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561.263:551.736(161.16.44)

MOMCILO MILANOVIC

**KOCHANSKYELLA (CHLOROPHYTA, DASYCLADACEAE),
A NEW PERMIAN GENUS OF MOUNT VELEBIT, CROATIA**

Kochanskyella tulipa n. gen., n. sp. (Chlorophyta, Dasycladaceae)
a peculiar dasyclad alga from the Middle-Upper Permian of Mount
Velebit (Croatia) is described here.

Upper Paleozoic deposits of Mount Velebit are known as very fossiliferous, both in faunal and in floral remains. This relatively small outcrop yielded a number of new species and genera. They have mostly a relatively simple structure and hence the reconstruction was not particularly difficult.

Already during earlier investigations, I have frequently noticed in thin sections elongated horn-like or petal-shaped forms. A structure of pores or small channels could be observed in these fragments, but it was still impossible to get a definite picture. For years, only fragments have been repeatedly observed, and not one complete section. The fragments were supposed to derive from an alga which has broken into segments and, further on, into separate petal-shaped parts. Consequently, all one had to deal with were longitudinal or transversal sections of mere parts.

At last, a transversal-oblique section of a complete segment has enabled the reconstruction of the new genus.

Familia Dasycladaceae Kützing, 1843. orth. mut. Stizenberger, 1860

Tribus Diploreae? Pia, 1927

Genus *Kochanskyella* n. gen.

The name of the genus is given in honour of Professor Vanda Kochansky-Devidé, in appreciation of her many years of paleontological investigations of the Paleozoic deposits of Mount Velebit.

The type of the genus is *Kochanskyella tulipa* n. sp.

Diagnosis: Thallus composed of loosely connected bowl-shaped segments. Segments composed of loosely connected petal-like parts. Each part has a system of branches (pores).

One species, deriving from Middle to Upper Permian dolomites of the northeastern slopes of Mount Velebit, is described.

Kochanskyella tulipa n. gen., n. sp.

Plates I—V

The thallus of this comparatively large alga consists of a series of paraboloidal or bowl-shaped segments, entering each other.

Each segment consists of 8—10 petal-shaped parts which are, just as the segments themselves, rather loosely connected with each other. Segments in the lower part of the thallus are wider and bowl-shaped, and in the upper part they have a more hemielipsoidal shape. The segment as a whole, with partly connected or separated petal-shaped parts, resembles a calix of a flower, especially tulip or lily, wherefrom the specific name.

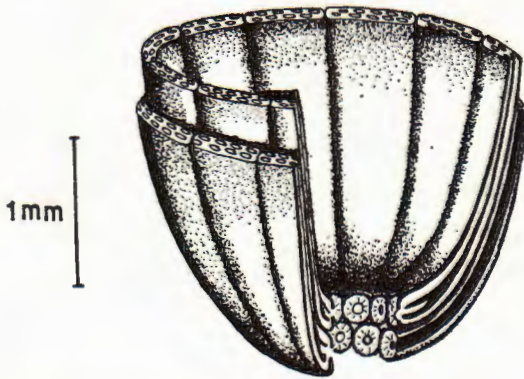
It could not be ascertained, due to the small number of complete transversal sections, whether the petaloid parts in all segments touch each other or not. When the plant is young, or in younger segments nearer the top, they certainly do. In older segments it may be observed that the »petals« are separated — like a partially blossoming bud. It cannot be ascertained whether they grow up that way, separated from each other and wrapping round the younger segment, or whether they separate afterwards. The hypothetic reconstruction (text-fig. 1) shows the »petals« as being in mutual contact all along their length.

Certainly the petal-shaped parts touch each other in the upper part (sections in Pl. V), and near the bottom they are even compressed, acquiring therefore a prismatic shape.

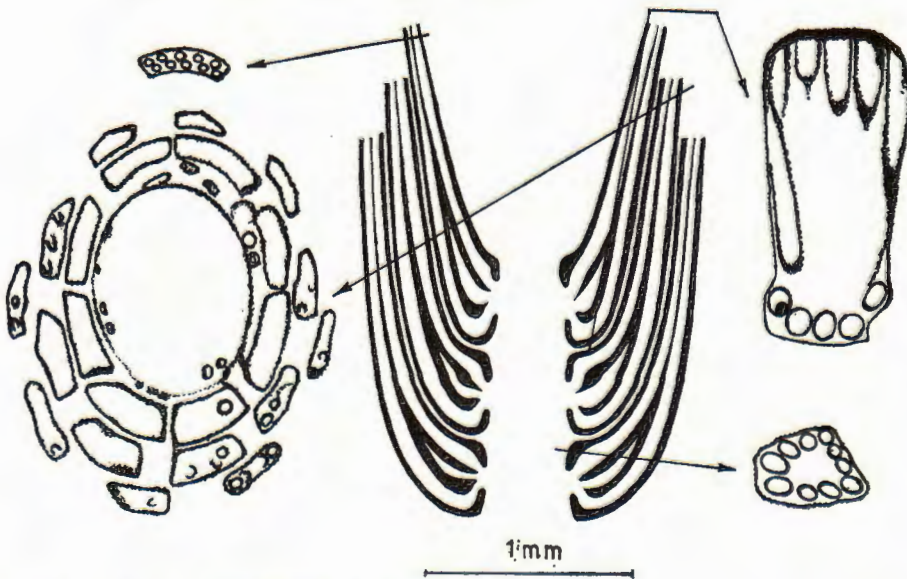
Each segment usually has 10 parts, arranged in verticil around the main stem, with which they communicate through an aperture in their base.

In their upper part of the »petals« are flattened in transversal sections resembling a strongly elongated ellipse; they are flattened at the poles of the longer axis, whereas further down they are cylindrical and in the base acquire a prismatic shape (mostly a three-sided prism), owing to mutual pressure (Pl. II, fig. 1).

Each part has 8—12, most frequently, 10 branches (pores), arranged along the periphery of the »petal« and often touching each other. Along with the shape of the petal-like part, the branches, being most frequently rectilinear, are curved in their base merging into a joint aperture.



Text-fig. (sl.) 1. *Kochanskyella tulipa* n. gen., n. sp.
Reconstruction of two segments
Rekonstrukcija dvaju segmenata



Text-fig. (sl.) 2. *Kochanskyella tulipa* n. gen., n. sp.
Idealized longitudinal sections of three segments, and various sections in view of the section planes (transversal, oblique-transversal and tangential),
Idealizirani uzdužni presjek triju segmenata i različiti presjeci obzirom na ravninu presjeka (poprečni, koso-poprečni i tangencijalni).

Small spherical or ellipsoidal bodies — possibly sporangia — have been sporadically noticed within the main stem.

Idealized sections are shown in text-figure 2.

Dimensions (in mm):

Diameter (hypothetic) at the upper end of a segment	2—4
Diameter of the main stem	0.3—0.7
Length of the petal-shaped parts	2—3
Width of the parts in the lower, cylindrical i. e. prismatic part	0.35—0.50
Diameter of the pores	0.04—0.09

The holotype is the oblique-transversal section in the slide Br. 8b/5 (Pl. I, fig. 1).

Locality: northeastern slopes of Mount Velebit — near the villages of Brizik, Okić, Medak and Međuvođe.

Stratigraphic position: Middle to Upper Permian — equivalent to the Upper Artinskian—Lower Kazanian. Most frequently dolomites with *Mizzia velebitana* Schubert, *Velebitela triplicata* Kochansky-Devidé, *Salopekiella velebitana* Milanović, *Likanella spinosa* Milanović, *Neoschwagerina craticulifera* (Schwager), etc.

Discussion: By its shape, *Kochanskyella* does not resemble any alga known so far. However, it is interesting to note the congruity of some transversal sections of the branches of this alga with the appearance of *Atractyliopsis lastensis* Accordi (1956). In earlier studies of these thin-sections, *Atractyliopsis lastensis* has been quoted by the present author as one of the accompanying fossils. As a matter of fact, these have been transversal sections of the »petals« of *Kochanskyella*.

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M. MILANOVIĆ

KOCHANSKYELLA (CHLOROPHYTA, DASYCLADACEAE)
IZ PERMA VELEBITA

Naslage mlađeg paleozoika Velebita poznate su kao veoma fosiliferne, kako faunom tako i florom. Iz tog relativno malog prodora opisane su i publicirane mnoge nove vrste i rodovi. Njihova građa bila je relativno jednostavna, a očuvanost najčešće dobra, tako da rekonstrukcija najčešće nije bila osobito teška.

Još u toku ranijih istraživanja, nailazio sam često u preparatima izdužene forme slične rogu, ili laticama nekog cvijeta. U njima se zamjećivala struktura pora ili kanalića, ali ih se nikako nije moglo određenije oblikovati. Godinama sam samo sretao različite fragmente, ali nikako cjelovite presjeke. Pretpostavljam sam da se radi o algi koja nije uspjela da sačuva pravi oblik, već se raspadala u segmente, a ovi u dijelove nalik laticama. Nalazio sam dakle različite uzdužne ili poprečne presjeke samo tih dijelova.

Najzad jedan poprečno kosi prerez cijelog jednog segmenta dao je naslutiti oblik novog roda

Familia Dasycladaceae Kützing, 1843, orth. mut. Stizenberger, 1860

Tribus Diploporeae? Pia, 1927

Genus *Kochanskyella*, n. gen.

Ime rodu dato je u čast akademika, profesorice dr. Vande Kochansky-Devidé, koja već godinama paleontološki istražuje paleozojske sedimente Velebita.

Tip roda je vrsta *Kochanskyella tulipa* n. sp. Dijagnoza: Talus sastavljen od rahlo vezanih zdjeličastih segmenata uloženi jedan u drugi. Segmenti sastavljeni od rahlo vezanih dijelova nalik laticama. U svakom dijelu sistem od više pora.

Opisana je jedna vrsta iz srednje-gornjopermskih dolomita sjeveroistočnih padina planine Velebita.

Kochanskyella tulipa n. sp.

Table I—V

Skelet ove razmjerno velike alge sastavljen je od niza paraboloidnih ili polukuglastih segmenata, koji ulaze jedan u drugi.

Svaki segment ima 8—10 dijelova (poput režnjeva ili latica), koji su kao i segmenti međusobno slabo vezani. Segmenti u bazi su širi, paraboloidnog, odnosno polukuglastog oblika, dok su prema vrhu alge uži i više poluelipsoidnog oblika. Sam oblik segmenta s dijelom spojenim ili rastavljenim ograncima nalikuje čaški cvijeta (tulipana ili srijana), otuda i ime vrste.

Nije se moglo sigurno utvrditi (mali broj cjelovitih poprečnih presjeka) da li se režnjevi kod svih segmenata dodiruju ili ne. Dok je biljka mlada, odnosno kod mlađih vršnih segmenata, oni su se sigurno dodirivali. Kod starijih segmenata vidljivo je da su oni razdvojeni — kao polurascvjetani pupoljak. Ne može se utvrditi da li oni rastu tako rastavljeni obavijajući mlađi segment, ili se kasnije razdvajaju. Na hipotetskoj rekonstrukciji prikazano je kao da se oni dodiruju cijelom dužinom (sl. 1).

Sigurno je da se u gornjem dijelu dijelovi segmenta dodiruju (presjeci na tab. V), dok su pri dnu još i stiješnjeni te poprimaju prizmatski oblik.

Svaki segment sastoji se najčešće od 10 dijelova koji su pršljenasto složeni oko valjkaste matične stanice, s kojofm komuniciraju preko ušća u bazi svakog dijela.

Dijelovi segmenata su u gornjem dijelu spljošteni — u poprečnom presjeku slični jako izduženoj elipsi, spljoštenoj na polovima, dok su prema dolje valjkasti, odnosno u bazi, zbog uzajamnog pritiskivanja poprimaju prizmatski oblik (najčešće trostrana prizma — tab. II, sl. 1).

Svaki dio sadrži 8—12 pora (najčešće 10) koje su raspoređene po periferiji i koje se često međusobno dodiruju. Prateći oblik ogranaka, pore, koje su najčešće pravolinijske, u bazi povijaju i spajaju se u zajedničko ušće.

U matičnoj stanici su mjestimično primijećena mala kuglasta, odnosno elipsoidna tijela — možda sporangiji.

Idealizirani prerezi prikazani su na sl. 2.

Dimenzije:

Dijametar (hipotetski) na gornjem dijelu segmenta	2—4	mm
Dužina dijelova segmenta	2—3	mm
Dijametar matične stanice	0,3—0,7	mm
Širina dijelova segmenta u gornjem dijelu do cca	0,7	mm
Promjer dijelova segmenta u donjem valjkastom, odnosno prizmatskom dijelu	0,35—0,50	mm
Promjer pora	0,04—0,09	mm

Holotip je koso poprečni presjek na izbrusku Br. 8 b/5.

Lokalitet: Sjeveroistočne padine planine Velebit — u blizini Brizika, Metka, Okića i Međuvođa.

Starost: Srednji—gornji perm — ekvivalent gornjem artinsku—donjem kazanu. Najčešće dolomiti sa: *Mizzia velebitana* Schubert, *Velebitella triplicata* Kochansky-Devidé, *Salopekiella velebitana* Milanović, *Likanella spinosa* Milanović, *Neoschwagerina craticulifera* (Schwager) itd.

Osvrt i diskusija: Svojim oblikom *Kochanskyella* nije slična nijednoj poznatoj algi. Interesantna je međutim podudarnost nekih poprečnih presjeka dijelova segmenata ove alge sa izgledom vrste *Atractyloopsis lastensis* Accordi. Još pri obradi ranijih taksona iz istih ovih preparata stavio sam vrstu *Atractyloopsis lastensis* kao jednog od pratećih fosila. U stvari bili su to poprečni presjeci ogranaka kohanskele.

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PLATE — TABLA I

Kochanskyella tulipa n. gen., n. sp.

- 1, 3, 4. Oblique-transversal sections (1 — Holotypus).
Poprečno kosi prerezi (Br. 8b/5, Br. 8b/7, Br. 8b/2) × 26, × 70, × 40.
2. Longitudinal sections through two branches.
Uzdužni presjek kroz dva ogranka (U-4012/12). × 30.

Taken by (foto) R. Pavlešić

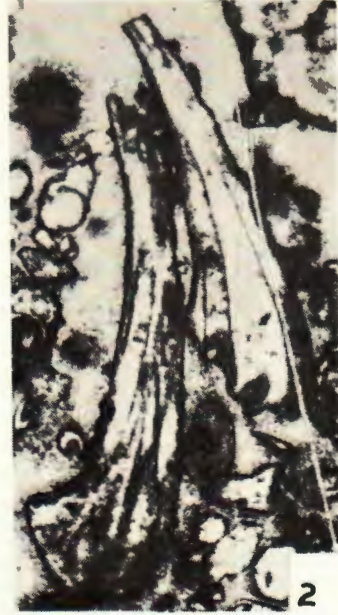


PLATE — TABLA II

Kochanskyella tulipa n. gen., n. sp.

- 1, 2, 4, 5. Oblique-transversal sections through one part of segment.
Poprečno-kosi presjeci kroz jedan dio segmenta. (U-4012/1, U-4012/7,
U-4012/3, U-4012/5). × 71, × 46, × 70, × 70.
3. Oblique-transversal section through 3 segments. Poprečno-kosi presjek
kroz 3 segmenta. (Br. 86/7). × 70.

Taken by (foto) R. Pavlešić

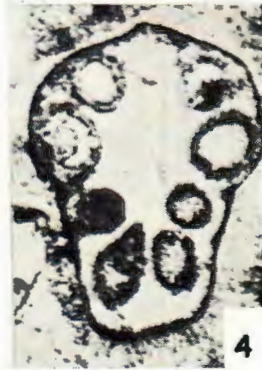
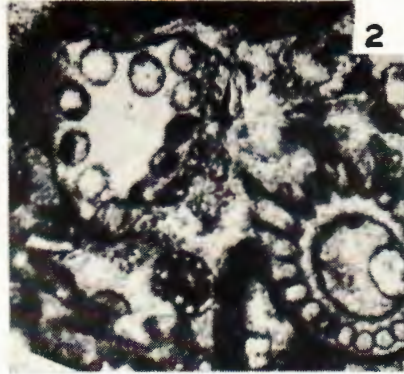
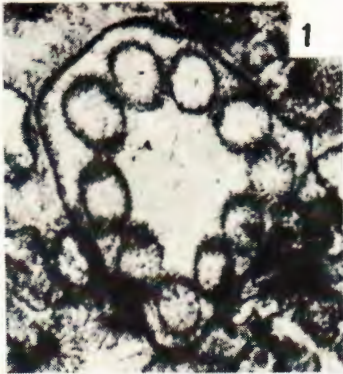


PLATE — TABLA III

Kochanskyella tulipa n. gen., n. sp.

- 1—6. Longitudinal sections trough one part of segment.
Uzdužni presjeci kroz jedan dio segmenta (U-4012/5, U-4012/9, U-4012/1, Br. 8b/2, Br. 8b/3, U-5110/1). $\times 30$, $\times 30$, $\times 40$, $\times 40$, $\times 30$, $\times 31$.
- 7—9. Transversal sections trough one part of segment.
Poprečni presjeci kroz jedan dio segmenta (U-4012/1, Br. 8b/5, U-4012 7). $\times 70$, $\times 66$, $\times 46$.

Taken by (foto) R. Pavlešić

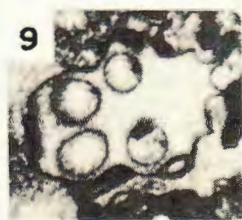
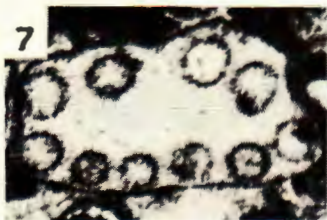
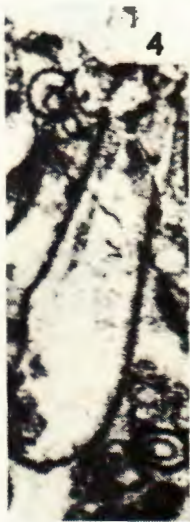
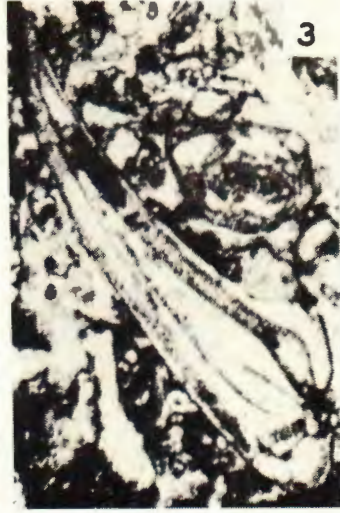
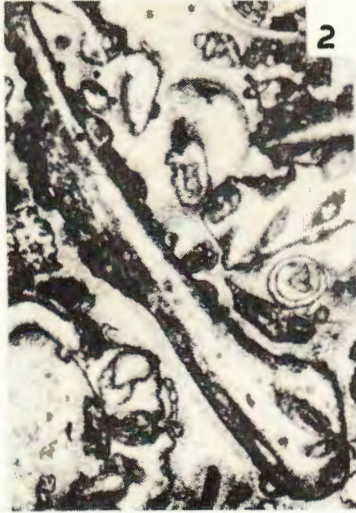
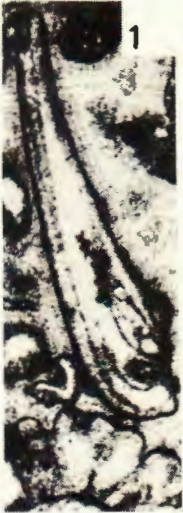


PLATE — TABLA IV

Kochanskyella tulipa n. gen., n. sp.

Various tangential sections through one part of segment.
Različiti tangencijalni presjeci kroz jedan dio segmenta. (U-4012/1, U-4012/2,
U-4012/1, U-4012/1. Br. 8b/2, U-4012/3). $\times 60$, $\times 70$, $\times 70$, $\times 60$, $\times 80$, $\times 40$.

Taken by (foto) R. Pavlešić

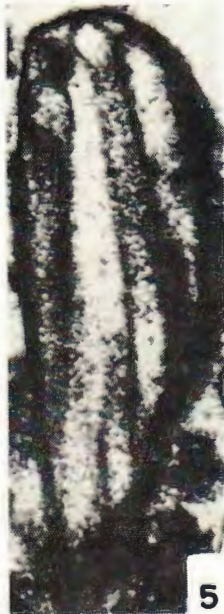


PLATE — TABLA V

Kochanskyella tulipa n. gen., n. sp.

Various transversal sections through two parts of segment.

Različiti poprečni presjeci kroz dva dijela segmenta. (U-4012/2, U-4012/11, U-4012/8, U-4012/9, U-4012/9). $\times 70$, $\times 70$, $\times 70$, $\times 70$, $\times 80$.

Taken by (foto) R. Pavlešić

