

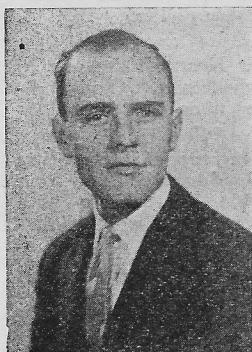
## PALYNOLOGICAL INVESTIGATION OF SOME SAMPLES FROM NAHORKATIYA, ASSAM<sup>1</sup>

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ABSTRACT.—The author describes some pollen from the samples from Nahorkatiya oilfield in Assam, India.

SAMPLES received from the Assam Oil Company, Ltd., from their Nahorkatiya oilfield<sup>2</sup> from depths ranging between 9,000 and 10,000' in Upper Assam were investigated for their pollen content.



The samples coming from the Barail series contained a rather uniform flora. The following remarkable types have been found abundant:

A most common type of spore occurring in the sample is a trilete striate spore with loosely spaced striae running parallel across the proximal side of the grain (Pl. 24, fig. 1). Its size varies between 60 and 70 $\mu$ . This spore has been associated with the living *Parkeriaceae* and with *Ceratopteris* in particular (Kuyl *et al.*, 1955).

A further spore type of approximately the same size as the spore mentioned above but bearing a reticuloid sculptural pattern (Pl. 24, fig. 2) is also frequent.

Particularly striking is the large amount of mono-colpate-monosulcate palm type pollen contained in the sample (Pl. 24, fig. 3). In their high frequency they may indicate the vicinity of a palm swamp such as known today from South America and Africa.

A pollen grain with one circum-equatorial furrow (Pl. 24, fig. 4) is known from South American and African deposits and may be derived from palm trees also. It has great similarity with *Monocolpites operculatus* B, v. d. Hammen (1954) which author believes his species to be derived from *Palmae* of the genus *Asterocaryum*.

Among pollen types with a known living representative there are tricolporate and almost psilate small grains with long transversal furrows replacing the pores. Similar pollen is produced by plants belonging to the genus *Rhizophora* (Kuyl *et al.*, 1955). The presence of mangrove pollen in the samples investigated would indicate the vicinity of a marine shore vegetation at the time of deposition.

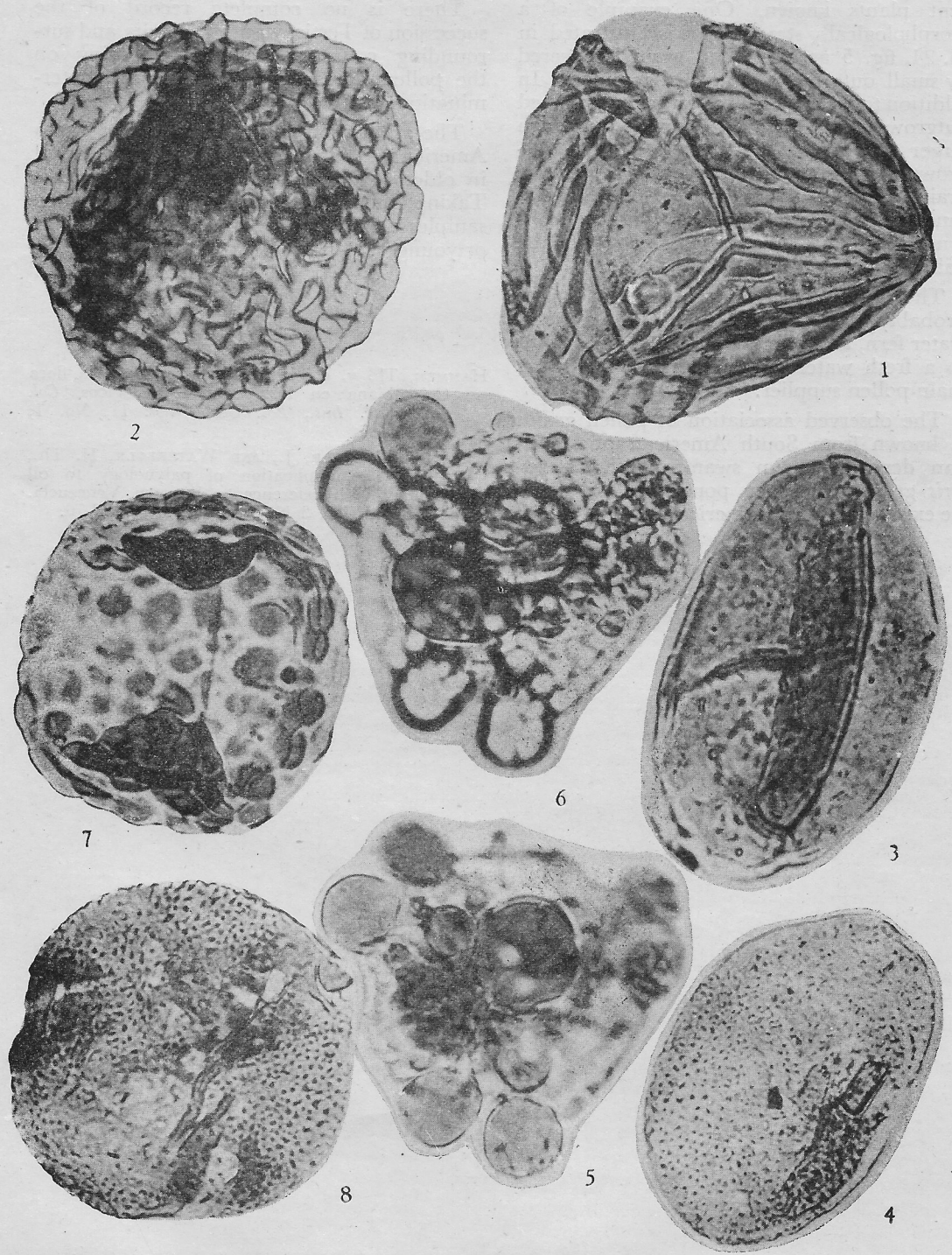
In association with the types mentioned above there are a number of various pollen species which, although showing characteristic morphological features, have not been recorded before nor is their affinity with re-

### EXPLANATION OF PLATE 24

- FIG. 1—Ceratopteris type spore 67  $\mu$ .
- 2—Trilete spore 60  $\mu$ .
- 3—Monocolpate palm type pollen grain 60  $\mu$ .
- 4—Asterocaryum type pollen.
- 5—Gemmata-syncolpate grain 36  $\mu$  upper focus.
- 6—Same as Fig. 5. Lower focus.
- 7—Polypodiaceae type spore 48  $\mu$ .
- 8—Tricolporate reticulate pollen grain 55  $\mu$ .

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<sup>2</sup> From the wells Nahorkatiya 1 and 3.



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cent plants known. One example of a morphologically strange type is illustrated in Pl. 24, fig. 5 and 6. This grain is covered by small outgrowths, so called gemmae. In addition to these there are pairs of ball-shaped outgrowths similar to the gemmae but much larger in size. One pair of these outgrowths is situated on each pole of the grain and three pairs arranged in equal distance around the equator. The grain is syncolpate, the furrows pass through the pair of outgrowths.

The relatively high frequency of spores probably derived from *Ceratopteris*, a fresh-water fern, and palm tree pollen would point to a fresh water swamp flora as being the main pollen supplier.

The observed association of pollen grains is known from South American and African deposits. Palm swamps with *Ceratopteris* growing in open ponds are known to be existing in South America today.

There is no complete record of the succession of Tertiary floras in India and surrounding countries. Therefore basing on the pollen flora alone an exact age determination cannot be given.

The association encountered has in South America or Africa as yet not been found in older sediments than Middle Oligocene. Taking this as standard the investigated samples would be of Middle Oligocene age or younger.

## REFERENCES

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