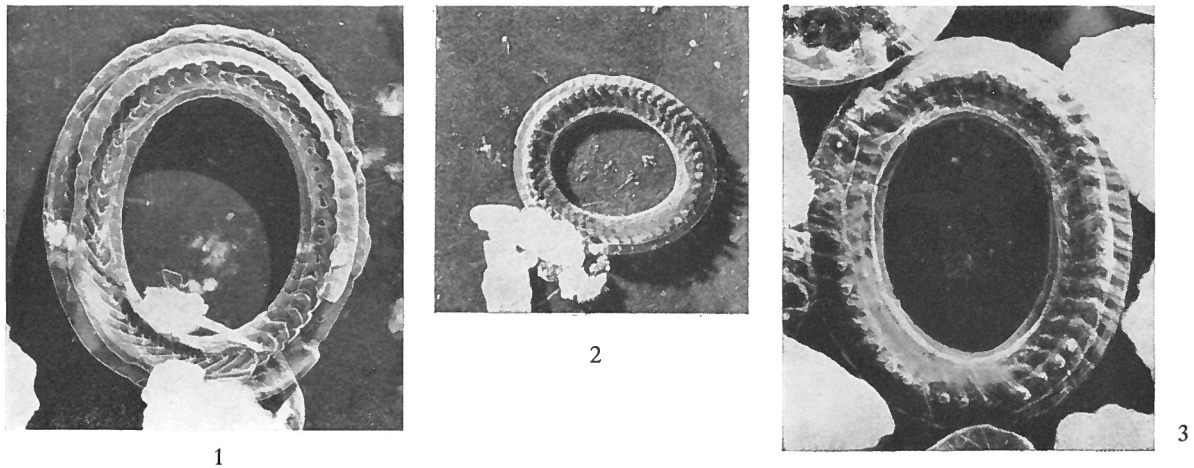


**Manivitella pemmatoidea** THIERSTEIN emend. BLACK, 1973

1965 *Cricolithus pemmatoideus* DEFLANDRE; *Manivit*, *Revue Micropaléont.*, vol. 8, p. 192, pl. 2, fig. 8.

1971 *Manivitella pemmatoidea* THIERSTEIN, *Eclog. geol. Helv.*, vol. 64, p. 480, pl. 5, figs. 1-3.



Figs. 1-3 — *Manivitella pemmatoidea* THIERSTEIN, 1971. 1) Proximal view. Upper Gault, Cambridge Experimental Borehole (H.865). SM 22982. x 3,400. 2) Distal view showing shadows cast by the spines on the ridge of the distal shield. Lower Gault, Bed V, Folkestone (H.605). SM 13474. x 2,150. 3) Distal view. Lower Gault, Mildenhall (H.962). SM 26336. x 3,400.

**Description:**

Diagnosis: A species of *Manivitella* with a short spine or knob on each of the petaloid elements of the distal shield.

Manivit's original diagnosis, based upon observations under a light-microscope, mentions "une apparence perlée", which well describes the appearance of the spines on the distal shield when viewed under these conditions.

Measurements (in microns):

|        |       |               | d    | d'   | p    | p'   | c    | c'  | n  |
|--------|-------|---------------|------|------|------|------|------|-----|----|
| H.594  | 10388 | proximal view | 12.0 | 9.7  | 10.7 | 8.7  | 7.1  | 5.0 | 50 |
| H.595  | 16396 | " "           | 12.2 | 10.1 | 10.6 | 9.2  | 6.8  | 4.9 | 44 |
| H.605  | 13474 | distal "      | 14.0 | 12.1 | 12.8 | 10.5 | 8.6  | 7.0 | 46 |
| H.607  | 16184 | " "           | 11.2 | 10.3 | —    | —    | 6.7  | 5.8 | 46 |
| H.799  | 31087 | proximal "    | 13.2 | 11.8 | 12.2 | 10.8 | 8.4  | 6.7 | 51 |
| H.865  | 22982 | " "           | 15.0 | 12.8 | 13.6 | 11.0 | 9.4  | 7.0 | 46 |
| H.949  | 16739 | " "           | 16.3 | 13.7 | 14.9 | 12.0 | 10.0 | 7.0 | 44 |
| H.962  | 26336 | distal "      | 15.7 | 12.7 | —    | —    | 9.5  | 7.0 | 48 |
| H.1049 | 28951 | proximal "    | 11.3 | 10.0 | 10.3 | 9.3  | 8.2  | 5.3 | 50 |

d, d' = major and minor diameters respectively of the distal shield or distal surface.

p, p' = major and minor diameters of the proximal shield or proximal surface.

c, c' = major and minor diameters of the central area.

n = number of component elements in the distal shield, loxolith-ring or other marginal structure.

#### Remarks:

This large and conspicuous coccolith was known to French workers for many years as *Cricolithus pemmatoideus*, the name appended by Deflandre to a photograph of it in his *fichier*. The name remained a *nomen nudum* until Manivit (1965) published a figure and a formal diagnosis. *M. pemmatoidea* can easily be identified under a light-microscope, and can be distinguished from other species of the genus by the bright spots of light refracted by the spines on the distal shield when the microscope is focused at a suitable level. The actual shape of the spines can only be seen under an electron-microscope.

#### Type level:

Middle Albian.

Occurrence: The observed range in England is Middle and Upper Albian. It is present throughout the Gault from Bed I to Bed XIII at Folkestone, and at all localities from Kent to Norfolk.

The range outside Britain is difficult to establish from the published records. Manivit (1965) gives the horizon of Deflandre's material from the Paris Basin as Upper Campanian. Apart from this, few lists of Upper Cretaceous coccoliths contain any form which could be regarded as belonging to this species. American occurrences of *Manivitella* from this level have all been referred to *M. gronosa*.

In SE France, Thierstein (1971) lists *M. pemmatoidea* as present in all stages from the Berriasian to the Albian, and gives it a similar range in deep-sea cores from the W Atlantic (Joides DSDP Leg 1, Sites 4, 4a and 5a). In Britain the earliest confirmed occurrence is in the Albian; the form present in the Hauterivian and Barremian parts of the Speeton Clay, previously recorded as *Apertapetra pemmatoidea* (Black 1971) has proved to belong to another species.

#### Type locality:

Ville-moyenne, Aube, France.

#### Depository:

Coll. Lab. Micropal. E.P.H.E., Paris.

Holotype: Specimen figured as *Cricolithus pemmatoideus* by Manivit 1965, pl. 2, fig. 8; HM 922B DB9; from the Middle Albian of Ville-moyenne, Aube, France.

Manivit (1965) designated Deflandre's specimen BG 38 from the Upper Campanian of Vanves as the holotype of *C. pemmatoideus*. Nevertheless, Manivit's specimen must be regarded as the holotype, since no figure of Deflandre's specimen had been published at that time (International Code of Botanical Nomenclature, Article 7, Note 6).

#### Author:

Black M., 1973, p. 80; pl. 23, figs. 1-3.

#### Reference:

British Lower Cretaceous Coccoliths. I. Gault Clay, Part 2. Palaeontogr. Soc. Monogr., vol. 127, pp. 49-112, text-figs. 39-51, pls. 17-33.