

TABLE II

Compound (as hydrochloride)	Bath concentration (mg per ml)	% Inhibition
3-[1-Pyrrolidino]- acetamidocoumarin	0.5	26.3
	1.5	89.5
	2.0	100.0
3-[1-Piperidino]- acetamidocoumarin	1.0	60.5
	3.0	97.0
3-[1-Morpholino]- acetamidocoumarin	0.5	4.5
	1.5	20.4
	3.5	49.5
	7.5	86.0
Procaine	0.5	22.7
	1.5	50.0
	3.5	100.0

for the bath concentrations of the most active compounds is shown in Table II. Procaine hydrochloride was used as standard.

The 6-(N-substituted amino) acetamidocoumarins required a bath concentration between 7 and 15 mg/ml to show complete inhibition of the contractions.

Pharmacological testing was carried out at the Haffkine Institute, Bombay. We are grateful to the UGC for financial assistance to GM.

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PLEISTOCENE TUBIPORA FROM TANZANIA (EAST AFRICA)

GISLA I. PRASAD

Department of Geology, UDSM
P.O. Box 35052, Dar es Salaam, Tanzania

SHROCK AND TWENHOFEL¹ and Bayer² state that the common Indo-Pacific reef coral *Tubipora* is

only of a Recent genus, a fossil *Tubipora* Linne 1758 is reported for the first time in Tanzania. *T. purpurea* is known from Pleistocene reefs in Kenya (Gregory³) and from the Plio-Pleistocene of Port Sudan Montanaro⁴. Further *T. rubiola* is reported from the Plio-Pleistocene of Timor (Felix⁵). Umbgrove⁶ describes *Tubipora* sp. from Upper Miocene of Java, and Yabe and Sugiyama⁷ record fossil and living *Tubipora* from Japan.

In Tanzania the fossil *Tubipora musica* occurs in the Wazo Hill limestone of Pleistocene age. The limestone is exposed in the Wazo Hill quarry (6° 39' S; 39° 09' E) 25 km NW of Dar es Salaam.

The corallum is massive, oval or semicircular in shape. The corallites consist of long, slender tubes of calcium carbonate (length 3-7 cm, diameter 0.2-0.3 cm) (Fig. 1). They are almost parallel, closely spaced and radiating outwards. The tubes are partitioned by transverse platforms or stolons containing solenia (Figs. 1 and 2). New corallites arise from stolons and never bud from old corallites. The wall of the tubes is perforate.

Specimens of Recent *T. musica* from the Tanzanian coast (Fig. 2) show great variability in tube diameter, distance between transverse platforms and thickness of tube wall and stolon. The dimensions of the newly discovered Pleistocene species fall well within the variability of the Recent species and therefore it is assigned to the same species of *T. musica*.

Stratigraphically the Wazo Hill quarry shows barren clay-bound sands at the base with Wazo Hill coral limestone (8-20 m) in the middle and topped by the lateritic soil (2-4 m).



FIG. 1. A colony of Pleistocene *Tubipora musica* Linne 1758 showing the cylindrical tubes and transverse platforms.

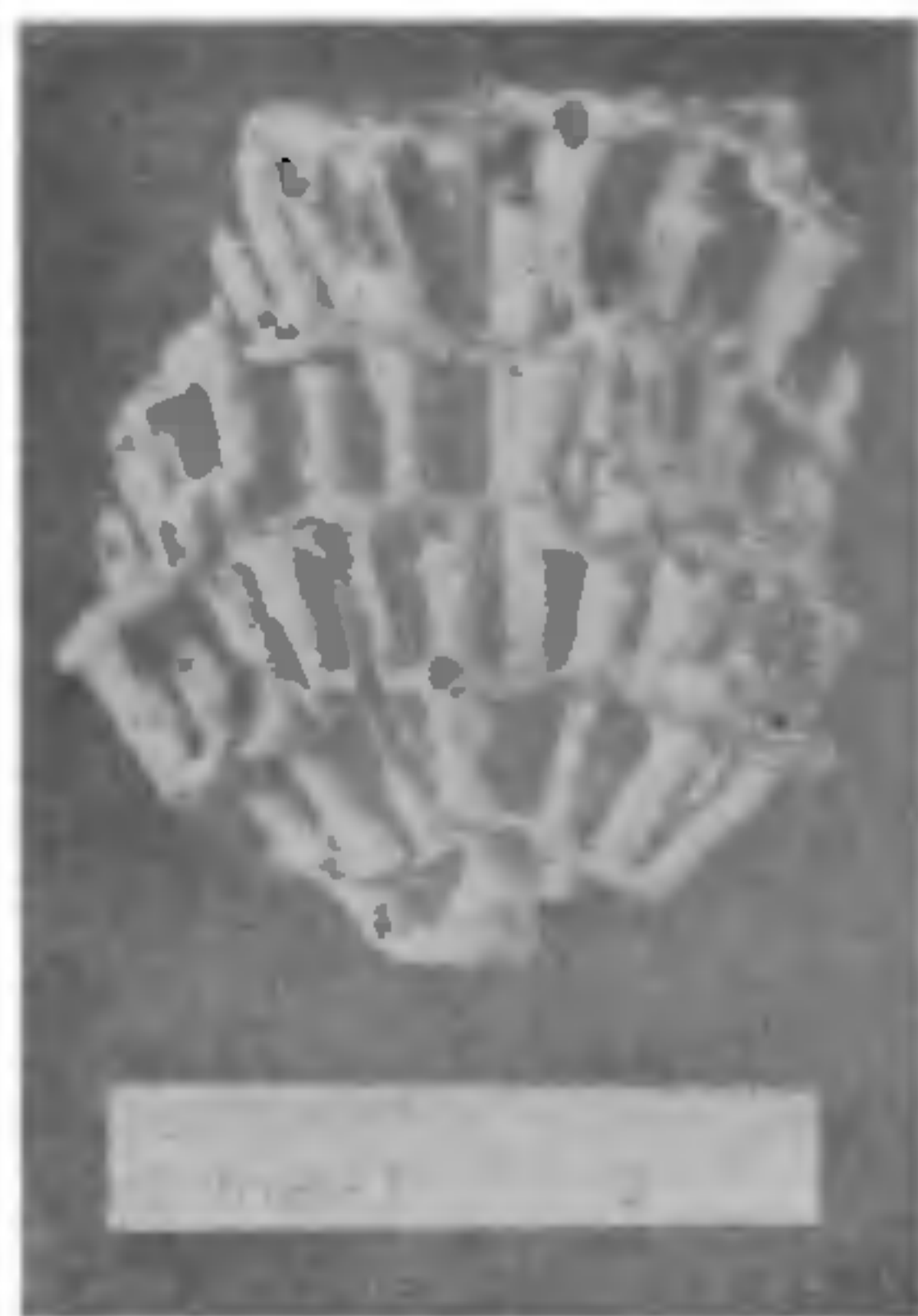


FIG. 2. A colony of Recent *Tubipora musica* Linne 1758 from a living reef of the Indian Ocean adjacent to the fossil occurrence, $\times 1.2$.

The age of the Wazo Hill limestone has been assigned to Pleistocene to Recent on fossil evidence (Bartholomew⁸). It has been correlated with the Tassimian terraces (Early Quaternary) of Madagascar (Battistini)⁹. A radio-carbon date of 34,400 \pm 1600–2000 has been obtained from coral samples of Wazo Hill (Alexander)¹⁰. The author therefore considers it reasonable to assign a provisional Pleistocene age to the Wazo Hill coral limestone containing *Tubipora musica*. Further precise confirmation of the Pleistocene is in progress.

The present coast-line in Tanzania lies 4 Km to the east of the Wazo Hill quarry. The coast is fringed by coral reefs in which *Tubipora musica* is found. A comparison of the coral content and distribution of the Wazo Hill limestone with the Recent reef environment has brought out many close similarities. The author suggests that the Wazo Hill coral limestone corresponds to the fringing reef of Pleistocene age when the shoreline was farther to the west than it is now.

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INDUCED DIFFERENTIATION FROM CULTURED COTYLEDONARY LEAVES OF MUSTARD (*BRASSICA JUNCEA* VAR. PRAKASH)

SAYEEDABANU, S. SINGH, L. K. PAREEK AND N. CHANDRA

Department of Botany, University of Rajasthan
Jaipur 302 004, India

Brassica juncea is an important oil-seed crop plant of India. Attempts are being made throughout the world to improve crop plants by tissue culture methods¹. Several species of *Brassica*, especially some varieties of *B. oleracea*, are known to regenerate plantlets by *in vitro* culture methods. There are reports on organogenesis in tissue cultures of *B. oleracea* var. *capitata*², *B. oleracea* var. *gemmifera*³, *B. oleracea* var. *botrytis*^{4,5}, *Labularia maritima*⁶, *Sisymbrium irio*⁷ and *Arabidopsis thaliana*⁸. However, very little success has been achieved in differentiating plantlets from tissue cultures of different varieties of mustard and rape. In the present communication organogenesis in cotyledonary leaf explants of *B. juncea* var. *prakash* is reported.

Seeds of this variety procured from Agriculture Research Station, Durgapura, were surface sterilized with 0.1% mercuric chloride and germinated aseptically in culture tubes on 1% agar slants. Cotyledonary leaves excised from one week old seedlings were cultured on Murashige and Skoog⁹ (MS) medium without meso-inositol. Media were supplemented with different concentrations of an auxin, 2,4-dichlorophenoxyacetic acid (2,4-D), indole 3-acetic acid (IAA) or naphthalene acetic acid (NAA) and/or a cytokinin (Kinetin or Benzylaminopurine). pH of the medium was adjusted to 5.8. All the cultures were maintained in weak light at 26° \pm 2° C.

Cotyledons transferred to media with various auxins alone did not respond at all but increased in size. On media supplemented with both an auxin and a cytokinin, there was a great increase in size