Dept. of Chemistry, Y. H. DESHPANDE.
Marathwada University, V. RAMACHANDRA RAO.
Aurangabad, *May* 4, 1971.

1. Charles, R. G., *J. Inorg. Nucl. Chem.*, 1964, **26**, 2298.
2. — and Perrotto, *Ibid.*, 1964, **26**, 373.
3. Alire, R. M., *Ph.D. Thesis*, University of New Mexico, 1962.
4. Bellamy, L. J. and Beecher, L., *J. Chem. Soc.*, 1954, p. 4488.
5. — and Branch, R. F., *Ibid.*, 1954, p. 4491.

A PRELIMINARY NOTE ON THE WADHWAN FORMATION OF SAURASHTRA

THE Wadhwan sandstone reported by Fedden from around Wadhwan (22° 42′ : 71° 44′) to consist of a calcareous sandstone with a thin band of limestone at its top, was on the basis of a few fragmentary molluscan fossils considered Lower Cretaceous in age and to resemble the Bagh Beds of the Narbada Valley (Fedden, 1884, p. 84; Arkell, 1956, p. 292; Krishnan, 1968, p. 254).

Our recent work in that area has shown it to be a much better developed sequence (*vide* Table I) of a thick coarse- to medium-grained calcareous sandstone, the Surendranagar Sandstone, succeeded by the argillaceous Navania Limestoone, with the Bhaduka Limestone, a silicified bryozoan limestone comming at the top of the series.

In the field by their sequence and lithological characteristics, these members of the Wadhwan Formation are very closely similar to the three most widely-occurring constituents of the Bagh Beds (*vide* Table I).

Several of the Bagh species are found to occur in these Wadhwan rocks among which may be mentioned *Pycnodonta boucheroni* (Coq.), *Lima granulicostata* Chiplonkar and Badve, *Liostrea rouveli* (Coq.), *Paraesa faba* (Sow.), *Protocardia pauli* (Coq.), *Voluta elongata* (d'Orb.), *Nucleolites rajnathi* (Chiplonkar), *N. chirakhanensis* (Chiplonkar), *Hemiaster subsimilis* Fourtau and *Archaeolithothamnium saurashtraensis* Chiplonkar and Borkar.

Better preserved material would probably enable us to establish the presence in the Wadhwan Formation of some more of Bagh species, e.g., *Spondylus latus* (Sow)., *Proplacenticeras stantoni* Hyatt var. *bolli* (Hyatt),

TABLE I

Wadhwan Area			Narbada Valley
Fedden (1884)	Present Authors		
Deccan Trap	Deccan Trap		Deccan Trap
Cherty Freshwater Beds	Lamata		Lamata
Wadhwan Sandstone: Calcareous sandstone with a thin band of limestone at top	Wadhwan Formation: (1) Bhaduka Limestone: Silicified bryozoan limestone with molluscs, echinoids, algae, etc., with oyster bed at top 5 m–25 m	Lower Cretaceous	Bagh Beds: (1) Coralline Limestone: Silicified bryozoan limestone with molluscs, echinoids, algae, etc., with Deola Marl in the middle and oyster bed at top 2 m–12 m
	(2) Navania Limestone: Argillaceous, with small oysters and some echinoids 1 m–2 m		(2) Nodular Limestone: Sometimes argillaceous; molluscs, echinoids, etc. 7 m–14 m
	(3) Surendranagar Sandstone: Marine, calcareous, massive, generally fossiliferous with molluscs, echinoids, bryozoans, algae, etc. 5 m–10 m	Cenomanian Turonian	(3) Nimar Sandstone: Extensively false-bedded, oyster bed at top and in the middle; but generally unfossiliferous; partly fluviatile 15 m–30 m
Umia Beds	Umia and Dhrangadhara Beds		Bijawars and Archaeans

Cidaris namadicus Duncan, *Malwirhynchia transversalis* Chiplonkar and *M. subpentagonalis* Chiplonkar.

British and French species, *e.g.*, *Neithea gibbosa* (Pult.), *Lima cretacea* Woods, *L. meyeri* Woods, *Opis haldonensis* Woods, *Volutilithes orbignyana* Müller, *Turbo alsus* d'Orb., to be found occurring in the Wadhwan rocks add further to their faunal interest.

Such a fossil assemblage indicates for the Wadhwan Formation, a younger age, more like Cenomanian-Turonian, than what was till now assigned to them (*vide supra*), and their affinities, like those if the Bagh Beds (Chiplonkar, 1937-42), with the Mediterranean palaeo-zoo-geographic province.

The points on which these Wadhwan strata differ somewhat from the Bagh Beds are that the Surendranagar Sandstone is more generally fossiliferous and rarely false bedded in contrast to the Nimar Sandstone; the argillaceous Navania Limestone is much poorly developed as compared to the Nodular Limestone; while the Bhaduka Limestone is much better developed that the Coralline Limestone, its counterpart in the Bagh Beds.

These differences probably indicate that these Wadhwan sediments were deposited more towards the open sea than in the narrow gulf where the Bagh Beds were probably laid down.

Maharashtra Association for the Cult. of Sci., Poona-4, *April* 3, 1971.

G. W. Chiplonkar.
V. D. Borkar.

1. Arkell, W. J., *Jurassic Geology of the World*, 1956.
2. Chiplonkar, G. W., *Proc. Ind. Acad. Sci., (B)*, 1937-42, **6** (1); **9** (5); **10** (4); **15** (3).
3. Fedden, F., *Mem. Geol. Surv. Ind.*, 1884, **22** (2).
4. Krishnan, M. S., *Geology of India and Burma*, 5th ed., 1968.

CORALLOIDAL CALCITE FROM A MICA MINE IN NELLORE DISTRICT, ANDHRA PRADESH

The occurrence of stalctitic calcite of white colour with radiating structure, formed by the evaporation of trickling carbonated mine waters, is not an uncommon feature in the abandoned tunnels and galleries of the underground mica mines of the Nellore granitic pegmatite belt of Andhra Pradesh State.[1] An unusual occurrence of calcite entirely different from the stalctitic variety was observed for the first time about a year ago, while dewatering a water-logged gallery, abandoned for about three years and located at 30-metre level of the Seetharama Mica Mine (57 N/11; Lat, 79° 43' 43", Long. 14° 17' 5") in Kalichedu Village of Rapur Taluk in Nellore District.

The mineral is light grey in colour and shows coralloidal structure by containing groupings of fine elongated fibres of less than 0·1 mm thickness, interlacing flexuous branchings and coalescing stems having a maximum thickness of about 3 mm (Fig. 1). An unusual feature

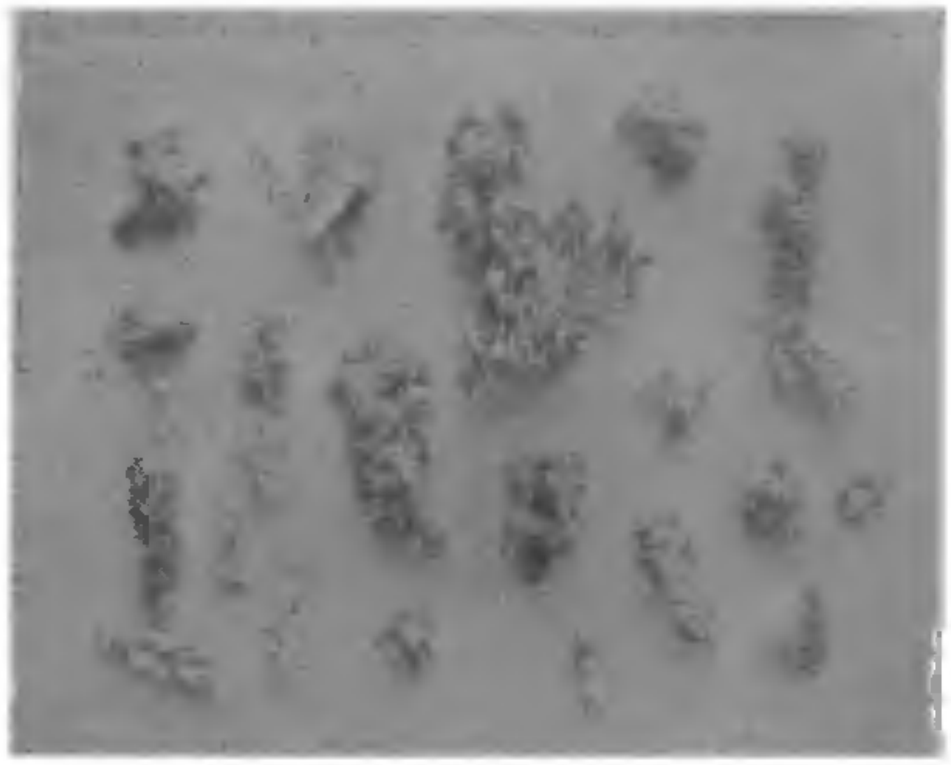

FIG. 1. A photograph of coralloidal calcite shown in the background of a centimetre-graph.

noticed is that the fibres of calcite show a positive sign of elongation and a negative optic sign, indicating that the optic axis of the mineral is perpendicular to its direction of elongation. As it is known that the direction of elongation in calcite generally coincides with its optic axis, a suggestion is offered that the original material was represented by optically positive vaterite (μ-$CaCO_3$) having its optic axis parallel to the direction of elongation, which later inverted to calcite, pseudomorphous after vaterite, having its optic axis normal to the direction of elongation. On determining the refractive index of the mineral in yellow light by the standard immersion method, it is found that the ω value is 1·650, which is a little less than that of pure calcite (1·658). The low refractive index obtained for the mineral compared to that of calcite has been suggested to be a diagnostic property of calcite formed at the expense of vaterite.[2]

The mineral was ground to a fine powder in an agate mortar, washed free of chloride with distilled water and dried at 105° ± 5° C. The acid-soluble portion of the mineral was analysed by an adaptation of the method of Shapiro and Brannock[3] and the results are presented in Table I. From an estimation of organic carbon by the method of Schollenberger, as modified by Allison,[4] it is observed that the