

## **Part Two: Participants Scientific Contributions**

### **A Contribution to the Palynological Knowledge of Lower Cretaceous Stratigraphy of the Middle Magdalena Valley, Colombia, South America**

(with 3 figures)

By JORGE BENDECK OLIVELLA

Petroleum Engineer and Geologist, Empresa Colombiana de Petroleos, El Centro,  
Santander, Colombia S. A.

#### **Summary**

In the present study a description is given of a pollen grain, which because of its abundance and characteristics, is an indicative fossil of "Tambor" Formation, which is considered in the chronogeological scale as of Valanginian age.

The grain characteristics suggest a generic relation with other grains found in the Alpine Triassic, and other grains reported with different names, including the lower Cretaceous from other places of Europe and Asia (Yemen). It is the first time this grain is reported in South America.

#### **Presentation**

This is the first part of a study and some of the preliminary conclusions about a palynological investigation, made by the author under the sponsorship of Empresa Colombiana de Petróleos in its Geological Laboratory at El Centro, Santander, Colombia.

#### **Purpose of the Investigation**

With the desire to elaborate a group (column) of fossils as basis for the palynological analysis for Middle Valley of Magdalena River, the studies were started with the deepest Cretaceous, known as "Tambor" or "Arcabuco".

Actually there exists in Colombia a great interest for the Cretaceous because of the recent oil discoveries in sediments of that age, in the Southern part of the country.

#### **Samples and Slides Preparation**

The samples were taken from cores of the oil well "Infantas 1613" which situation and location is shown in the attached map (fig. 1).

The material used is exclusively sandstone, almost quartzite, with some thin dark colored inclusions, where one finds very rich organic matter.

The technic of preparation was to remove the silex by  $H_2F$ , following the Erdtman Method, improved by W. KLAUS.

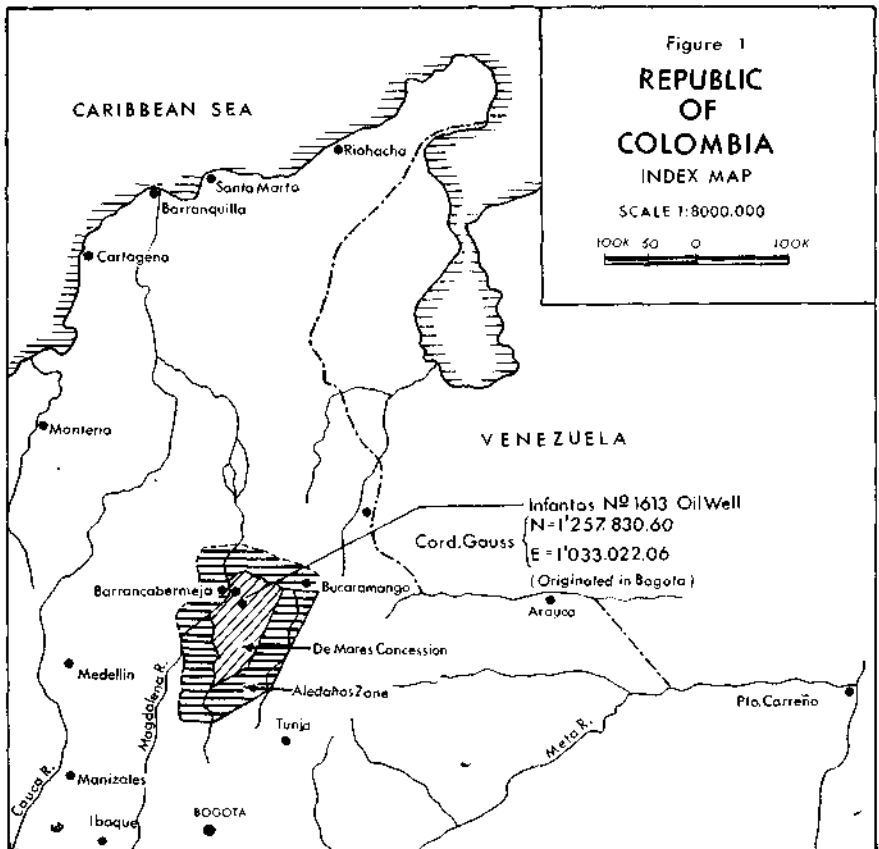
The slides were prepared by the system of single grains embedded in glycerin-jelly.

### Working Method

The analysis of the grains was made with a binocular Leitz microscope through No. 10, 45, 60, 100 objectives and 10-X eyepiece; photos are taken with an automatic Leitz Camera.

### Acknowledgment

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### Geology

The "Tambor" formation rests unconformably on the Triassic-Jurassic, called "Giron Series", formed by three members: basic group conglomeratic, intermediate group of gray sandstone, shales or red limolites, and the upper group formed by sands.

The red elements found in the lower and medium members are probably reworked "Giron" rocks.

The "Tambor" formation possibly represents continental deposits and litoral deposits from the beginning of the Cretaceous cycle of marine sedimentation.

"Infantas 1613" oil well, located in the Gauss coordinates 1.257.830.60-N and 1.033.022.06-E originated in Bogotá, encountered upper oligocene sediments down to 2060 feet, further 1600 feet of Middle Oligocene and lower Oligocene. The Eocene, 500 feet, rests unconformably on the "Galembó" member of "La Luna" formation of the upper Cretaceous. The section through the Cretaceous is represented by 6900 feet of sediments from "La Luna, Simiti, Tablazo, Paja, Rosablanca y Tambor" formations. The total depth of the well is 11,100 feet.

A standard stratigraphical column for Middle Magdalena Valley is attached (fig. 2).

### Taxonomy and Nomenclature

The symbols used in descriptions and the morphological terminology follow the principles of IVERSEN & TROELS SMITH (1950).

All preparations, slides and holotypes are kept in the files of Palynological Laboratory of Empresa Colombiana de Petroleos at El Centro, Santander, Colombia.

*A n t e t u r m a* : Pollenites R. POT.

*S u b a n t e t u r m a* : Praepollenites (PANT, 1954) emend.

*S u b t u r m a* : Circumpolles (PFLUG, 1953) emend.

*G e n u s* : *Corollina* MALJAWKINA, 1949.

*Corollina ecopetrolis* n. sp.

*H o l o t y p e* : Photo No. 1, Slides M-3-a, Single Grain.

*D e r i v a t i o n o m i n i s* : Homage to Empresa Colombiana de Petroleos (Ecopetrol).

*D e s c r i p t i o n*. Polar view circular to oval; side view like an open umbrella (see fig. 3).

On the distal side parallel to the equatorial line there is a bright, light color ring without any relief around the grain, separating two more dark zones.

# Standard nomenclature for Middle Magdalena Valley-Colombia (Upper Tertiary excluded)

System	SUBDIVISIONS		SERIES	STANDARD NOMENCLATURE	THICKNESS METERS	LITHOLOGY	GENERALIZED LITHOLOGIC DESCRIPTION
	Colombia	GULF COAST					
TERTIARY	MIDDLE	VICKSBURG GROUP	OLIGOCENE (?)	CHUSPAS GROUP	COLORADO FORMATION	575-3200	mostly conglomerate at base b la cira fossils alternating red shale and coarse conglomeratic sandstone
					MUGROSA FORMATION		b mugrosa fossils (local) shale with thin beds fine grained sandstone
	LOWER	JACKSON FM	Eocene (?)	CHORRO GROUP	ESMERALDAS FORMATION	1225-2300	b las carros fossils (local) C sandstone with interbedded siltstone and shale C occasional lignite seams
		MIDWAY FM			PALEOCENE		LISAMA FORMATION
	CRETACEOUS	UPPER		DANIAN ?	LA LUNA FORMATION	UMIR SHALE	± 1000
NAVARRO GROUP			MAESTRICHTIAN				
TAYLOR MARL			CAMPANIAN				
AUSTIN CHALK			SANTONIAN ?				
MIDDLE		EAGLE FORD SHALE	CONIACIAN	TURONIAN	PUJAMANA MEMBER	180-350	predominantly calcareous shale with limestone interbeds chert beds and limestone concretions
		WOODBINE FM	CENOMANIAN	SALTO LIMESTONE	SALADA MEMBER	50-225	black, thin-bedded, calcareous shale medium soft
		WASHITA GROUP	ALBIAN		50-100	hard, black, calcareous shale limestone beds, pyrite concretions	
		FREDERICKSBURG		SIMITI SHALE	250-650	hard, argillaceous limestone, shale partings	
		TRINITY GROUP	TABLAZO LIMESTONE		150-325	black, thin-bedded shale	
		NUEVO LEON GROUP			APTIAN	125-625	limestone and marl abundantly fossiliferous
		LOWER	DURANGO GROUP	BARREMIAN	PAJA FORMATION	ROSA BLANCA FORMATION	150-425
HAUTERIVIAN				massive limestone and marl abundantly fossiliferous			
VALANGINIAN ?			TAMBOR FORMATION	CORE-SAMPLES 0-650	dark red siltstone, sandstone and conglomerate gray at top, with foraminifera		
JURATRIAS				GIRON FORMATION (UNDIFFERENTIATED)	?	interbedded red and brown siltstone, shale and sandstone, with volcanics	

Fig. 2.

There is another zone in the middle of the grain, which is thinner than the rest of the grain body, showing perhaps the reducing thickness of the *ektexine* possibly indicating the tetrad mark. It lets the light go through easily, compared with the rest of the body (see fig. 3).

The radius of this circle is  $\frac{1}{4}$  of the equatorial line radius. The *ektexina* is very thin; its sculpture in the interior zone, limited by the ring, is microreticulated. In the exterior zone of the characteristic luminous ring, one can see concentric rings as lines that come one after the other.

Size: 25—32 microns.

### Stratigraphic Distribution

Up to now this type has been found in the upper part of the "Tambor" Formation, equivalent to Valanginian age.

### References

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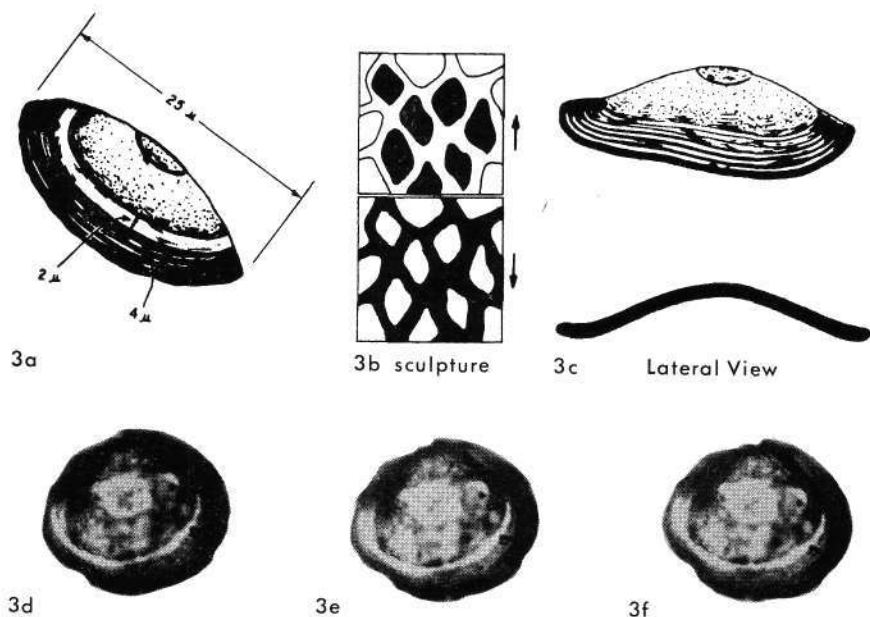


Fig. 3.