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Megaspores of the turma zonales from the Carboniferous of Poland. Part I - coronate megaspores

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Eight Carboniferous coronate megaspores species, assigned to the genera *Radiatisporites*, *Rotatisporites* , and *Zonalesporites*, structure of the spore wall and mesospore ornamented by numerous cushions are described. Corona has equatorial appendages connected by a membrane and displays two centrifugal channels. Structure of the spore wall, corona and that of laesurae were studied in SEM and in transmitted light. The structure of the corona is of basic taxonomic value for determining genera and species. The main evolutionary trends are changes of the corona; the main types appear in the Upper Visean and develop at a different evolution rate along four lines: 1. *Rotatisporites solidus - Radiatisporites radiatus*; 2. *Rotatisporites tulensis - R. rotatus - R. dentatus*; 3. *Zonalesporites mucronatus - Z. superbus; 4. Z. brasserti. A peculiar state of preservation of Z. brasserti f. circum-textus is described and explained.*