Tree with stout boles not over 3 meters high; bark reddish, peeling off in thin papery sheets; branching dichotomous, stag-horn in appearance; lobes of mature leaves with entire margin; flowering in April and May; found in highlands usually at an altitude of from 500 to 1750 meters; restricted to Durango and Sinaloa.......................... C. elasticus.

Tree with boles up to 20 meters high; bark whitish, not peeling off; branching verticillate, the branches usually in whorls of 3 or 4; mature leaves with spatulate lobes cuspidate-dentate above the middle; flowering in June and July; found in wet lowlands at an altitude of from 5 to 500 meters; apparently restricted to southern Sinaloa, Nayarit, and Jalisco............................................................................. C. tepiquensis.

In view of the economic possibilities of the two species, particularly C. elasticus, seeds of both trees were gathered. Plantings to test the adaptability, and plantation possibilities, of C. elasticus were made in March, 1944 at the Agricultural Research Station of the Institute of Technology and Plant Industry of Southern Methodist University at Dallas, and in April, 1944 in the Rio Grande Valley of Texas.

A technical report covering in detail the field investigations of the sources of chilte, and the progress of the test plantings of the two species, will be published elsewhere.

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Concretions in the Woodbine Sands Near Irving, Texas

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Introduction

It is the purpose of this paper to describe field relations of a group of concretions found in the Woodbine sands of the Cretaceous Gulf Series. The concretions studied are in the eastern part of Tarrant County, north-central Texas. The locality is six and a half miles west of Irving, Texas, along the road that parallels the Rock Island Railway. For a mile along the road the concretions are well exposed in the Woodbine croppings and are sectioned in road cuts.
Stratigraphy

The local section includes approximately the upper twenty-five feet of the Woodbine, and the lower few feet of the basal Eagle Ford formation. The uppermost unit of the Woodbine comprises a few feet of brownish sandstone with lentils of pebble conglomerate. The sandstone is laminated and prevailing cross-bedded. Fossils are abundant. Fragments and complete shells of *Ostrea* and *Exogyra* form coquinitic lentils. Fish teeth abound in the conglomeratic parts, and are especially common at the top.

Below this unit is twelve feet of friable sandstone stained brown and weakly cemented with limonite. Individual layers are commonly cross-bedded and show rippled surfaces. Oyster shells are relatively common, and fossil leaves occur throughout.

This last unit overlies sandy yellowish-brown shale that contains scattered specimens of *Ostrea*. The maximum thickness exposed is five feet.

Fig. 1—The concretion above shows a flattened irregular shape such a body might assume if limited by enclosing beds.
Concretions

Concretions occur in the medial and upper units of the local section. Those of the upper unit have rough, flattened or irregular tops that correspond with the topmost bedding surface. They vary between a few feet and a few tens of feet in maximum linear dimension. Locally they are so intergrown as to form a conspicuous ledge (Fig. 1).

Concretions of the medial unit are more symmetrically shaped and are generally ellipsoidal. They average about 5 feet long, 4 feet wide, and 3 feet high. Examples smaller than average size tend to be more nearly spherical; the larger the concretion grew the more flattened and irregular it became.

The concretions consist of sandstone which differs from the surrounding rock only in the nature and superior binding quality of the cement. Siderite and calcite cement the sand grains together and form the matrix of the concretions.

Fig. 2—Concretion showing nucleus and rind.
Fig. 3—Ripple marks seen in bedding planes in center of concretion.

Fig. 4—Worm castings.
Fig. 5—Leaf impressions showing how numerous they are in portions of the concretions.

Fig. 6—Cross section of a concretion in the bedrock. Note in the outline the bands of ferric iron and the nucleus resembling a gray sandstone.
Fig. 7—Polished section of nucleus and ring showing definite break between the two in color and texture.

Fig. 8—Photomicrograph of thin section of the nucleus.
Surrounding many of the concentric concretions are rinds of deep brown or reddish sandstone, averaging 4 inches thick (Fig. 2). Some concretions have as many as four bands or rinds, while some have only a part of one. All bands, if they completely surround the center body, have a tendency to be thinner on the top than on the bottom. If a concretion has only a part of a band, it is on the bottom. These bands are easily distinguished from the surrounding rock by their darker brown color which is due to a higher concentration of ferric iron.

Many lines of evidence point to the conclusion that the concretions formed after the Woodbine formation had been deposited. Bedding surfaces and cross-beded units are well preserved in the concretionary bodies, and continue without interruption into the surrounding sandstone. Rippled surfaces are evident both within and on the upper and lower surfaces. (Fig. 3.) The fossils within the concretions are identical with those of the surrounding sandstone layers,
The concretions usually break with irregular fractures; but occasionally along the surfaces of the cross-bedding.

except that they are generally better preserved within the concretions than without. This is particularly true of the worm castings and leaf impressions. (Figs. 4 and 5.)

Thin sections of the concretionary rock and of the surrounding sandstone show no appreciable differences in average size of quartz grains. The significant difference has to do with the nature of the cement: calcite and siderite in the concretions and limonite in the sandstone.

Quantitative analyses were run for two suites of specimens, each suite containing samples from a concretion, the ring or rings around the concretion and of the sandstone outside the outermost rind. Each concretion contained approximately five per cent iron. Rinds surrounding the concretions contain roughly three per cent iron, and the normal sandstone contains two per cent.