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TORREYITES SITHOLEYI, A NEW RECORD FROM THE GANGAPUR FORMATION OF ANDHRA PRADESH

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THE paper records *Torreyites sitholeyi* in the Lower Cretaceous (Neocomian-Aptian) Gangapur Formation of the Pranhita—Godavari basin, Andhra Pradesh. The fossil specimen has been collected from the Gangapur sediments near Rallapet (19°19′; 79°25′), about 1 km from the Rebna on the Rebna—Kagaznagar Road in Adilabad District. *Torreyites* was collected from the fine-grained cream to whitish clay in a quarry at Rallapet.

Genus: *Torreyites* Seward 1919
Torreyites sitholeyi Ganju 1947 (figures 1 and 2)

Description: Vegetative shoot 7.5 cm long. Leaves spirally arranged, linear, lanceolate, 2–2.3 cm long, 1–1.5 mm broad, base decurrent and constricted, apex acute, margin entire, midrib distinct.

Comments: Only two species of *Torreyites* i.e. *T. constricta*[1] and *T. sitholeyi*[2] are known to date from India. The former is from the Sriperumbudur beds of Palar basin, while the latter is from the Rajmahal hills, Bihar.

The present species *T. sitholeyi* differs from *T. constricta* in having the leaves with pointed apex.

Torreyites shows apparent similarities with the leafy twigs of *Torreya* of Taxaceae. The fossil specimen is deposited in the Palaeobotany-Palynology Laboratory of P. G. College of Science, Saifabad, Hyderabad.

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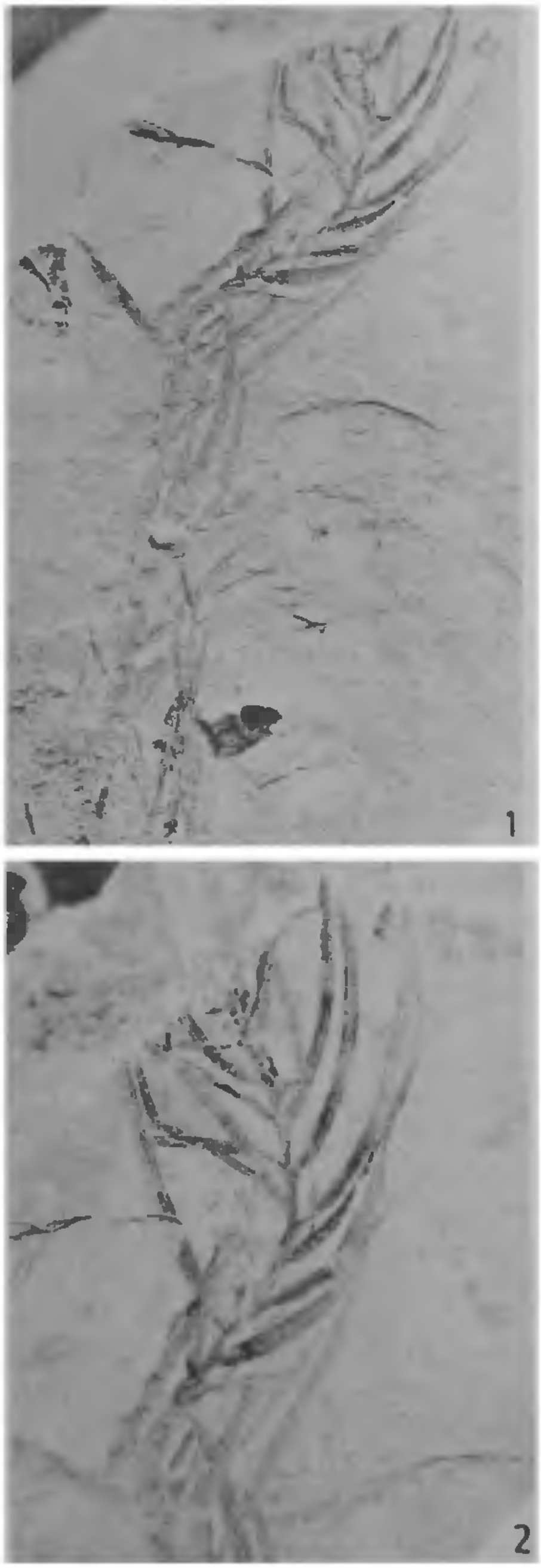

Figures 1 and 2. *Torreyites sitholeyi* (**1.** × same size; **2.** × 1½).

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PRE-ANTHESIS CLEISTOGAMY IN *OTTELIA ALISMOIDES*

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OPINIONS differ with reference to the mode of pollination in *Ottelia*, a freshwater genus of the family Hydrocharitaceae. Ernst-Schwarzenbach[1] reported typical cleistogamy in *O. ovalifolia* where flowers fail to open. Sculthorpe[2] mentioned that *Ottelia* is characterized by entomophily. The present work was undertaken to ascertain the mode of pollination in *O. alismoides*, the common and cosmopolitan species of this genus.

O. alismoides produces axillary scapes, each bearing a solitary, fairly large, white coloured, bisexual and protandrous flower. The flowers are chasmogamous in that they open after coming out of water. Investigation revealed that each of the 6–15 anthers showed latrose and irregular dehiscence even before the flowers came out of the water surface and opened. By the time the flowers opened the pollen tubes in many cases had already reached the ovules and effected fertilization. In other words, *O. alismoides* is a good example of a plant showing pre-anthesis cleistogamy which is very common in some legumes. It differs from *O. ovalifolia* in having open flowers but resembles it in having cleistogamy, although of a different type. This is, therefore, the first report of pre-anthesis cleistogamy in Hydrocharitaceae.

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INHERITANCE OF THREE NEW MUTANTS IN SESAME

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PHENOTYPICALLY distinct mutants are a prerequisite to develop stocks for genetic mapping. Such stocks have been painstakingly developed in crop plants like barley[1], maize[2], pea[3], tomato[4] and wheat[5] but are generally lacking for plants predominantly grown in the tropics. Inheritance of several characters in sesame (*Sesamum indicum* L.) has been reported and reviewed periodically[6–8]. Towards the genetics of sesame, inheritance of three new, hitherto unreported, mutant phenotypes—fasciated cotyledons (*fcl*), tall seedling (*ts*) and dotted corolla tube (*dtf*) is reported here.

Fasciated cotyledonary leaves mutant (FCL): This mutant was observed among ten-day-old seedlings in one of the M_4 progenies (NY–21) derived from 1% E.M.S. treatment of cultivar N–8 seeds. The fasciation in these seedlings was either complete, giving a cup-shaped appearance or partial. The FCL seedlings increased in size up to 20–25 days, but failed to develop the first pair of leaves (figure 1), as they were devoid of the terminal bud. Thus the mutant was lethal. Seeds from five sib plants were sown in the seedling racks[9] and were scored for the mutant phenotype. Segregation of 3 normal : 1FCL phenotype was observed (table 1). From one of the segregating families, 55 single plants were progeny tested. The genotypic and phenotypic segregations in the M_5 (table 1), confirmed that the character of the fasciated cotyledonary leaves is controlled by single recessive gene factor (*fcl*).

Tall seedling mutant : This was isolated[10] from cultivar N62–32. It is characterized by long hypocotyl (figure 2) due to which the seedlings grow taller than the parent. The mutant was crossed with cultivar TC–25. Phenotypic and genotypic segregations in the F_2 and F_3 generations (table 1) indicated that the mutant character is inherited as a monogenic recessive (*ts*).

Dotted flower mutant : A mutant with dark pink dots inside the corolla tube (figure 3) was isolated in the M_2 generation following 20 kR gamma ray treatment of cultivar Phule Til–1. Out of 23 plants in a M_2 family, 19 were of the parental type and 4 were of mutant type [χ^2 (3:1) = 0.7101, P = 30–50]. The mutant types bred true in the M_3 and M_4