DESCRIPTION OF SOME FOSSIL PLANTS FROM THE STANFORD PALEONTOLOGICAL COLLECTION.

ALBERT B. REAGAN, CORNFIELDS, GANADO, ARIZ.

The Stanford Paleontological Collection contains a few fossil plants that were collected by Mr. Orestes St. John[1] in 1901 from Willow Canyon, New Mexico, and elsewhere; also some fossil wood that was collected by the writer from the Shinarump-Chinle Series of the Trias. A part of these is classified below as follows:

Fossils from the St. John Collection.

Sabal sp. (Fig. 1). The specimen here figured is a mere fragment of what was apparently a large leaf, but it lacks so many essential features that it is deemed unwise to give it a specific name.

Magnolia angustifolia Newberry. (Fig. 2). U. S. Nat. Mus., Proc., vol. 5, 1882 (1883), p. 513; Berry, U. S. Geol. Surv., prof. paper 91, 1916, p. 214; Knowlton, U. S. Geol. Surv., prof. paper 101, 1917, p. 309, pl. 79, f. 1, pl. 80, pl. 81, f. 1; idem., U. S. Geol. Surv., Bull. 696, p. 389.

Magnolia attenuata Weber. Lesquereux, Rept. U. S. Geol. Surv. Terr., vol. 7 (Tert. Fl.), 1878, p. 250, pl. 45, f. 6.

Terminalia radobojensis Heer (not Unger). Lesquereux, U. S. Geol. and Geog. Surv. Terr., Ann. Rept. 1871 (1872), Suppl. p. 15.

Magnalio lanceolata Lesquereux. Hollick, La. Geol. Surv. Special Rept. 5, 1899, p. 282, pl. 40.

Description from a broken leaf, the only leaf obtained: Leaf coriaceous, evidently thick in texture, slightly obovate-lanceolate, with accuminate apex; midrib relatively very thick, particularly below, much more slender above; secondaries rather slender, alternate at an angle of 45 degrees, considerably curved upward near the margin; finer venation not retained.

Position and Locality—Raton: Wootton, Weston, Starkville, Aguilar, Santa Clara, Trinidad, Tercio, and other localities, Colorado; Ute Park, Raton tunnel, Vermejo Creek, Yankee, and other localities, New Mexico; Fishers Peak, Raton Mountains, Colo. Wilcox: Coushatta, Red River Parish, and Naborton, De Sota Parish, La. Lagrange: Puryear, Henry County, Tenn. (Knowlton). Willow Canyon, New Mexico (St. John-Reagan).

Platanus guillelmae heerii Knowlton. (Fig. 3). U. S. Geol. Surv., prof. paper 101, 1918, p. 323, pl. 96, f. 5, pl. 97, f. 1, pl. 98, f. 2; U. S. Geol. Surv., Bull. 696, p. 468.

Three leaf impressions were obtained from Willow Canyon, none of which were entire.

[1] The writer described a part of the wood fossils of the St. John's collection under the title "Identification of Two Fossil Leaves from Iowa, one from Arizona and a 'Tree Trunk' from Kansas", Proc. Ind. Acad. Sci., vol. 34, 1924 (1925), pp. 141-142.

Description after Knowlton, above: "Leaves of medium size, 12 to 15 centimeters long and 9 to 12 centimeters wide (or less), undivided, long, somewhat wedge-shaped at base * * * unequal sided, apex deltoid, moderately acute; margin entire along the wedge-shaped portions, otherwise rather coarsely and sharply toothed; petiole long * * * nervation strong, consisting of a relatively strong midrib and about 5 pairs of alternate or subopposite secondaries at an angle of 60° to 65°, ending in marginal teeth; lowest pair of secondaries, strongest, arising at or a little above the top of the petiole, each with some five or six angular tertiary branches on the outside; finer nervation strong, consisting of numerous, often broken, nervilles, very plantanoid in appearance."

Position and Location: Raton: Tercio, New Mexico (Knowlton), Willow Canyon (St. John-Reagan).

Platanus latoir (Lesquereux) Knowlton. (Fig. 4). U. S. Geol. Serv., Bull., 152, 1898, p. 170; idem, Bull. 696, 1919, p. 469; Berry, U. S. Geol. Surv., prof. paper 112, 1919, p. 84.

Platanus aceroides Goppert var. *latior* Lesquaereux. Am. Jour. Sci., 2d ser., vol. 46, 1868, p. 97.

Platanus primaeva Lesquereux. Rept. U. S. Geol. Surv. Terr., Vol. 6, (Cret. Fl.), 1874, p. 69, pl. 7, f. 2, pl. 26, f. 2; U. S. Geol. Surv., Mon. 17, 1892, p. 72, pl. 8, f. 7, 8b, pl. 10, f. 1.

Leaves large, palmately trilobate, broadly rhomboidal in outline; margin somewhat irregularly dentate, entire at the broadly cuneate base; lateral lobes short; intervening sinuses scarcely differentiated; petioles long and stout; primaries stout, three in number; venation strictly plantanoid; texture coriaceous.

Position and Location—Dakota: Kansas, Nebraska, and Minnesota. Tuscaloosa: Cottondale, Alabama (Knowlton). Raton: Willow Canyon, New Mexico (St. John-Reagan).

As a concluding remark on this section, it would appear that the formation in Willow Canyon, from which these leaves were obtained, is of Raton Age.

Fossil Wood from the Chile and Shinarump Rocks of the Navajo Country, Arizona.—As has been previously noted, petrified forests occur in the vicinity of Ganado and at several others places within the reservation and also just outside to the southward.[2] For the purpose of determining the trees represented, the writer collected fossil wood at various places in the area mapped and also at a point along the Keams-Canyon-Holbrook wagon road about seven miles north of Holbrook. Many slides were made of this wood, and so far as examination has been carried out, it is found that the wood belongs to the single species *Araucarioxylon arizonicum*, though other species are undoubtedly represented. Below is a description of the species identified.

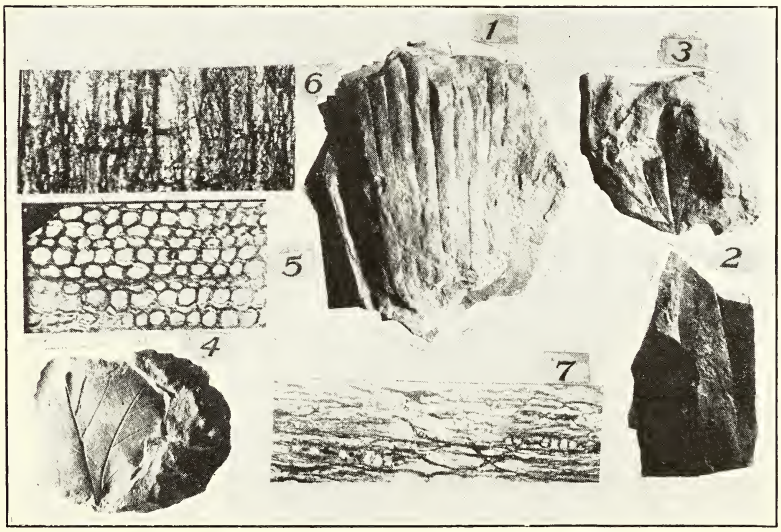
Araucarioxylon arizonicum Knowlton. (Fig. 5, 6, and 7). U. S. Nat. Mus., Proc., Vol. 11, 1888, p. 1, pl. 1, f. 1-5; idem, Vol. 13, 1890, p. 285; Penhallow, Man. N. A. Gym., 1907, p. 207; Knowlton, Am. Forestry, Vol. 19, 1913, p. 210. *Araucarites möllhausianus* ? Göppert, in Möllhausen, Tagebuch einer Reise v. Mississippi, nach d. küsten d. südsee, p. 429.

[2] See Reagan, Albert B., Stratigraphy of the Hopi Buttes Volcanic Field, Pan-American Geologist, vol. 41, June, 1924, pp. 355-366.

Knowlton's description (above): "Annual ring not apparent to the naked eye, but under the microscope observed to be present, the yearly growths being separated by a layer of 2-5 tangenitally compressed cells; tracheids with moderately thick walls, which are provided on the radial sides with a single row of large contigous pores or rarely with two rows of alternating pores, and on the tangential sides with numerous, separated, perfectly round, small pores; medullary rays numerous, composed of a single series of 1-22 short, superimposed cells; resin ducts none."

The cells shown in the transverse section average .040 mm. in diameter. The pores of the radial section have an average diameter of from .02 mm. to .0040 mm. and in the tangential section the diameter of the pores range from .0027 mm. to .0075 mm.

Position and Location:—Triassic: Fort Wingate and Abiquiu, New Mexico; Chalcedony Park, Arizona; Cedar City, Utah (Knowlton). Division C of the Chinle (Triassic): Beautiful Valley, northeast of Ganado; Ganado Petrified Forest, and also along the Keams-Canyon-Holbrook auto road about seven miles north of Holbrook, Arizona. Shinarump conglomerate (Triassic): near Cross Canyon on the Ganado-Fort Defiance wagon-auto road and elsewhere on the Defiance Plateau, Arizona (Reagan).[3]



Figs. 1-7—1, *Sabal*, sp.; 2, *Magnolia angustifolia* Newberry; 3, *Platanus guillelmae heeri* Knowlton; 4, *P. latior* (Lesquereux) Knowlton; 5-7, *Araucarioxylon arizonicum* Knowlton, (5) cross section, (6) radial section, (7) tangential section.

[3] The abundance of fossil wood in this region is almost incredible, and its presence has made a profound impression on the native tribes. To the Navajos the logs are yietsobitsin, the bones of Yietso, a monster who destroyed the sun and whose blood was congealed in lava flows. In the Piute mythology the broken trunks are the spent weapons of Shinarav, the great wolf god, the accumulated masses marking the sites of battlefields.