of the Phosphoria Formation of the Big Horn Mountains northwest of Shell, Wyoming. The rock is 260 million years old. Collected by James L. Carter.



18. The sample of natural "clinker" (pyrometamorphic breccia) is part of the Fort Union Formation found in the Powder River Basin south of Gillette, Wyoming. "Clinker" formed when a coal seam naturally burned resulting in collapse of the overlying baked shale and siltstone sedimentary layers into the molten coal residue. The Fort Union Formation is 59 million years old. Collected by James L. Carter.



19. The sample of asphalt-bearing fossiliferous limestone is part of the Anacaho Formation exposed west of Uvalde, Texas. This asphalt-bearing limestone is mined and used on asphalt roads. On very hot days the asphalt softens to the point of flowing out of the pores in the rock. The rock is 84 million years old. Collected by James L. Carter.