

# SOME MEGASPORES FROM THE AMASRA (ZONGULDAK) GOAL BASIN

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## INTRODUCTION

While investigating the stratigraphical value and vertical distribution of Megaspores in the Amasra Carboniferous, six new species and some new forms were again observed. These new species of Megaspores were collected from the different bore-cores. They are individually described below.

## SYSTEMATIC DESCRIPTION

*Trilethisporites retipilatus* sp. n.

Plate I, Fig. 1,2

*Description.* — The shape of the spores is sub-triangular in equatorial outline, compressed in proximal-distal or in oblique direction. Spore size varies from 800 to 1100 microns; holotype 450? X 850 microns (3 specimens were found). Triradiate mark very conspicuous, coarse, roof-like, as long as the spore radius, 100-120 microns in width at the base and same in height. Cingulum is narrow, not always clearly visible, sometimes barely distinguishable. Only distal area is covered with seven tubercles, 110 microns in diameter, but the proximal side is free from tubercles (knolls). The spore coat is reticulate on both proximal and distal surfaces. The lacunae are from 20 to 40 microns in width, the reticulate ridges (muri) have characteristic bead-shaped ornamentation. Exospore black and about 40-50 microns thick.

*Comparison.* — This new species most resembles *Trilethisporites tuberculatus* (Zerndt) Pot. and Kr., but clearly differs from it by its retipilate ornamentation.

*Locality.* — Amasra, Boring No. 41.

*Age.* — Westphalian C.

*Tuberculatoisporites egemeni*<sup>1</sup> sp. n.

Pl. I, Figs. 3, 4; Holotype Fig. 3

*Description.* — The shape of the spores is generally round, flattened in oblique direction. 2 specimens were observed: one 1100x1000 microns, the other

<sup>1</sup>The name *egemeni* was attributed to this new species in honor of Phytospaleontologist

1275 - 1075 microns in diameter. Triradiate ridges conspicuous, half-cylindrical in shape, 200-300 microns in length, 20-25 microns in height and the same in width. Arcuate ridges and the border of the contact faces not distinguished. Whole spore coat densely covered with numerous truncated, budded papillae, 25-30 microns broad and 20 microns high; but the contact faces beset with densest and shortest papillae, about 10 microns in diameter. At the top of the triradiate ridges a knob is visible, 50 microns in breadth. Exospore black, slightly plicate and 25-30 microns in thickness.

*Comparison.*— This new species closely resembles *Tuberculatisporites tulerosus* Ibrahim, 1933, but differs from it by the shape of ununiform papillae.

*Locality.* — Amasra, Boring No. 47, 825 m.

*Age.* — Westphalian C.

*Triangulatisporites globuliferus* sp. n.

Pl. I, Figs. 5, 6; Holotype Fig. 6

*Description.* — Equatorial outline irregularly oval or roundly triangular with distinct angles, apex more or less elevated than the ray ends, flattened in dorso-ventral direction. Including the flange (zona), oval specimen is 475x300 microns, whereas triangular specimen is 400 microns in diameter (2 specimens measured). Triradiate ridges distinct, as broad as high (about 30-40 microns) and reaching up to the angles. Proximal side black and smooth, but ornamented with shining black globules, 8-12 microns in diameter and touching each other. Sub-equatorial flange (zona), shining black, granulate and about 40-50 microns in width. The middle part of the distal side is hollow, contains some minute depressions, and this portion of the spore is ornamented with granulations. Exospore black, smooth, rather thick and about 20-25 microns.

*Comparison.* — By the distal sculpture these new specimens most resemble *Triangulatisporites zonatus* (Ibrahim) Pot. and Kr., but differ from it by their proximal ornamentation (globules) and by granulated zona.

*Locality.* — Amasra, Boring No. 41.

*Age.* — Westphalian C.

*Lagenosporites (Sporites) cerebralis* (DIJKSTRA, 1957) comb. n.

Pl. I, Figs. 7, 8; Holotype Fig. 7

*Description.* — Spores are irregularly oval in equatorial contour, compressed in proximal-distal or in lateral direction. Dimension of the spores 525x320 and 450x375 microns, respectively (2 specimens-observed). Triradiate ridges very distinct, coarse, straight, nearly as long as the radius of the spore, 55-65 microns broad and approximately the same in height. Apical prominence (gula) of the trilete mark is 70-75 microns wide and high. Arcuate ridges thin and about 10 microns broad. Contact surfaces clearly visible. The proximal, especially distal sides of the spores (contact areas excluding), covered with characteristic folds which strikingly resemble the winding of a brain. Extrema lineamenta and the surface (including the trilete mark) are punctate-granulate in all parts of the

spore and completely devoid of any special ornamentation. Spore coat (exine) is black, rather thick, about 20-25 microns.

These new spores by their characteristic fold structure show great resemblance to *Sporites cerebralis* Dijkstra, 1957, and have been given the same name, but our specimens are thicker in spore wall and a little smaller in spore size.

*Locality.* — Zonguldak, Beycuma, Kalabaklar village.

*Age.* — Westphalian B-A.

*Valvisporites subverrucosus* sp. n.

Pl. II, Figs. 9-12; Holotype Fig. 11

*Description.* — The shape of the spores is roundly oval or sub-triangular in outline, flattened in lateral as well as in dorso-ventral direction. Spore size varies from 800 to 1400 microns, holotype is 950x1175 microns (25 specimens measured). Triradiate ridges very conspicuous, coarse, straight, as long as the radius of the spore in length and 110-170 microns high, about 100-140 microns broad. Arcuate ridges distinct, very prominent, 100-125 microns broad and the same in height. Auriculae only in the form of small projections which may not always be visible. Cingulum not clearly distinguishable. Exine on both sides of the spore, inclusive of the cingulum and triradiate ridges, covered with verrucae of various sizes. Spore coat light- and dark-brown, thick and approximately 60-80 microns.

*Comparison.* — These new specimens resemble in some respects (especially by their verrucae) *Valvisporites verrucosus* Bhardwaj, but our new species are much larger in size and much coarser in every character than the former. On the other hand, they show (by their large size) some resemblance to *Valvisporites auritus* var. *grandis* (Zerndt) Pot. and Kr., but differ from it by verrucose exine and by very small auriculae.

*Locality.*—Amasra, Boring No. 31; 237-240 m.

*Age.*—Westphalian D.

## EXPLANATION OF PLATES

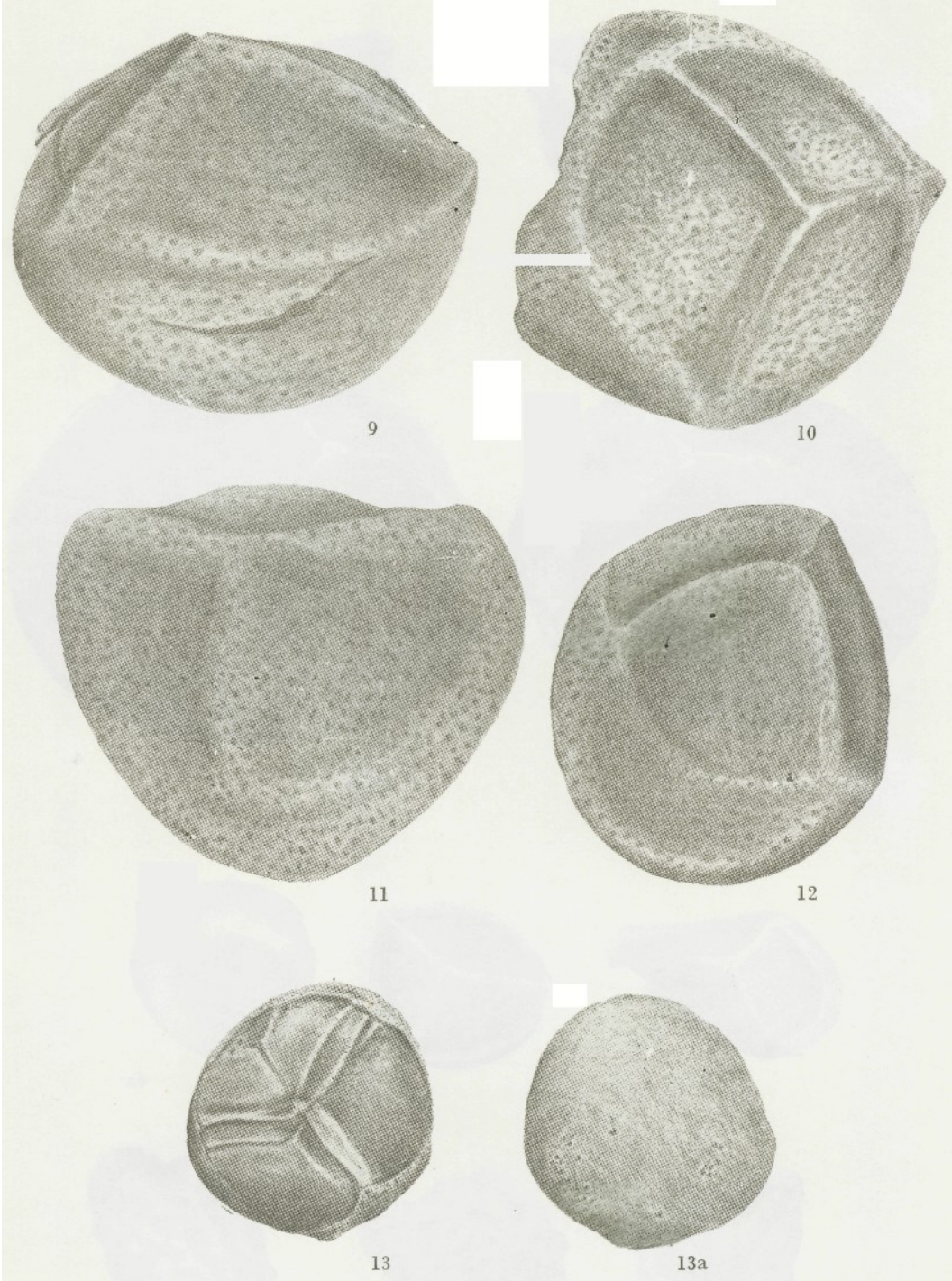
### PLATE I

- Fig. 1 — *Triletoporites retipilatus* sp. n. X 50  
 Fig. 2 — Sculpture of *T. retipilatus* sp. n. X 300  
 Fig. 3 — *Tuberculatoisporites egemeni* sp. n. X 50  
 Fig. 4 — *Tuberculatoisporites egemeni* sp. n. X 60  
 Figs. 5, 6 — *Triangulatisporites globuliferus* sp. n. X 70  
 Figs. 7, 8 — *Lagenoisporites (Sporites) cerebralis* (Dijkstra, 1957)  
 comb. n. x 70

### PLATE II

- Figs. 9, 11 — *Valvisporites subverrucosus* sp. n. X 60  
 Figs. 10, 12 — *Valvisporites subverrucosus* sp. n. X 50  
 Fig. 13 — *Biharisporites blattis* sp. n. X 70





*Biharisporites blattis* sp. n.

Pl. II, Fig. 13

*Description.* — The shape of the spore is round, flattened in proximal-distal direction. Spore measures 525 microns (only one specimen has been found, but its conservation is excellent). Triradiale ridges prominent, 3/4 or more of the radius of the spore in length, 10 microns in width and the same in height. Arcuate ridges distinct, 10-13 microns broad and high. Contact areas are large; these occupy almost the whole proximal surface of the flattened spore. On both sides of the triradiale rays two thin grooves are distinguishable, which extend nearly parallel to the rays, thus resembling a propeller in their polar view. Whole spore coat, the contact faces included, is finely granulate; diameter of the reddish and semi-translucent granules about 4-5 microns. Between these granules some red, semi-translucent objects, 8-10 microns in diameter, are observed. A few of them can be seen on the proximal, but more are found on the distal side. Exine reddish-brown, semi-translucent.

*Locality.*—Amasra, Boring No. 41.

*Age.* — Westphalian C.

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