Calcareous Algae from the Inter-Trappean Beds Near Rajahmundry.

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As already stated in previous notes (N. Rao and S. Rao, 1935; R. Rao, N. Rao and S. Rao, 1936) the Rajahmundry-limestones —marine and estuarine intercalations in the Lower Deccan Traps of the Godavari coastal region—contain numerous fragmentary remains of calcareous algæ belonging to the families Characeæ and Dasycladaceæ. Some of the Characeæ have been listed in the above-mentioned papers. Now we are in a position to give a provisional list of the Dasycladaceæ.

Names of the algæ	Stratigraphic range of the genera					
	Triassic	Jurassic	Cretaceous	Paleogene	Neogene	Recent
Holosporella cf. *siamensis* Pia ..	?	..	..	..	..	..
Dissocladella ? sp. ..	..	..	+	+	..	..
Neomeris 4 spp ind. ..	..	..	+	+	+	+
Terquemella lenticularis n. sp. ..	..	?	?	+	..	..
Acicularia sp. ..	..	..	?	+	+	+
Acetabularia ? sp. ..	..	..	..	+	..	+
Dasycladaceæ indet. ..	..	..	..	..	..	..
Characeæ indet. ..	..	..	..	..	..	..

We have already referred to the unexpected discovery of *Holosporella* in another note (N. Rao and S. Rao, 1937). This genus was first described from rocks supposed to be Triassic, exposed near the Burmo-Siamese frontier (Pia, 1930). We do not think it safe to draw any stratigraphical conclusions from its occurrence in the Rajahmundry-limestones. The age of the original finds in Siam may not be fixed beyond every doubt. Besides, the identification of Dasycladaceæ in which only the sporangia are calcified is not as exact as in other genera. In any case, the survival of so primitive a Dasycladacea into the Tertiary was hardly to be expected.

The single specimen of *Dissocladella ?* is very poorly preserved. It may belong to another genus, *Trinocladus*, *Thyrsoporella*, *Belzungia*. *Dissocladella* itself is known from Cretaceous and from Tertiary strata.

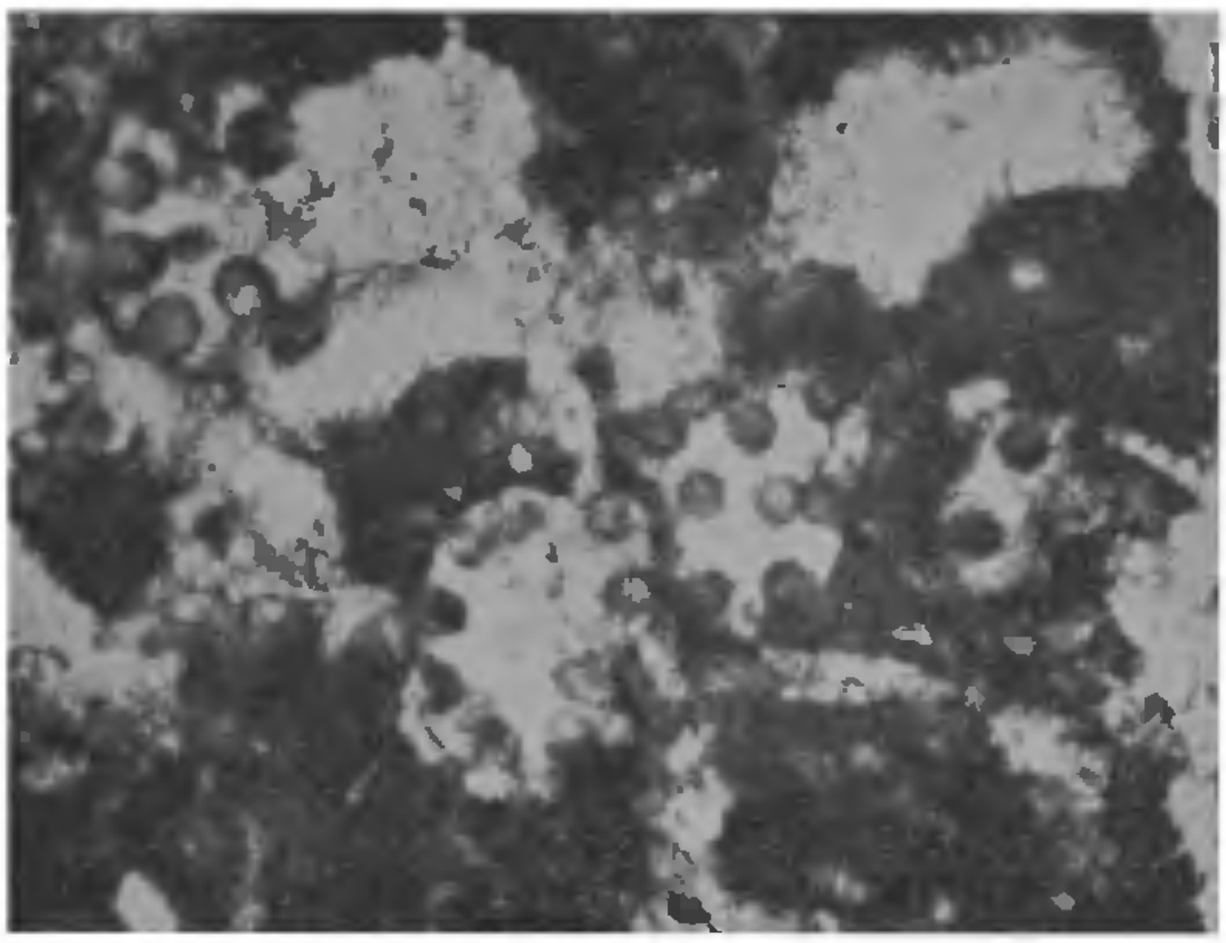
The numerous fragments of *Neomeris* all seem to belong to the section *Descaisnella*. In this subgenus the calcareous envelope is composed of free annulets each corresponding to the sporangia of a single whorl. It seems impossible to determine such fossils specifically, especially when only observed in slides. Our specimens are comparatively large. *Neomeris* appears first in the Cenomanian and still lives at the present time.

Concerning the identification of *Terquemella*—the commonest alga in our material—the remarks made on *Holosporella* ought to be kept in mind. Calcareous corpuscles with spherical spore-cavities corresponding to the definition of *Terquemella* have been found in Tertiary as well as in Jurassic strata. Very probably they were borne on plants differing rather markedly in the structure of the uncalcified branches. As our specimens belong to a new species, they are of little value in correlating the Rajahmundry-limestones.

The occurrence in our material of a true *Acicularia* with long, needle-like calcareous spicules is perhaps the most important fact from a chronological point of view. This type has never been observed in strata older than Paleocene (except for a very doubtful case; see Pia, 1937). It is found frequently in the Lower Tertiary.

Fossil *Acetabulariæ* are also confined to Tertiary strata. They are, however, exceedingly rare, owing to the very fragile nature of the calcareous incrustation. They have, therefore, not the same stratigraphic value as the *Aciculariæ*. Their absence from Cretaceous rocks may be an apparent one.

If we put aside for the moment the problematic genus *Holosporella*—out of place in Cretaceous as well as in Tertiary strata—the flora under examination has decidedly



Section of Pungadi-limestone showing accumulation of the remains of *Terquemella lenticularis* sp. nov. × 75

a modern character. This becomes the more evident, when we compare it with the flora of the Danian Niniyur strata of the Trichinopoly district (Rama Rao and Pia, 1936). Here the living genus *Neomeris* is entirely missing. It is replaced by the extinct *Indopolia*. The more primitive genus *Dissocladella*, represented in the Rajahmundry-limestone by a single, doubtful specimen, is fairly common in the Niniyur strata. The *Acicularia* found in them differs markedly by its stout shape from the one mentioned above.

Summing all these facts we may conclude, that the Dasycladaceæ of the Rajahmundry-limestones do not yet supply a sufficient basis for the exact determination of the geologic age. They add, however, markedly to the probability, that the traps of the Rajahmundry area erupted in Tertiary, not in Cretaceous time. Further progress will depend upon the finding of more complete, specifically determinable algal remains in the Rajahmundry-limestone, but even more on the discovery within the tropical regions of other comparable algal floras in rocks of precisely known age.

A fuller description of the Rajahmundry Dasycladaceæ, with plates, will be shortly published in the Proceedings (*Sitzungsberichte*) of the Vienna Academy of Science.

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Element 87.

THE discovery of element number 87—the last but one of the missing elements in the periodic table—has been made in France. The findng of this elusive element, whose discovery has been previously reported and afterwards disproved, was made by Horia Hulubei, in France.

The discovery has not yet been reported in scientific journals but was discussed by Dr. F. R. Hirsh, Jr., research fellow at the California Institute of Technology, speaking at a seminar of the physics department. Dr. Hirsh reported that Hulubei's discovery was made as a result of a suggestion of Dr. Jesse W. M. DuMond, research associate at the institute. In 1930 Dr. DuMond first suggested an apparatus, known as the curved crystal focussing spectrograph, which was modified by M. Cauchois and used by Hulubei in the discovery of element number 87.

While at Cornell University Dr. Hirsh, one of the 17 or 18 investigators who sought the formerly missing element, reported to the American Physical Society that he was unable to confirm a prior claim by Professor Jacob Papish and Eugene Wainer, for the discovery of the element. Dr. Hirsh predicted that the last missing element, number 85 in the periodic table, might be discovered by the powerful instrument used in France. This instrument is so sensitive that it can detect one part of a given element in 10,000,000,000 parts of polluciate or any chemical or mineral. Polluciate is the mineral in which Hulubei discovered element number 87, and which he has named madavium. The only remaining missing element is ekaiodine.—*Science*, 1937, 86, 2230, pp. 10 (Supplement)