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Cover Picture

White Mound

White Mound, the most famous fossil-collecting locality in Oklahoma and one of the best in the United States, is in NE¼ sec. 20, T. 2 S., R. 3 E., Murray County. This locality has yielded a profuse fauna for more than half a century. The earliest known published reference to the mound is that of C. A. Reeds, who designated it as the type area of the Haragan Formation (Lower Devonian) in 1911. However, the site had been collected from earlier times. The cover picture, first printed in a paper by Thomas W. Amsden in 1958 (Okla. Geology Notes, vol. 18, p. 131), was taken in 1909. (Contrary to appearances, the figure on the left horizon is not the field-trip leader.)

At this locality, the Haragan rock that constitutes the mound is a yellowish-gray, fossiliferous marlstone within the carbonate sequence of the Hunton Group, exposed in the immediate vicinity. The fauna recovered from the mound and from nearby exposures of other Hunton rocks includes brachiopods, trilobites, corals, mollusks, ostracodes, and other forms, and the specimens are widely distributed in schools, museums, and private collections throughout the world. Unfortunately, access to the site is now barred by the owners of the land.

Geological Society of America Regional Meeting in Oklahoma

The South-Central Section of the Geological Society of America, Inc., will hold its first annual meeting at the Center for Continuing Education on the campus of The University of Oklahoma March 30, 31, and April 1, under the sponsorship of the School of Geology and Geophysics of The University of Oklahoma, the Oklahoma Geological Survey, and the Oil Information Center of The University of Oklahoma Research Institute. The meeting will be highlighted by two days of technical sessions in which forty-five papers will be presented. A varied program of ladies' entertainment, a banquet, and a one-day field trip are also planned.

The technical program will comprise four half-day sessions with a one-day palynology symposium to be held concurrently with the last two sessions:

Thursday, March 30

9:00 A.M. — **General** (8 papers)
1:20 P.M. — **Paleontology, stratigraphy, and sedimentation** (10 papers)

Friday, March 31

8:00 A.M. — **Geochemistry and petrology** (10 papers)
9:00 A.M. — **Palynology symposium** (5 papers)
1:20 P.M. — **Structural geology** (8 papers)
1:30 P.M. — **Palynology symposium** (4 papers)

The annual business meeting will be held at 4:30 P.M., March 31, at which time the results of the election of officers will be announced. The slate of candidates presented by the nominating committee is as follows:

Chairman:	**Charles J. Mankin** Director, School of Geology and Geophysics, The University of Oklahoma
Vice Chairman:	**Claude C. Albritton, Jr.** Dean, Graduate School, Southern Methodist University
Secretary-Treasurer:	**Melvin C. Schroeder** Professor of geology, Texas Agricultural and Mechanical University

The one-day field trip will be held on Saturday, April 1, the subject being the *Structural and Igenous Geology of the Wichita Mountains, Southwestern Oklahoma.* The leaders will be W. E. Ham, H. E. Hunter, C. A. Merritt, and G. T. Stone. Stops along the north flank of Wichita Mountains will show the relations of the Lower Paleozoic rocks of the southern Anadarko basin to those of the Wichita Mountains block. A stop on top of Mt. Scott will allow examination of a representative of the Wichita Mountain granites, and additional stops farther to the west will treat the layered ultramafic intrusive rocks of the Raggedy Mountains and the contact relations of the granitic and mafic intrusions. Transportation will be by bus. The field-trip fee of approximately $7.50 will cover transportation, box lunch, and guidebook.

The ladies' program will include a tour of Norman and environs, with a visit to the famed Bavinger House and a style-show luncheon on Thursday, March 30. On Friday, March 31, the group will have lunch in Oklahoma City, at the Chandelle, considered by some as one of the world's most exquisite restaurants, followed by a visit to the Cowboy Hall of Fame and Western Heritage Center.

Registration fee for the meeting is $5.00 for members and nonmembers and $1.00 for students. Ladies' registration is free. Complete details may be obtained by writing to the School of Geology and Geophysics, The University of Oklahoma, Norman, Oklahoma 73069.

Caryocaris Removed from Oklahoma Faunal List

Carl C. Branson

Ruedemann (1935) described *Caryocaris magnus* and *C. oklahomensis* from the Henryhouse Shale of Oklahoma. The two supposed phyllocarid crustaceans were recently examined by Churkin (1966) and reported to be a "pod-shaped depression" and a "branched structure . . . unlike any phyllocarid. It may even be a plant" (see text-fig. 2g).

The two type specimens, although stated by Ruedemann to be in The University of Oklahoma collections (Mus. Inv. Paleont. A2469, A2470a, A2470b), are at the U. S. National Museum (USNM 114533 [*C. magnus*] and USNM 114534 [*C. oklahomensis*]). *Caryocaris* is a strictly Ordovician genus, not known in Oklahoma.

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Names and Relative Ages of Granites and Rhyolites in the Wichita Mountains, Oklahoma

C. A. Merritt

The silicic igneous rocks exposed in the Wichita Mountains are granites, rhyolites, and closely related types, which form a comagmatic series, probably Middle Cambrian in age (fig. 2, p. 52-53). The rocks are interpreted as differentiates of a granitic magma which was emplaced at shallow depths as plutons, sills, and dikes and in part extruded at the surface as lavas and pyroclastics.

The granites and rhyolites have been mapped and named by several investigators in the sixty years since Taff's (1904) original work. Only one of the geologists, Taylor (1915), mapped the igneous rocks in all parts of the Wichita Mountains; the others restricted their studies to parts of the mountains. The relative ages of the rocks in contact with one another were determined, but the correlation of these rocks with those exposed in other parts of the mountains usually was not considered. For that reason some of the names apply only to rocks of a local area.

At the present time ten names are in the literature for the different members of the granite-rhyolite series and the usage of some of these names has changed with time. Carlton Rhyolite has been broadened to a group name that applies to all the rhyolites and associated pyroclastics. Davidson "granophyre," originally defined as a separate granite emplaced as a sill, is now called Davidson Rhyolite and interpreted as a member of the extrusive Carlton Rhyolite Group.

An attempt is made in this article to clarify the present usage of the rock names and to determine the relative ages of the members of the granite-rhyolite series. Where the rocks are in contact their relative ages have been established by previous investigators. For the rocks which do not occur together the writer has inferred their age relationships from mineralogic and chemical data.

The first geologic map of the Wichita Mountains was prepared by Taff and Gould and published by Taff in 1904. It was reconnaissance in character and showed the igneous rocks as gabbro, granite porphyry, and granite. Concerning their relative ages, Taff (1904, p. 60) wrote: "These in order of apparent age are gabbro and related anorthosite, granite and related aplites, granite porphyry and associated aporhyolite, and diabase dike rocks." In describing the rocks, Taff (1904, p. 64) used the term Carlton Mountain porphyry to designate part of the granite porphyry and associated aporhyolite. The latter rocks now are considered to be a part of the Carlton Rhyolite Group.

A decade later Taylor (1915) mapped the igneous rocks of the Wichita Mountains in more detail. He subdivided and named the granites, Headquarters (oldest), Reformatory, Lugert, Cold Springs, Quanah, and granite dikes (youngest). Taylor found inclusions of Headquarters Granite in Reformatory Granite and dikes of Lugert cutting Reformatory and thus established the relative ages of these three granites.

Taylor mapped Lugert Granite as extending from the Lugert area in the western part of the Wichita Mountains to the eastern edge of the mountains, a few miles north of Lawton. For some reason he included in the Lugert Granite the rocks previously mapped by Taff and Gould as granite porphyry and associated aporhyolites (Carlton Rhyolite Group).

Taylor introduced the name Quanah Granite for the exposures in the southern part of Wichita Mountains Wildlife Refuge. This granite intrudes "Lugert" granite but the "Lugert" in the eastern part of the mountains is now considered to be a different granite and has been named Mt. Scott Granite by Merritt (1965).

Fifteen years passed before the next geologic map showing igneous rocks in any part of the Wichita Mountains appeared. Hoffman, in 1930, published a geologic map of the eastern part of the mountains. He was impressed with the microscopic granophyric texture of the rocks in this area and labeled them all granophyres, even though he recognized that the proportion of this texture varies greatly in different outcrops of the same rock. This usage is unfortunate and has been criticised by Ham, Denison, and Merritt (1964, p. 64), as many of the outcrops are not granophyric and, also, Hoffman included under the name granophyre such diverse rocks as Quanah "granophyre" and Carlton "granophyre." The former is a coarse-grained granite and the latter is a thick series of extrusive rhyolites and pyroclastics.

Hoffman mapped the "granophyres" as Saddle Mountain (oldest), Davidson, Carlton, Lugert, and Quanah (youngest). Two of these names, Saddle Mountain and Davidson, were introduced by him.

The Saddle Mountain "granophyre" is a rhyolite with a microscopic spherulitic texture. This rock and the Carlton Rhyolite are mapped as rhyolite porphyry on the *Geologic Map of Oklahoma* (Miser, 1954). The writer believes this interpretation is correct and that the Saddle Mountain Rhyolite is part of the Carlton Rhyolite Group.

The Davidson "granophyre" is an extremely fine-grained quartz-feldspar rock, and Ham, Denison, and Merritt (1964, p. 48) interpreted it as a member of the Carlton Rhyolite Group that has been hydrothermally altered and partly converted to hornfels by intrusion of granite.

Carlton "granophyre" is mainly exposed in the area of the Fort Sill Military Reservation and is the rock previously mapped as granite porphyry and associated aporhyolites by Taff and Gould. It is now placed in the Carlton Rhyolite Group.

Hoffman followed the usage of Taylor with respect to the terms Lugert and Quanah, except that he called them granophyres rather than granites. He interpreted all the "granophyres" as sill intrusions, mainly upon the basis of this texture. Today only the "Lugert granophyre" (now called Mt. Scott Granite) is considered a sill. The Saddle Mountain, Davidson, and Carlton Rhyolites are believed to be extrusive rocks. Quanah "granophyre" is a coarse-grained granite and probably was emplaced as a pluton.

With respect to the relative ages of these rocks, Hoffman found xenoliths of Carlton "granophyre" in "Lugert granophyre" and dikes of rhyolite porphyry cutting the latter rock.

Schoonover (1948) mapped the rocks of Fort Sill Military Reservation. He recognized the extrusive character of the rock labeled "Carlton Mountain porphyry" by Taff and Carlton "granophyre" by Hoffman and renamed it Carlton Rhyolite.

Gerald Chase of the Oklahoma Geological Survey studied the igneous rocks of the Wichita Mountains during the years 1949-1955. He prepared a manuscript geologic map of the eastern part of the mountains and recognized that the granite of this area was not Lugert. He also subdivided the Quanah Granite into four units. This is the most detailed work which has been done on this area, and it is unfortunate that it was not completed before he left the Survey and has not been published. The writer frequently consulted Chase's map and studied his collection of thin sections and hand specimens and found them invaluable.

Walper (1951) studied the Cold Springs Granite and concluded that is was a hybrid rock formed by the assimilation of andesite by granite magma.

Tilton, Davis, Wetherill, and Aldrich (1957), from a study of radioactive isotopes, determined the age of the granites of the Wichita Mountains as approximately 525 million years and placed them in Middle(?) Cambrian time. Prior to this study these rocks had been considered Precambrian by all investigators.

Denison (1958, 1959) from a subsurface study of the basement rocks east and south of the Wichita Mountains concluded that the Carlton Rhyolite was a thick series of lavas and pyroclastics that extended eastward from the mountains in subsurface. He believed this extrusive series could be correlated with the rhyolite porphyry outcrops in the West Timbered Tills and East Timbered Hills of the Arbuckle Mountains. These latter exposures had previously been named Colbert porphyry by Reeds (1910, p. 31).

Ham, Denison, and Merritt (1964) made a detailed study of the basement rocks in south-central and southwestern Oklahoma between the Ouachita Mountains and the Texas Panhandle. They found that the Carlton Rhyolite extended in subsurface from the Texas Panhandle to the Timbered Hills of the Arbuckle Mountains and that it was at least 4,500 feet thick. They renamed this series of flows and pyroclastics the Carlton Rhyolite Group. The term Wichita Granite Group also was introduced to include the various granites which are exposed in the Wichita Mountains and the similar granites in subsurface. The subsurface areal extent of these granites is several times that of their surface exposures in the Wichita Mountains. They concluded that the Wichita Granite Group is the intrusive equivalent of the extrusive Carlton Rhyolite Group.

The granite which forms half of the outcrop area in the eastern and central parts of the Wichita Mountains was named Mt. Scott Granite by Merritt (1965). It formerly had been mapped as "Lugert granite" by Taylor (1915) and as "Lugert granophyre" by Hoffman (1930). Mt. Scott Granite is intruded by Quanah Granite in the eastern part of the mountains and by Lugert Granite in the Snyder area. Thus it is the oldest of these three granites. Merritt also concluded from mineralogical data that the Lugert Granite is slightly older than the Quanah Granite.

From this brief review of previous investigations the following age relationships seem established: inclusions of Headquarters Granite occur in Reformatory Granite, Lugert Granite intrudes both Reformatory and Mt. Scott Granites, and Quanah Granite intrudes Mt. Scott Granite.

The Mt. Scott Granite includes xenoliths of Carlton Rhyolite and is intruded by rhyolite porphyry dikes. The Carlton Rhyolite Group is at least 4,500 feet thick, and the extrusion of this large amount of material must have taken a considerable period of time. Mt. Scott Granite is younger than the early rhyolites and older than the late rhyolites of this group. The Wichita Granite Group as a whole is the intrusive equivalent of the extrusive Carlton Rhyolite Group.

The following granites are found in different areas and their relative ages cannot be determined from field relationships: Quanah and Headquarters, Quanah and Reformatory, Quanah and Lugert, Mt. Scott and Headquarters, and Mt. Scott and Reformatory.

In an attempt to determine the relative ages of these granites, the writer has used chemical and mineralogical data. Thornton and Tuttle (1960) defined differentiation index as the sum of normative quartz, orthoclase, and albite and suggested that it may indicate the degree of differentiation of a magma.

The differentiation indices for the different granites are given below:

Mt. Scott	88.7	(avg. of 2 samples)
Headquarters	94.8	(1 sample)
Reformatory	95.4	(avg. of 2 samples)
Quanah	95.4	(avg. of 2 samples)
Lugert	95.5	(avg. of 3 samples)

The value for Mt. Scott Granite is considerably lower than those of the others and would indicate that it is the oldest. This relationship is confirmed in part, as the Lugert and Quanah Granites intrude Mt. Scott Granite. The values of the differentiation index for Headquarters, Reformatory, Quanah, and Lugert Granites are so close that there probably is little difference in the ages of these rocks and hence the index cannot be used as a criterion of relative age.

Aegirine and riebeckite are rare in the Headquarters, Reformatory, and Lugert Granites, but riebeckite occurs in miarolitic cavities in Lugert Granite. Dikes of aegirine-riebeckite granite cut Lugert Granite on Quartz Mountain (Merritt, 1958, p. 51) and Reformatory Granite near the town of Granite (Rogers, 1907). Aegirine and riebeckite apparently were formed during the hydrothermal stage following consolidation of the Lugert Granite and subsequently as mineral precipitates in aegirine-riebeckite granite dikes. These alkaline minerals are present in small amounts in Quanah Granite as constituent minerals and also as riebeckite in miarolitic cavities. These mineralogic features suggest that Quanah Granite is slightly younger than Lugert Granite and probably of the same age as the aegirine-riebeckite granite dikes.

Combining the conclusions from the mineralogic data, differentiation indices, and field relationships, the relative ages of the granites appear to be, Mt. Scott (oldest), Headquarters, Reformatory, Lugert, Quanah, and aegirine-riebeckite granite dikes (youngest). Cold Springs Granite is a hybrid rock formed by the assimilation of basic rocks by Mt. Scott Granite.

Five chemical analyses are available for rocks in the Carlton Rhyolite Group and their differentiation indices have been computed. The values range from 88.4 to 95.1, which is essentially the same range as shown by the granites, namely 88.7 to 95.5.

The five samples of extrusive rocks from the Carlton Rhyolite Group are listed below in order of increasing value of the differentiation index (DI), which corresponds to the order of relative ages of these rocks from oldest to youngest.

Carlton Rhyolite (DI = 88.4). Sample from bed 11 of measured section of Carlton Rhyolite Group on Bally Mountain. The bed is 515 feet thick, 681 feet above the base and 2,401 feet below the top of the section (Ham, Denison, and Merritt, 1964, p. 43).

Saddle Mountain Rhyolite (DI = 91.4). Sample 246. Near Saddle Mountain, NW¼ NE¼ NW¼ sec. 31, T. 5 N., R. 14 W.

Davidson Rhyolite (DI = 91.6). Sample 167. Easter Pageant area, NW¼ NW¼ NE¼ sec. 17, T. 3 N., R. 13 W.

Colbert Porphyry (DI = 93.7). Top of East Timbered Hills, Arbuckle Mountains.

Carlton Rhyolite (DI = 95.1). Sample 199. Southwest of Mt. Scott, NE¼ NE¼ SE¼ sec. 15, T. 3 N., R. 13 W.

Assuming that the differentiation index also shows the relationship of the granite magma at depth to the extruded magma, a tentative correlation of the granites and these five extrusive rocks may be made, as shown in figure 1.

Little evidence is available at this time to check the validity of these correlations, but a few facts may be mentioned. The extrusive rock with the lowest differentiation index (88.4) is an early rhyolite, as it occurs in the lower part of the thick (3,597 ft.) section on Bally Mountain. This index is close to that of the Mt. Scott Granite (88.7), which is the oldest of the granites.

A rhyolite porphyry dike intrudes Mt. Scott Granite in the Cooperton area a few miles west of Saddle Mountain. This dike rock is spherulitic and closely resembles Saddle Mountain Rhyolite in its mineralogy and texture. The dike could have been one of the feeders for the lava which formed the Saddle Mountain Rhyolite. If this assumption is correct, the extrusive rock would be younger than the Mt. Scott Granite, a relationship suggested by the differentiation-index values.

The differentiation index would place Colbert Porphyry in the upper part of the Carlton Rhyolite Group. Reagan Sandstone of Upper Cambrian age lies unconformably above Colbert Porphyry. Pebbles of the porphyry are present in the sandstone, but there is no evidence of

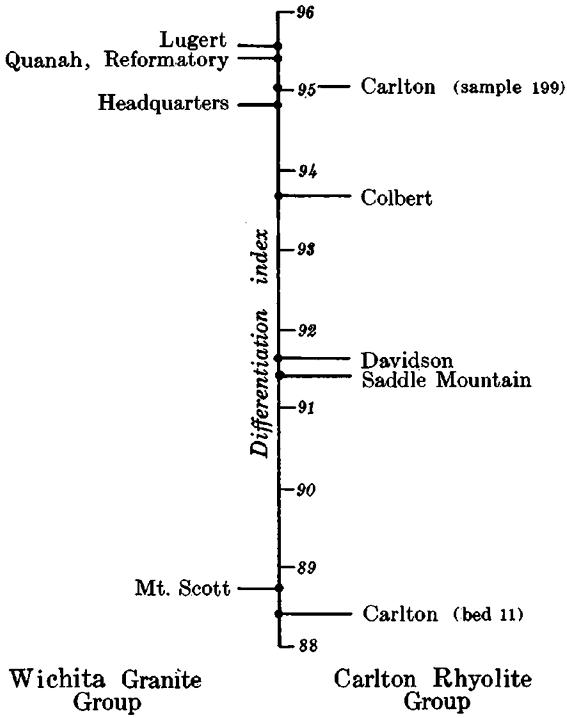

Figure 1. Relative ages (youngest at top) of the granites and rhyolites of the Wichita Mountains, according to their differentiation indices.

how much erosion of the Carlton Rhyolite Group is represented by the unconformity.

The Davidson Rhyolite and the Carlton Rhyolite (sample 199) are exposed in fault blocks on the downthrown side of large faults, and field evidence is inadequate to determine their original position in the Carlton Rhyolite Group. The Davidson Rhyolite is intruded by rhyolite porphyry dikes.

The determination of the differentiation index for the different beds of the Carlton Rhyolite Group in the measured section at Bally Mountain would test the validity of this index as a measure of the degree of differentiation.

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(Figure 2 of this paper appears on pages 52-53)

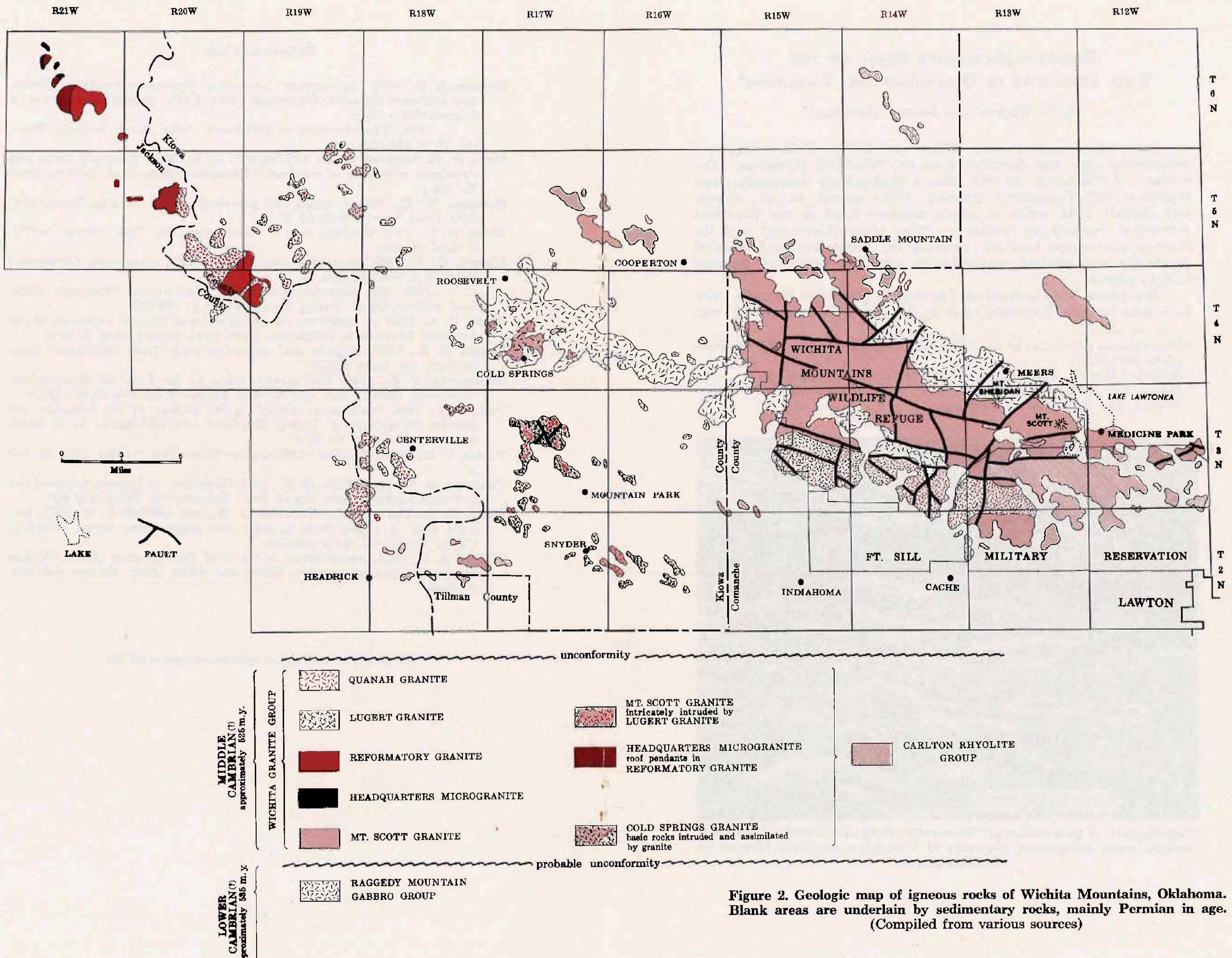

Figure 2. Geologic map of igneous rocks of Wichita Mountains, Oklahoma. Blank areas are underlain by sedimentary rocks, mainly Permian in age. (Compiled from various sources)

Electron-Microscope Study of the Wall Structure of *Quisquilites* and *Tasmanites**

L. R. Wilson[1] and John J. Skvarla[2]

Quisquilites buckhornensis Wilson and Urban, 1963, a supposed microscopic alga, was described from the Woodford Formation (Devonian) of Oklahoma. At that time a phylogenetic relationship was suggested with *Tasmanites* (Newton, 1875) emend. Schopf, Wilson, and Bentall, 1944, which is also a common fossil in the Woodford Formation. Subsequent studies involving phase microscopy and the electron microscope have strengthened the supposition and revealed previously unrecognized morphological structures which are common to both genera.

Specimens were secured of *Tasmanites punctatus* Newton, 1875, from near Latrobe, Tasmania (text-fig. 1), and of *T. huronensis* (Daw-

* Investigation supported by the University of Oklahoma Research Institute grant 1011-260.

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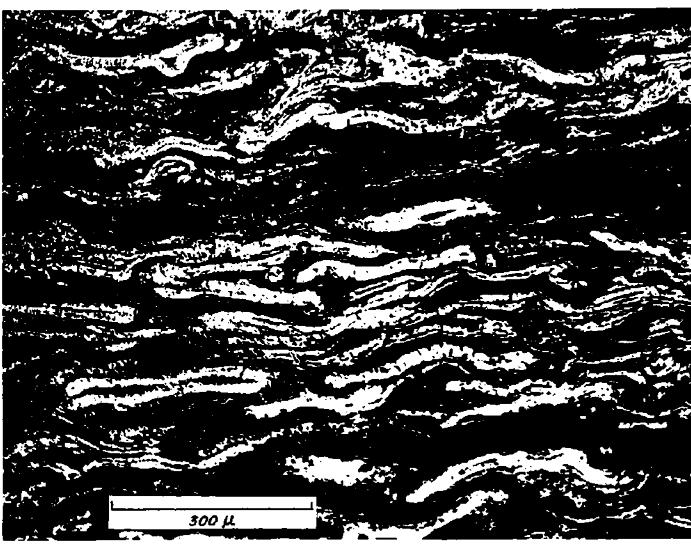
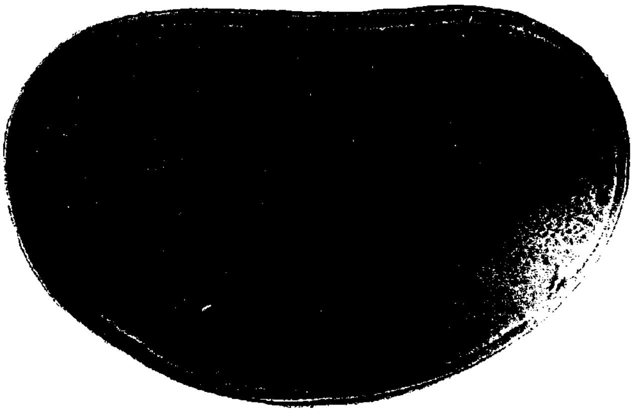


Text-figure 1. A thin section of "Tasmanite" from near Latrobe, Tasmania, showing many compressed specimens of Tasmanites punctatus Newton on bedding planes.

Plate I



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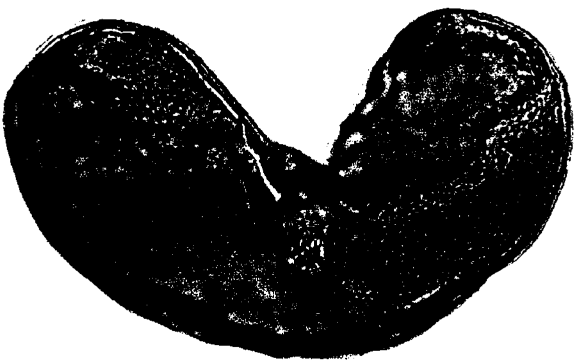

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Figure 1. Quisquilites buckhornensis, holotype; length 123 microns, height 78 microns. Slide OPC 350D-3-2.

Figure 2. Quisquilites buckhornensis, as it is generally observed in palynological preparations. Range of shape is from that shown in figure 1 to narrow terete types. Slide OPC 350B-3-3.

son, 1871) Schopf, Wilson, and Bentall, 1944, from Kettle Point, Ontario, Canada. The *Quisquilites buckhornensis* specimens were collected from the Woodford Formation of Oklahoma, reported by Wilson and Urban (1963).

Specimens for electron microscopy were stained 2 to 10 hours at room temperature in 2-percent osmium tetroxide buffered with sodium cacodylate at pH 7.2. Secondary staining for 2 hours in 5-percent uranyl acetate, dehydration in graded alcohols, and embedding in Araldite-Epon resins were done according to previously described procedures (Skvarla, 1966).

Sections approximately 1/40 micron thick were cut using diamond knives and Porter-Blum MT-2 microtome. The sections were retrieved on uncoated 200- and 300-mesh grids and stained with lead citrate for periods of 5 to 30 minutes. Observations and electron micrographs were made with a Philips-200 electron microscope equipped with a cold-finger device for hindering contamination, a double condenser lens, and a 20-micron objective aperture. Increased image contrast was obtained by using accelerating voltages of 40 to 60 kv.

Quisquilites buckhornensis is a common Upper Devonian microfossil in Oklahoma, and, as shown by Wilson and Urban (1963), it has considerable variation in shape and size (pl. I, figs. 1, 2). The best preserved specimens are essentially bean shaped, but most appear partially collapsed and assume a crescentic shape. Others are oval to terete with rounded ends and, except for ornamentation, are similar to some described species of the acritarch *Leiofusa.*

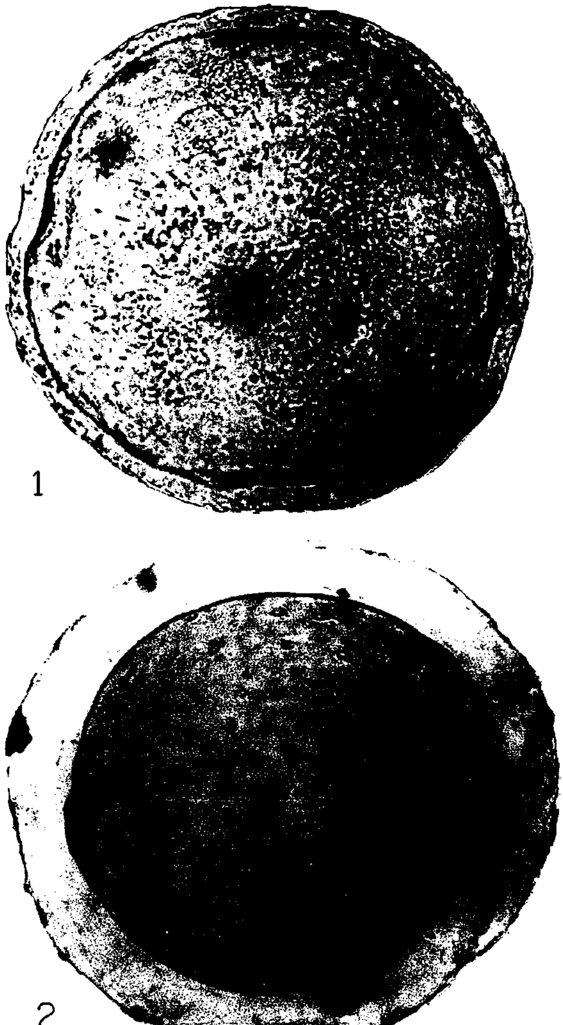
When observed with the bright-field compound microscope, all specimens of the species appear to have a granular to pitted surface, but observations of noncorroded specimens under oil-immersion optics and in the electron microscope reveal a surface of minute granules, best seen in profile on the periphery of the fossil (pl. III, fig. 1). Sections of the walls of *Quisquilites* and *Tasmanites* observed under the electron microscope reveal, in addition to the canals seen with the compound microscope, many minute canals oriented vertically within the wall structure (pl. III, figs. 1, 2; pl. V, fig. 1). The smaller canals appear to be essentially of uniform diameter (0.01 micron). In *Quis-*

Explanation of Plate II

Figure 1. Tasmanites punctatus; **diameter 285 microns, width of outer layer 14 microns. This specimen illustrates the common form which apparently has lost a portion of the outer wall during fossilization or corrosion during microtechnique processing. The canals appear smaller and less abundant than in the form shown in figure 2, but many specimens show transitional stages between the two types. Slide OPC 875-4-2.**

Figure 2. Tasmanites punctatus; **diameter 305 microns, width of outer layer 38 microns. This specimen has an air cavity within its center, resulting in marked optical definition of the canals. The base of each canal appears to have a circular thickening in contrast to the basal structure of** T. huronensis **(pl. IV, fig. 3). Slide 875-4-1.**

Plate II



quilites the larger canals range from 0.24 to 0.5 micron in diameter (pl. IV, fig. 1). The scattered distribution and irregularity of the larger canals in *Quisquilites* suggest that these perforations are different from those of *Tasmanites* (pl. IV, figs. 2, 3).

Quisquilites was originally described as having a three-layered wall, but subsequent electron-microscope study has substantiated the presence of only two (pl. V, fig. 3), as is the case in *Tasmanites* (pl. V, fig. 2). The determination of a third (innermost) layer may have been due to optical aberration under oil-immersion optics caused by the curvature of the walls in whole specimens.

Comparison of the wall structure of several species of *Tasmanites* has revealed numerous taxonomic problems which suggest incomplete understanding of certain species by their authors. Rather than enter a taxonomic controversy in this paper, we have restricted the electron-microscope investigation to specimens of *Tasmanites punctatus,* the type species (pl. II, figs. 1, 2), and one section of *T. huronensis* (pl. IV, fig. 3). The age of *T. punctatus* is Permian (Banks, 1961, p. 333); nevertheless it has essentially the same morphology as the Devonian species associated with *Quisquilites* in the Woodford Formation of Oklahoma.

The shape of *Tasmanites* in its uncompressed form is spherical. The striking feature of *T. punctatus* is the many large canals that are easily observed with the compound microscope, but which may or may not be present in *Quisquilites.* The large canals appear to be present in all species of *Tasmanites.* Their structure and distribution, which commonly appear variable within the same specimens, have been used to differentiate species. More study will be required to demonstrate that some of the currently recognized species are not the result of preservation factors, such as shown in *T. punctatus* (pl. II, figs. 1, 2).

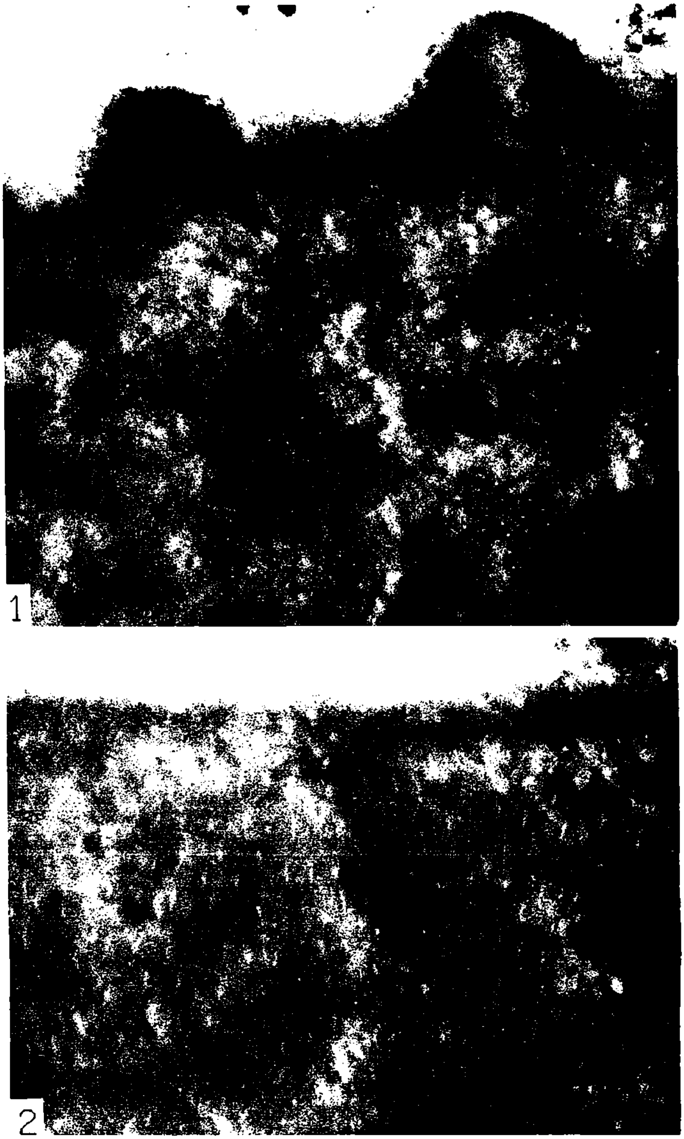
Observation of wall sections of *Tasmanites* with the electron microscope has revealed new details of the large canals (pl. IV, figs. 2, 3) and the presence of minute canals (pl. V, fig. 1) similar to those observed in *Quisquilites* (pl. III, figs. 1, 2; pl. IV, fig. 1). The larger canals in *Tasmanites punctatus* are generally surrounded by a structureless hyaline area in their upper portions (pl. IV, fig. 2). The basal portion of the larger canals of *T. punctatus* has not yet been observed with the electron microscope, but under oil-immersion optics (pl. II, fig. 2) the larger canals appear to have expanded circular bases. Basal sections of the canals of *T. huronensis* show the structure illustrated in plate IV, figure 3, which also shows cross sections of the smaller canals.

Explanation of Plate III

Figure 1. Quisquilites buckhornensis. **Electron micrograph of a section across outer surface showing two granular protuberances. Note cross sections and oblique sections of minute canals perforating the inner portion. Electron magnification x35,000, enlarged x1.6.**

Figure 2. Quisquilites buckhornensis. **Electron micrograph of a section across interior wall cut obliquely to canals. Electron magnification x52,000, enlarged x3.4.**

Plate III



1

2

The distribution of the smaller canals extends vertically through the inner layer of the wall in both *Tasmanites* and *Quisquilites*. The common occurrence and similarity of the canals, especially of the smaller ones, may be considered as strong evidence that the genera are phylogenetically related.

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(Plate V of this paper appears on page 63)

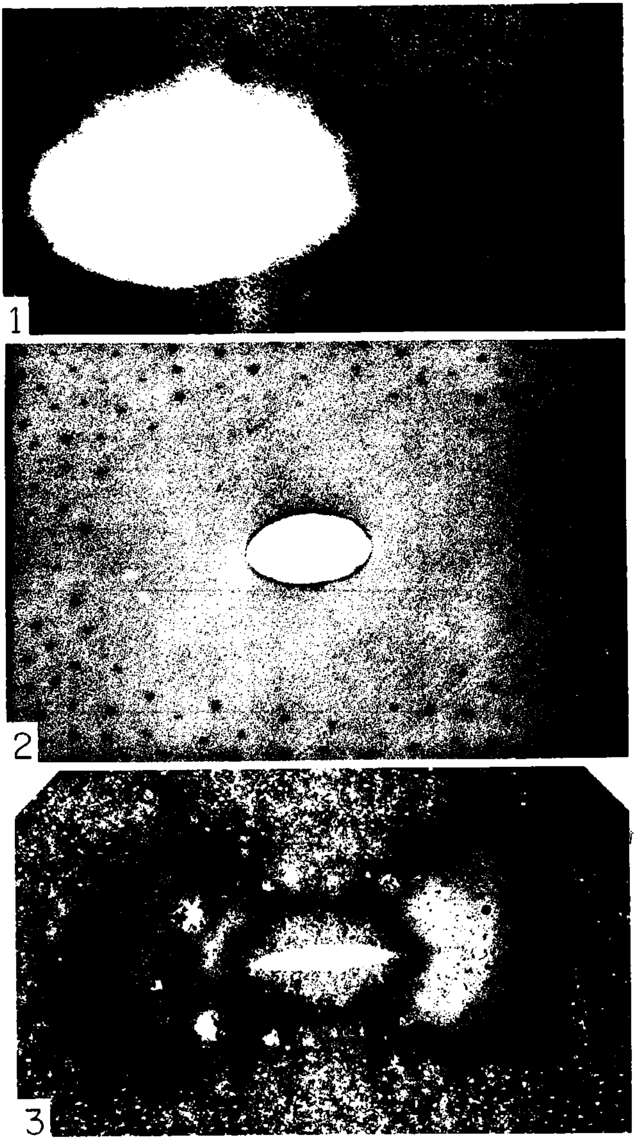
Explanation of Plate IV

Figure 1. Quisquilites buckhornensis. **Electron micrograph of a transverse section through a large canal; long diameter 0.25 microns. Electron magnification x35,000, enlarged x5.5.**

Figure 2. Tasmanites punctatus. **Electron micrograph of a transverse section through a large canal at approximately same plane of section as that of figure 1, showing hyaline area surrounding the canal. Electron magnification x5,400, enlarged x5.0.**

Figure 3. Tasmanites huronensis. **Electron micrograph of a transverse section through basal portion of a large canal, showing dumbbell-shaped structure associated with lenticular canal that lacks the hyaline area shown in figure 2. The long axis of the canal also occurs oriented 90° from that shown in illustration. Electron magnification x2,900, enlarged x4.3.**

Plate IV



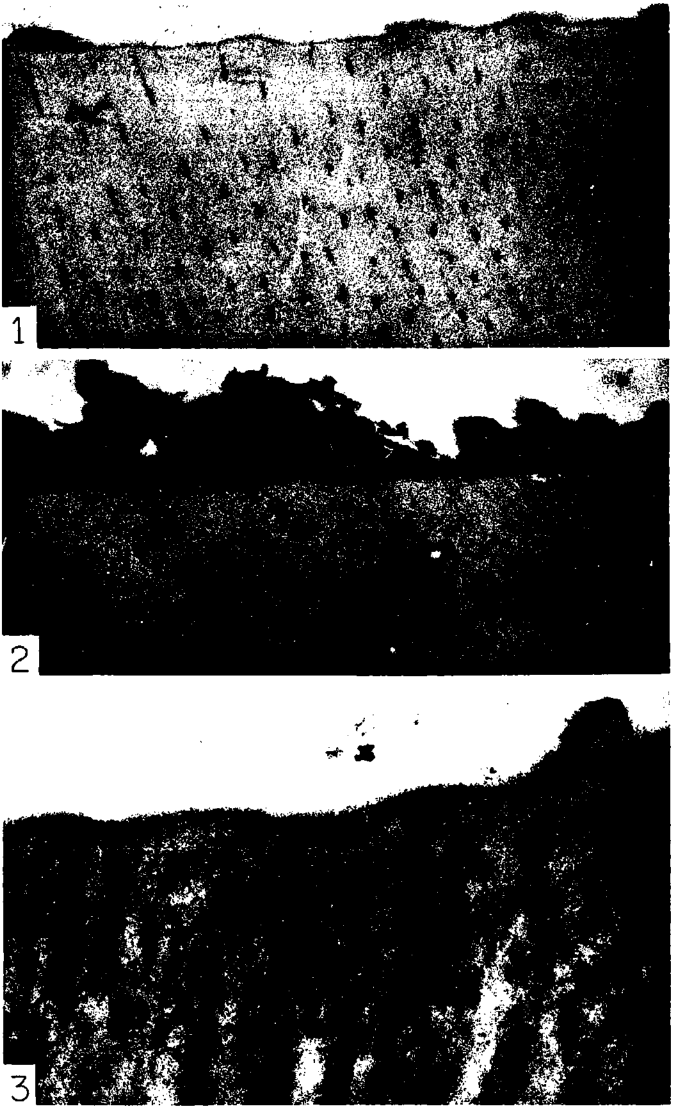
Explanation of Plate V

Figure 1. Tasmanites punctatus. **Electron micrograph of an oblique to nearly transverse section through inner wall, illustrating morphologic structure similar to that shown for** Quisquilites **(pl. III, fig. 2). Electron magnification x3,800, enlarged x7.1.**

Figure 2. Tasmanites punctatus. **Electron micrograph of a transverse section across corroded outer portion of wall, showing stain differentiation of wall layers. Electron magnification x5,400, enlarged x5.0.**

Figure 3. Quisquilites buckhornensis. **Electron micrograph of a transverse section similar to that of figure 2, demonstrating outer-wall differentiation. Electron magnification x6,500, enlarged x5.5.**

Plate V



Revision of Editorial Policy

In 1960 the editorial policy of the Oklahoma Geological Survey was modified to permit publication of new paleontologic and stratigraphic names in the *Oklahoma Geology Notes.* It was judged at the time, particularly in regard to the requirements for valid publication of biological taxa, that the circulation of the Notes was sufficiently large to warrant the change in policy (Okla. Geology Notes, vol. 20, p. 210). This decision is now reversed and papers containing formal proposals of new names will no longer be accepted for publication in the Notes. (The last such paper, in press at this time, has yet to appear).

Although this journal has enjoyed a steadily widening dissemination, and thus technically remains a suitable vehicle for valid publication, it is felt that, because of its parochial nature, significant contributions to biological taxonomy and stratigraphic nomenclature run too great a risk of being overlooked by specialists in other regions. Hereafter, the Survey will encourage authors of such consributions to seek publication in the national and international journals.

New Theses Added to O. U. Geology Library

The following Master of Science theses were added to The University of Oklahoma Geology Library during February 1967:

Subsurface stratigraphic analysis of northern Seminole County and portions of Pottawatomie and Okfuskee Counties, Oklahoma, by Francisco Cutolo-Lozano.

Stratigraphy and areal geology of central Choctaw County, Oklahoma, by Richard C. Dalton.

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