

This study is significant, since the present locality hitherto considered unfossiliferous from the foraminiferal point of view, has now yielded a rich assemblage of foraminifera which throws important light on the age of the enclosing beds. The rocks occur few feet below the surface, interbedded with cream-coloured gritty sandstone and consist of buff-coloured, soft and highly friable, marly shale somewhat gypseous. This marly bed has yielded abundant *Globotruncana* species in association with other foraminifers, but is conspicuously devoid of typical Mæstrichtian *Orbitoid* and *Siderolites* fauna. The foraminiferal fauna yielded by this bed is listed below:

Textularia sp., *Robulus* sp., *Lenticulina* sp., *Marginulina* sp., *Nodosaria* sp., *Dentalina* sp., *Lagena* sp., *Nonion* sp., *Nonionella* sp., *Discorbis* sp., *Gyroidina* sp., *Anomalina* sp., *Globotruncana* sp., *Globotruncana lapparenti lapparenti* Brotzen, *Globotruncana lapparenti tricarinata* (Quereau).

The Sillakkudi bed is characterised on the one hand by the occurrence of *Globotruncana lapparenti tricarinata* (Quereau) and *Globotruncana lapparenti lapparenti* Brotzen in abundance, and on the other hand by the conspicuous absence of the typical foraminiferal species of Mæstrichtian age like *Lepidorbitoides inornata* Rao, *Lepidorbitoides blandfordi* Rao, *Orbitocyclina ariyalurensis* Rao and *Siderolites calcitrapoides* Lamarck. Moreover, this bed occupies stratigraphically lower position than that of the Orbitoid-bearing bed. In view of the above facts, a Campanian age has been assigned to this bed, which suggests that it may be synchronous with the *Globotruncana lapparenti tricarinata* bed reported from Sadaiyakanpatti by Sastry, Mamgain and Rao.

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OCCURRENCE OF TWO VAGINICOLID SPECIES (PERITRICHA: CILIOPHORA) FROM CHITTOOR, ANDHRA PRADESH

Of the 90 species of Vaginicolidae (Noland, 1959) known to science, 5 species are reported from the Indian sub-continent (Bhatia, 1936; Naidu, 1965). They are *Vaginicola* sp., *Thuricola obconica* Kent, *Pyxicola carteri* (Kent), *Cothurina annulata* Stokes and *Cothurina* sp. The last mentioned undetermined species of *Cothurina* is *Cothurina imberbis* Ehrenberg.

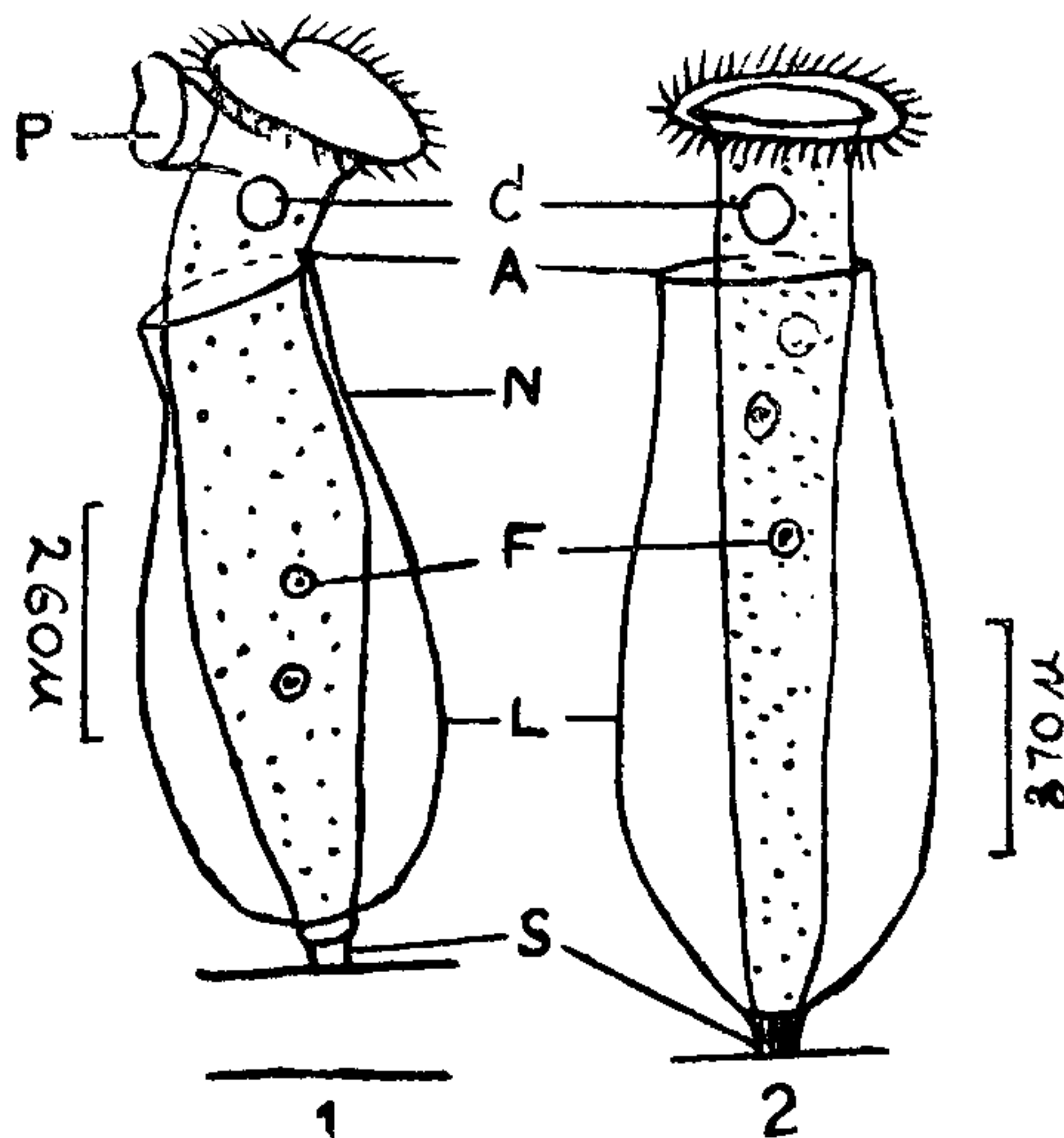
This note reports the occurrence of two vaginicolid ciliates, *Pachytricha cothurnoides* Kent and *Cothurina imberbis* Ehrenberg. Both are new to this sub-continent. They were collected by the author from filamentous algæ of an old unused well at Chittoor, Andhra Pradesh.

Pachytricha cothurnoides KENT (FIG. 1)

Noland, 1959, p. 294, Fig. 10.32(g).

Dimensions: Lorica: $77\mu \times 30\mu$, aperture: 20μ wide, neck: 16μ wide.

Extended animal: 100-110 μ . long.



FIGS. 1-2. Fig. 1. *Pachytricha cothurnoides* Kent. Fig. 2. *Cothurina imberbis* Ehrenberg. A, aperture; C, contractile vacuole; F, food vacuole; L, lorica; N, neck; P, protoplasmic plug; S, stalk.

The lorica (Fig. 1) is flask-shaped, brown, with a neck less wide than the aperture. It is attached at right angles to algal filaments by a short stalk. When the animal is retracted into the lorica, a circular protoplasmic plug fits into the neck and in extension this plug is pushed to one side of the peristome. Macronucleus is band-shaped. Contractile vacuole single.

Cothuringa imberbis EHRENBERG (FIG. 2)

Noland, 1959, p. 294, Fig. 10.32(c).

Cothuringa sp., Naidu, 1965, (in press)

Dimensions: Lorica: $54\ \mu \times 26\ \mu$, neck: $17\ \mu$,
aperture: $18\ \mu$.

Extended animal: $70-75\ \mu$.

The lorica (Fig. 2) is flask-shaped, colourless with a broad neck ending in an aperture. It is attached at right angles to algal filaments by a short stalk. Macronucleus is band-shaped. Contractile vacuole single.

Remarks: This was already recorded from a tank at Nandalur, Cuddapah District, Andhra Pradesh as *Cothuringa* sp. (Naidu, 1965).

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STIMULATING EFFECT OF SOME CELLULAR COMPONENTS OF *ALTERNARIA* SP. UPON THE GROWTH OF A *NOSTOC* STRAIN

The present communication summarises the preliminary observations on the effect of the mycelial extracts of a species of *Alternaria*, isolated from the surface of the legume nodules³ on the growth of a *Nostoc* strain.

The mycelial mat of the fungus was removed from the culture medium by filtration, repeatedly washed and pressed in between a blotter. 250 mg. of the fungal mat were extracted with 10 ml. of (i) EtOH at 75°C . for $1\frac{1}{2}$ hr., (ii) N/20 HCl at 37°C . for 24 hr. and (iii) water at room temperature for 36 hr. The acid extract was neutralised with N KOH. 10 ml. portions of Fogg medium² fortified with nitrate ($0.25\ \text{g. KNO}_3/1.$) were placed in quadruplicate series of sterile test-tubes to which

1 ml. of the fungal extract was added in an undiluted form and also in 1:10 and 1:100 dilutions. Each tube was seeded with 1 ml. of a uniform suspension of an endophytic strain of *Nostoc*. ARM 59.¹ All the cultures were maintained under identical conditions of temperature and continuous illumination.

The growth criterion used for the alga was the optical density of the methanol extract of the alga at $660\ \text{m}\mu$ as measured in a DU Beckmann Spectrophotometer, since chlorophyll *a* showed a conspicuous peak at this wavelength (Fig. 1).

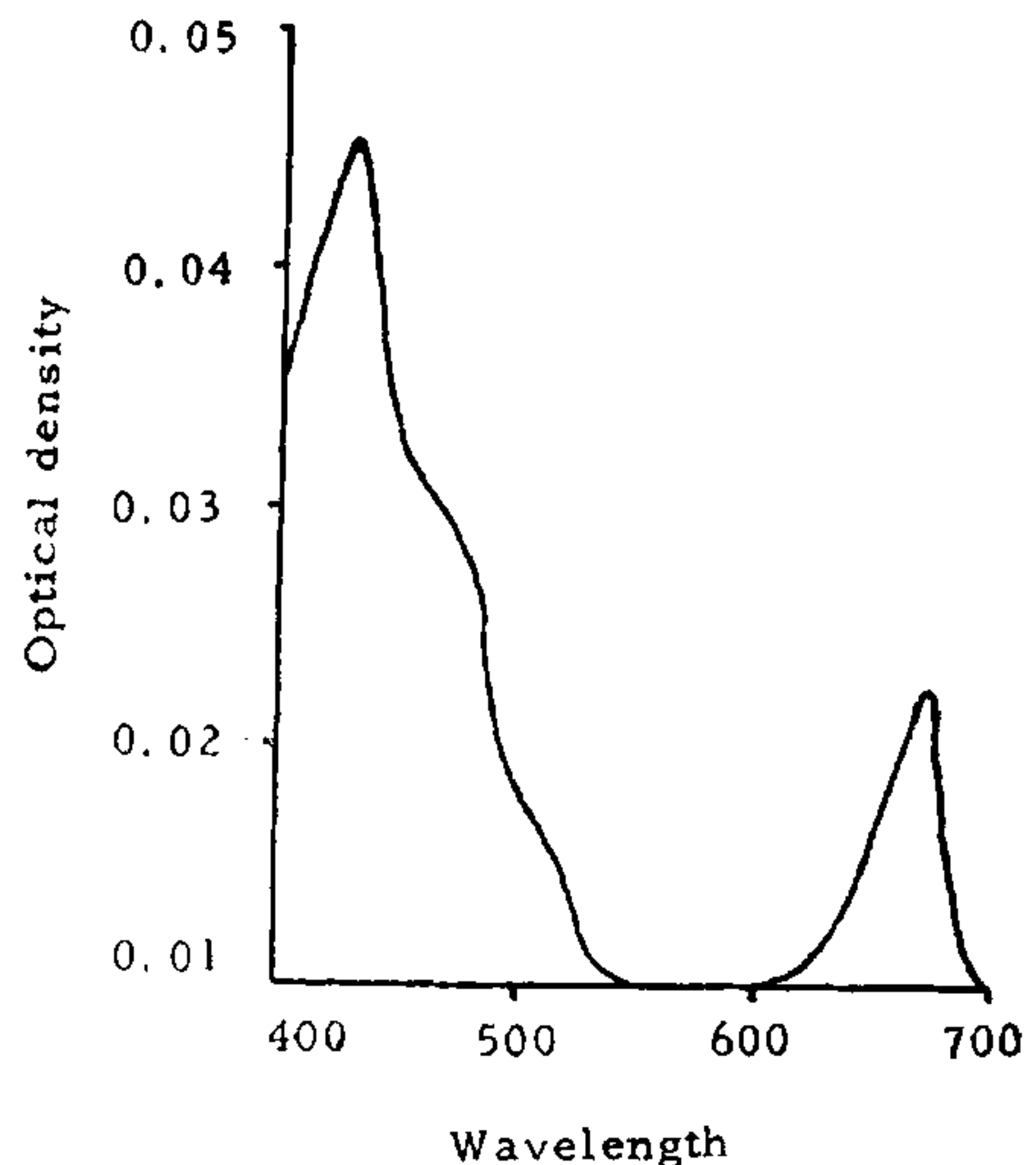


FIG. 1. Absorption spectrum of the methanol extract of *Nostoc* strain.

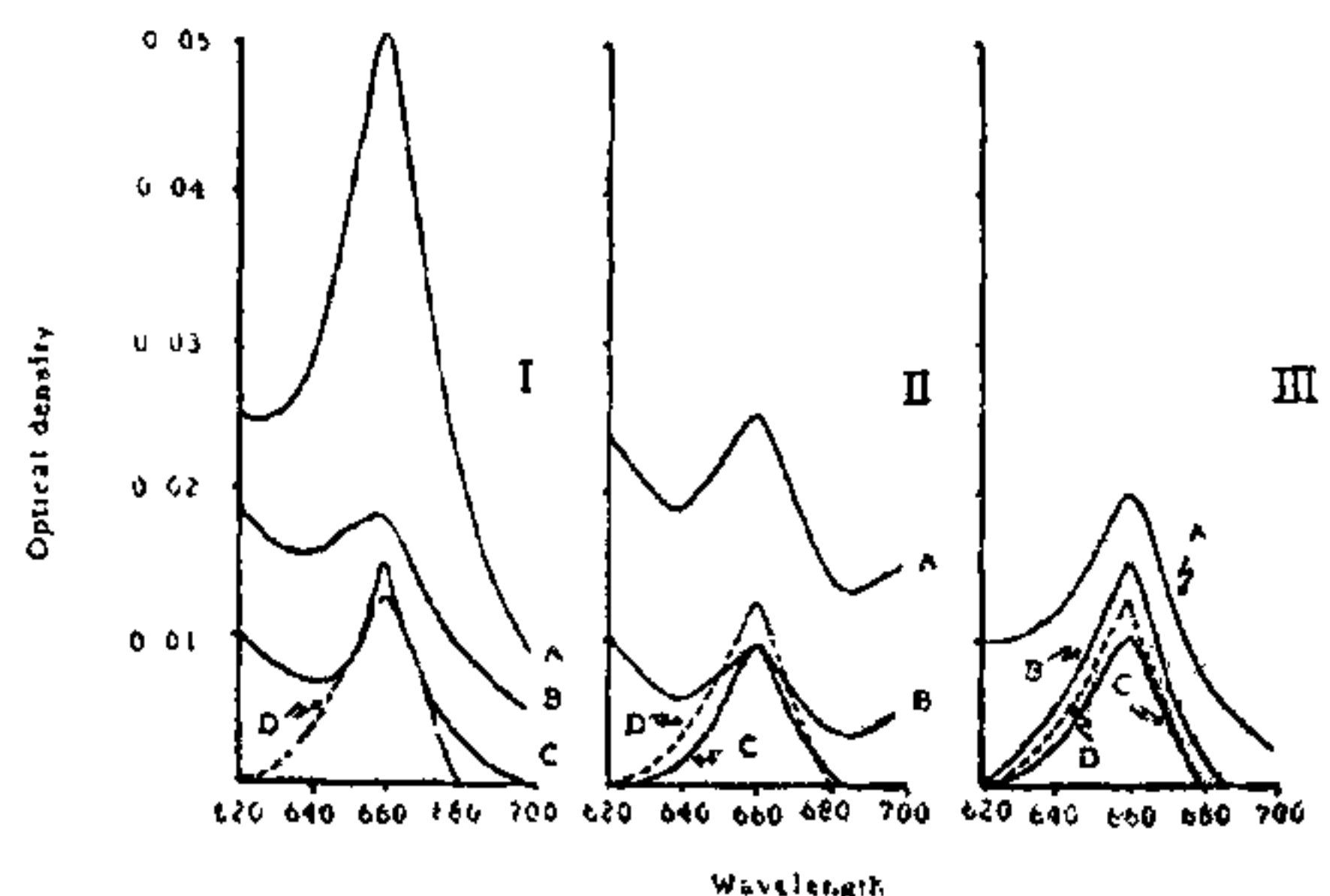


FIG. 2. Absorption spectrum of the methanol extract of *Nostoc* strain grown in presence of the mycelial extracts of *Alternaria* sp. I, acid extract; II, alcoholic extract; III, aqueous extract. A, undiluted; B, C, 1:10 and 1:100 dilutions respectively; D, control.