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DESCRIPTION OF SOME GENERA AND SPECIES OF FOSSIL POLLEN AND SPORES

(with 2 plates)

by

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INTRODUCTION

In a former publication we gave a short description and provisional classification of number of species of Maestrichtian age (VAN DER HAMMEN, 1954).

As we have established now more definitely the classification-system, we give here now the complete description of some of these species and moreover of some new species from the Tertiary, as we need to mention those species in some publications on climatic changes which will soon appear. For the same reazon we describe some of the spore-genera we proposed in the former publication (VAN DER HAMMEN, 1956).

MONOCOLPITES VAN DER HAMMEN 1954

Monocolpites medius VAN DER HAMMEN

Holotype fig. 1.

1954 *Monocolpites medius* VAN DER HAMMEN 1954, p.88, plate I.
Description: Pollengrain monocolpate.
Sculpture-type: psilate, but very small perforations can be observed vaguely. Colpe rather long and relatively narrow. The colpe occupies the whole length of the grain, but may be somewhat shorter in other grains of the same species.
Thickness of exine: ± 0.5 micron. Size of pollengrain 33 x 22 micron (variability, within the species 30-37.5 micron). Form of pollengrain ± oval (with the ends somewhat flattened).
Type: Slide F I 15; Loc. 127.7 x 40.0 (Ortholux); Col. I.G.N.C.
Natural relationship: This species belongs with much probability to the Palmae, but the genus cannot be established with certainty.
Age and locality: Maestrichtian (Guaduas formation). Suesca (Cogontá), Sample VII No. 4. Colombia (S.A.).

Monocolpites franciscoi nov. fsp.
Holotype fig. 2.

Description: Pollengrain monocolpate.
Sculpture-type: echinate. Colpe relatively long, margin somewhat irregular. Length of spines 1.5-2.5 micron. The spines are deep-rooted, and form salients on the interior side of the exine below each of them.
Thickness of the exine ± 1 micron. Size of grain (type) 53 x 33 micron. Form of grain oval, somewhat elongated.
Type: Slide F IV 4; Loc. 133.0 x 26.7 (Ortholux); Col. I.G.N.C.
Natural relationship: This species belongs doubtlessly to the Mauritiaceae family (Palmae).
Age and locality: Middle-Lower Oligocene (limit Carboneras - and Leon formations); Sample Ha-607; Catatumbo (Tibú); Colombia (S.A.)

PROXAPERTITES nov. fgen.

Pollengrains with a big and wide "aperture" at the proximal side of the grain (remnants of an extremely thin exine-layer can be found sometimes in the "aperture"). Grains of this type are sometimes found still in dyads (or sometimes tetrads, etc.
Genotype: *Monocolpites operculatus* VAN DER HAMMEN 1954

Proxapertites operculatus (VAN DER HAMMEN)
Holotype fig. 3.

Synonym: 1954 *Monocolpites operculatus* VAN DER HAMMEN 1954, p. 89, plate 5.
Description: Pollengrain with a big and wide aperture. Sometimes the grains are found still in dyads, united with the side where the "aperture" is present; but in general they are found partly or completely separated.

Sculpture-type micro-foveolate. Diameter of foveolae 0.1-0.3 micron. Form of grain nearly round or somewhat elongated or slightly square, Thickness of exine ± 1.5 micron. Size of type-specimen 50 x 44 micron but rather variable within the species. "Aperture" large (in the type-specimen it has ± 31 x 35 micron, but can be relatively greater in other specimen) and round to oval, margin relatively irregular. - This aperture is not homologous with the colpe of the majority of the monocotyledons (which is placed on the distal side of the grain), because in this case the "aperture" is present at the proximal side of the grain, as is also the case in various representants of the Annonaceae. As this "aperture" does not correspond either to the definition of "colpe" of IVERSEN & TROELS-SMITH (Length and breadth are nearly the same), we resolved to create a new genus for this and similar types.

Type: Slide F I 73; Lpo. 121.9 x 45.8 (Ortholux); Col. I.G.N.C.

Natural relationship: This species is nearly identical with pollengrains of *Astrocaryum acaule* and the natural relationship has to be very close, as the special type of this grain is only known from very few recent polden species. In the loose recent pollengrains of *Astrocaryum acaule* one can sometimes observe a very thin membrane of exine still covering party the big "aperture".

Age and locality: Paleocene (Lisama formation); Rio Lebrija, Sample HB-284; Colombia (S.A.).

PSILATRILETES nov. fgen.

Trilete spores; Sculpture-type psilate.

Genotype: *Triletes guaduensis* VAN DER HAMMEN 1954.

Psilatriletes guaduensis (VAN DER HAMMEN)

Holotype fig. 4.

Synonym: 1954 *Triletes guaduensis* VAN DER HAMMEN 1954, p. 101, plate 16.

Description: Trilete spore.
Sculpture-type: psilate. Size of spore (type) 33.5 x 30 micron. Thickness of exine 0.7-1 micron. From the tetrad-mark one arm is somewhat longer than the other two, and reaches the limit of the proximal side with the distal side. At both sides of this arm a thickening or fold of typical form is present, slightly divergating from the end of the arm towards the centre of the tetrad-mark. The broadest part of these "thickenings" is 4 to 5 micron wide.
Type: Slide F I 40; Loc. 127.0 x 29.9 (Ortholux); Col. I.G.N.C.
Natural relationship: This species belongs possibly to the Cyatheaceae family.
Age and locality: Maestrichtian (Guaduas formation); Suesca (Cogontá) Sample VI Nº 7. Colombia (S.A.).

STRIATRILETES nov. fgen.

Trilete spores; Sculpture-type striate.
Genotype: *Striatriletes susannae* nov. fsp.

Striatriletes susannae nov. fsp.
Holotype fig. 5.

Description: Trilete spore.
Sculpture-type striate. Size of type specimen 82 x 75 micron, but rather variable within the species. The arms of the tetrad-mark are relatively long, but in general do not reach the limit of the proximal and distal sides. Tetrad-mark sometimes slightly opened. Breadth of the striae 2-3 micron. The distance between the striae is smaller than the breadth of the striae. The majority of the striae leave divergating from the ends of the arms of the tetrad-mark. Bifurcations and little pronounced constrictions of the striae can be observed sometimes.
Type: Slide F IV 4; Loc. 129.4 x 39.6 (Ortholux); Col. I.G.N.C.
Natural relationship: This species is rather similar to pollengrains of the genus *Aneimia*, but the relationship is not completely sure,

as also in the Parkeriaceae somewhat similar types are found.
Age and locality: Middle to Lower Oligocene (limit Carboneras- and Leon-formation); Sample Ha-607, Catatumbo (Tibú). Colombia (S.A.)

PSILAMONOLETES nov. fgen.

Monolete spores; Sculpture-type psilate.
Genotype: *Psilamonoletes tibui* nov. fsp.

Psilamonoletes tibui nov. fsp.

Holotype: fig. 6.

Description: Monolete spore.
Sculpture-type: psilate. Size of the type-specimen 45 x36 micron. Exosporium thin, 0.5 to 0.8 micron. Color yellowish transparent. Aperture (in the type-specimen) ± 25 micron, but it is not always clearly defined. Form (because of the thin exosporium) irregular, sometimes bean-shaped, sometimes more rounded (as in the type-specimen), and sometimes with irregular folds.
Type: Slide F III 72; Col. I.G.N.C.
Natural relationship: not known.
Age and locality: Lower Eocene (Mirador formation); Sample Ha-487, Catatumbo (Tibú); Colombia (S.A.).

VERRUMONOLETES nov. fgen.

Spores monolete; Sculpture-type verrucate.
Genotype: *Verrumonoletes usmensis* nov. fsp.

Verrumonoletes usmensis nov. fsp.

Holotype fig. 7.

Description: Spore monolete.
Sculpture-type: verrucate. Size of type-specimen 40 x 33 micron. The

spore is ± bean-shaped. Aperture relatively short. Thickness of the exosporium 0,8-1,2 micron (verrugae not included). Verrugae relatively high: height up till ± 2 micron. Diameter of the verrugae: 2-4 micron. Verrugae irregular, some higher than others, and distributed irregularly.

Type: Slide F III 83; Loc. 124,3 x 39,6; Col. I.G.N.C.

Natural relationship: This species belongs probably to the Polypodiaceae.

Age and locality: Lower Oligocene (Carboneras formation); Sample Ha 617, Catatumbo (Tibú); Colombia (S.A.).

REFERENCES

HAMMEN, T. VAN DER, 1954. El desarrollo de la Flora Colombiana en los períodos Geológicos: I Maestrichtiano hasta Terciario mas Inferior. Boletín Geológico, Vol. 2,1.

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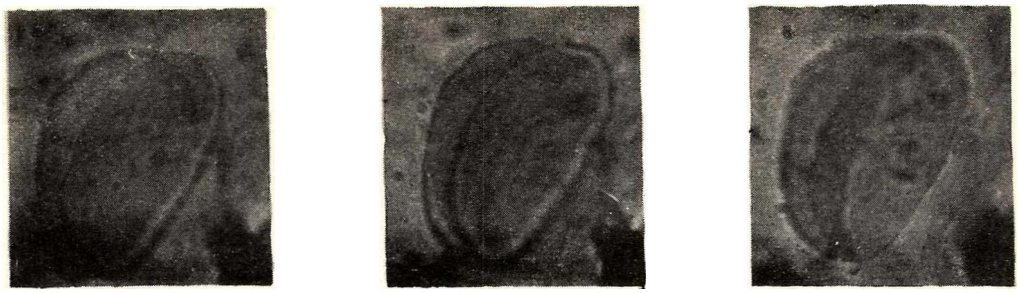

Fig:1 Monocolpites medius

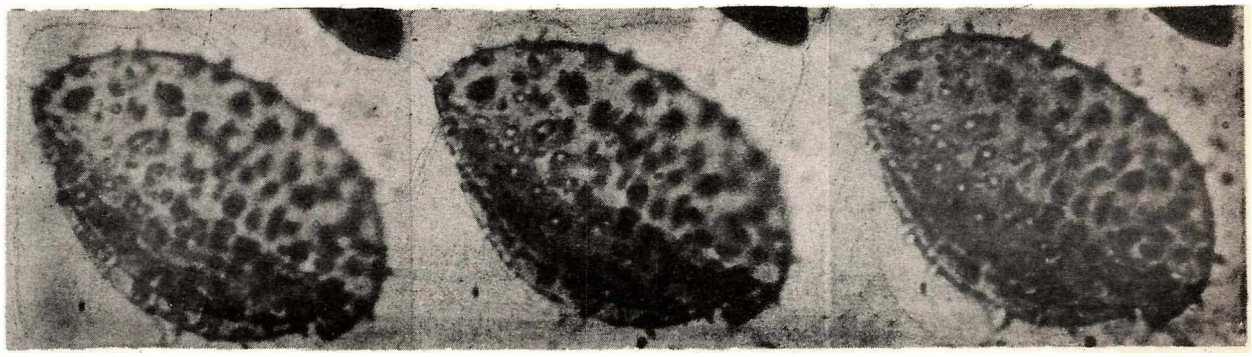

Fig:2 Monocolpites franciscoides

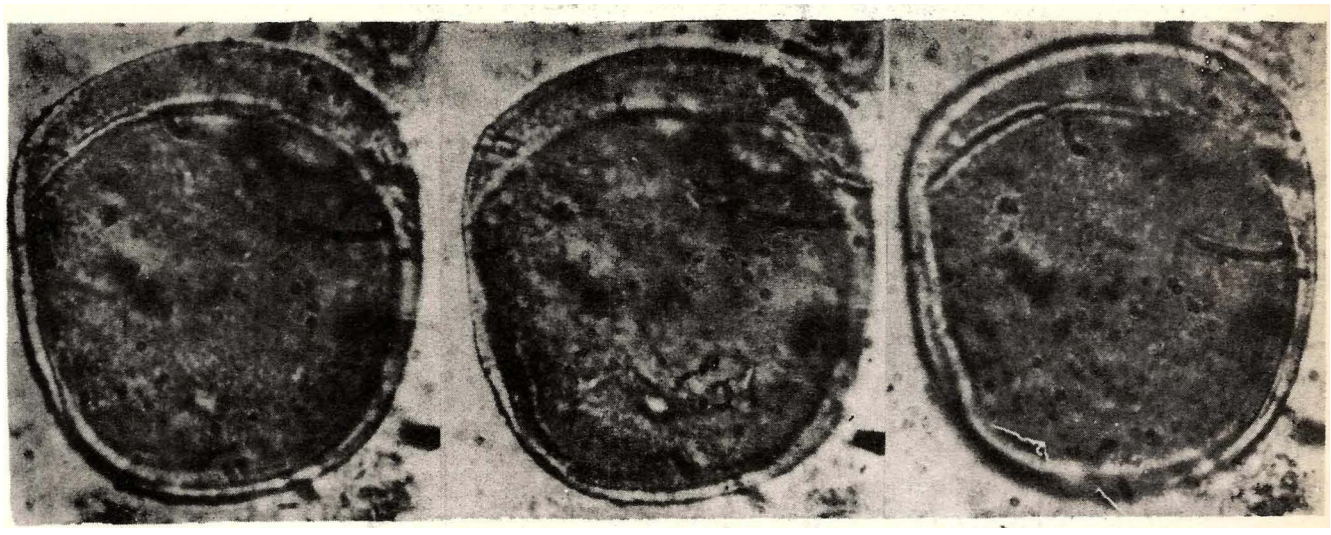

Fig: 3 Proxapertites operculatus

1.000 x

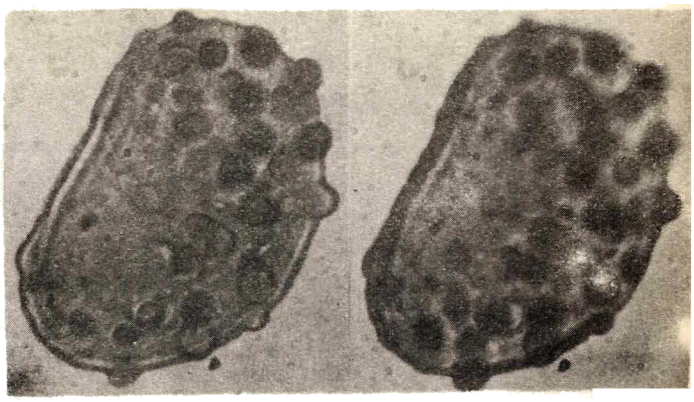

Fig:7 Verrumonoletes usmensoides

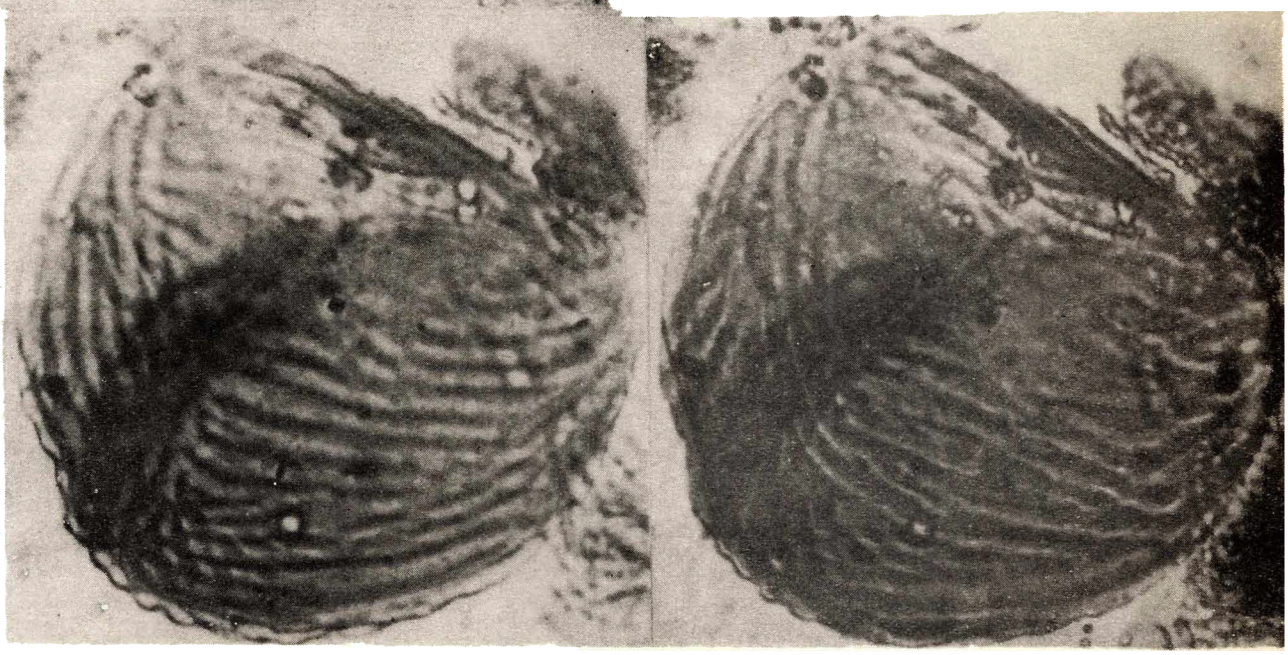

Fig:5 Striatriletes susannae

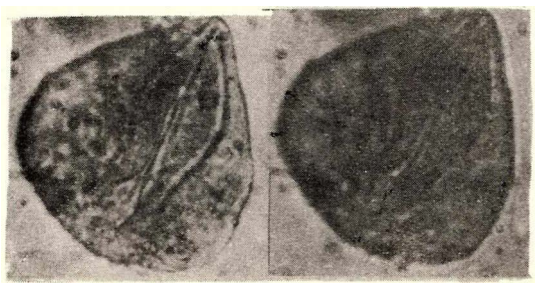

Fig: 4 Psilamonoletes guaduensis

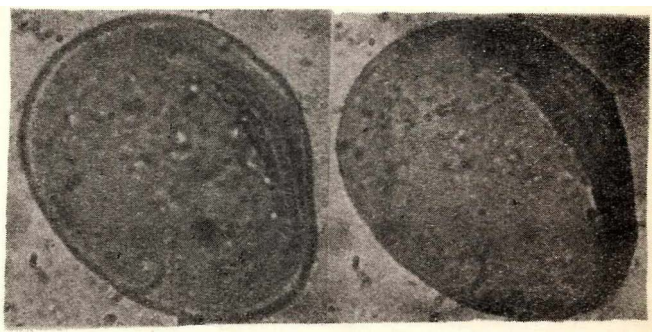

Fig:6 Psilamonoletes tibui

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