FIG. 1. Individual ooliths with shell of ancylite composition (× 55).

FIG. 2. Clusters of ooliths embedded in matrix of ancylite composition (× 55).

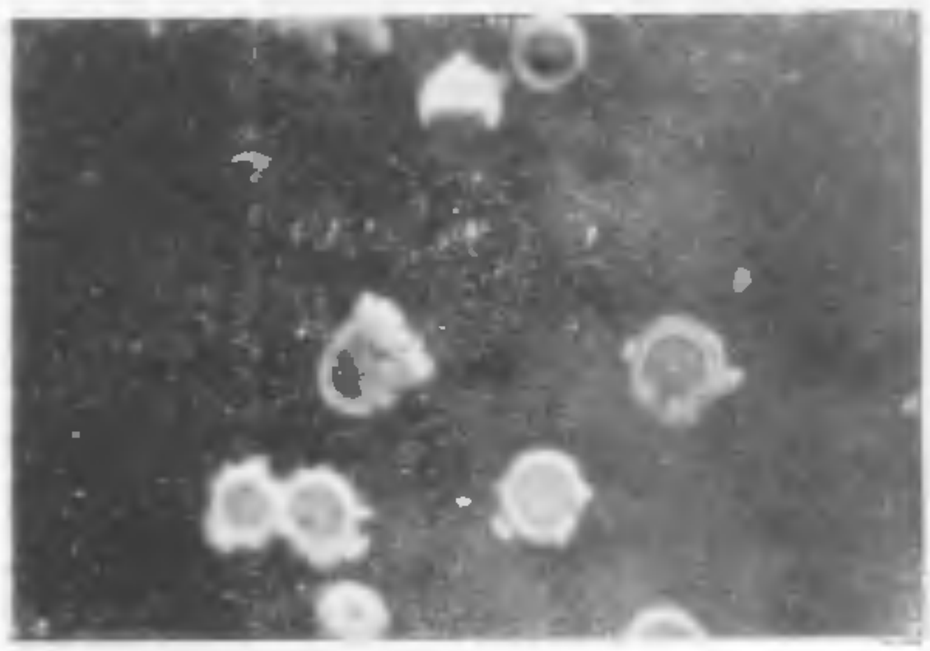

FIG. 3. Cross section of ooliths showing concentric alternating growth of siderite (black) and ancylite (white) layers (× 55).

The formation of ooliths and oolitic textures in the natural ores of Fe, Mn, Al and siliceous sedimentary cherts has been a subject of controversy. The formation of such textures in the present experiments are explained by assuming that at low temperatures, carbon monoxide evolved from the formic acid forms bubbles. Such gas bubbles become the chemically active centres for the precipitation and crystallization of the substrate material. This is evidenced from

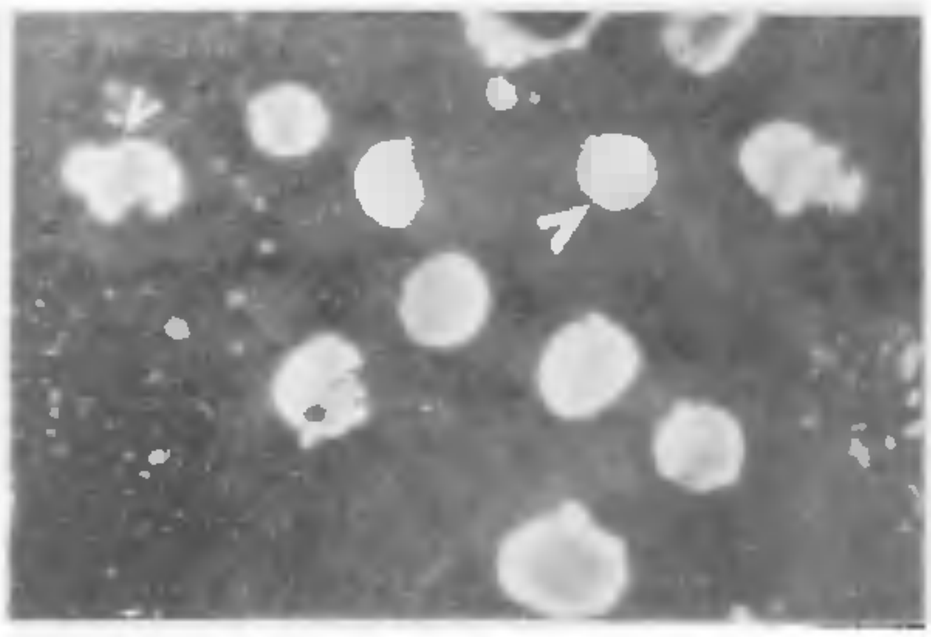

FIG. 4. Hollow broken shells of ancylite composition (× 55).

several hollow hemispherical shells noticed (Fig. 4). Alternate depletion of yttrium and iron in the substrate material with the progressive precipitation of yttrium carbonate–ancylite and iron carbonate–siderite, could be the probable explanation for the rhythmic layering observed. The authors are investigating the formation of such oolitic textures in other systems, Fe_2O_3–MnO–HCOOH, Al_2O_3–Fe_2O_3–HCOOH, etc., to find out if this could possibly be the mechanism of vast development of oolitic textures found in nature.

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Mineralogical Institute,
University of Mysore,
Mysore 570 006,
July 6, 1979.

M. N. VISWANATHIAH.
J. A. K. TAREEN.
K. V. KRISHNAMURHY.

A RECORD OF HOLOTHURIAN SCLERITES FROM THE TRIASSIC OF MALLA JOHAR, KUMAUN HIMALAYA

THE present note records for the first time the presence of holothurian sclerites from the Middle Triassic Kalapani Limestone of Malla Johar, Kumaun Himalaya, from the samples brought by one of us (S. K.) as a member of the Second Expedition of Wadia Institute of Himalayan Geology to Malla Johar area in the year 1972. Kalapani Limestone is exposed in Kiogar Valley and the samples were collected at a place 5 km east of Sumna in the Chamoli district of Uttar Pradesh. Holothuroids were recovered by acid etching in connection with search for conodonts. Although a sample (T55) yielded large number of well-preserved conodont elements but only a few moderately preserved holothurian sclerites could be recovered. The present material of sclerites includes exclusively wheel type forms that have been assigned to the single species of *Acanthothellia anisica*. Similar material of sclerites has already been described by

Mostler[1] and by Stefanov[2] from the Upper Anisian of Austria and Bulgaria respectively.

In the present microfauna, holothuroids occur in association with conodonts, microvertebrates, ostracodes, foraminifera, micromolluscs and echinoid spines. The conodont fauna is referable to Middle Triassic *Gladigondolella tethydis* assemblage[3] and includes the following forms besides *G. tethydis* : *Neogondolella mombergensis, N. constricta, N. huckriedei, Paragondolella excelsa* and *P. navicula navicula*.

First fossil holothuroids from India were discovered by Gowda[4] from the Cretaceous of Trichinopoly, Tamil Nadu. Since then there has been active interest among Indian workers and fossil holothuroids have been described or repor ed from Jurassic and Cretaceous sediments and also from the Tertiary and Quaternary sediments but these fossils are almost unknown from the Himalayan Triassic. In India, so far sclerites have not been found useful in biostratigraphic work. However, Kozur and Mostler[5] have shown some biostratigraphic utility of holothurian sclerites in the Anisian of Germany. The present report of sclerites from Malla Johar is significant as these fossils are very rare in the Triassic of Himalaya. This report not only extends our knowledge of holothuroids from the Indian Triassic but also extends the geographic range of species of *Acanthothellia anisica* into Kumaun Himalaya. Further active studies on holothuroids in Triassic may be useful in biostratigraphy.

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Geology Department,
Lucknow University,
Lucknow 226 007,
July 30, 1979.

NANDLAL CHHABRA.
ASHOK SAHNI.*
S. KUMAR.

* Present address : Geology Department, Panjab University, Chandigarh.

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MITOTIC SPINDLE IRREGULARITIES INDUCED BY ASPIRIN IN *ALLIUM CEPA*

ASPIRIN (acetyl salicylic acid) is well known as an antipyretic and analgesic agent and is mostly used either as such or in combination with other stimulants like caffeine. The mutagenic action of aspirin has been assessed by various workers in plants and animals[1–4]. In the present report an attempt is made to establish the mitotic spindle-inhibiting action of aspirin in root meristematic cells of *Allium cepa*.

Aspirin of required concentrations were prepared using distilled water. Fast growing roots of *Allium cepa* were treated with 0·01%, 0·02%, 0·05% and 0·10% at room temperature for 3 hours. Bulbs grown in distilled water served as control. Treated and control roots were fixed in 1 : 3 Carnoy's fluid for 24 hours and preserved in 70% alcohol. The root tips were examined by the usual squash method[5] for cytological observation. Metaphase and anaphase figures were analysed in most cases, since spindle irregularities are most readily detected at these stages. The observations were recorded on 500 cells from different root tips of each concentration.

The data presented in Table I shows that the mitotic index is lower in treated roots compared tothe control and there are differences in mitotic index among the four concentrations. Scattering of chromosomes at metaphase and anaphase (Figs. 2–5) and irregular formation of cell plate at ana-telophase (Figs. 8–9) comprised the most dominant types of anomalies. Lagging of chromosomes (Fig. 6), unequal distribution of chromosomes (Fig. 10), tripolar anaphases (Fig. 11) and formation of binucleate cells (Fig. 12) were less frequently observed. It is constantly observed that higher the concentration of aspirin greater is the effect (Table I).

The morphological changes of the chromosomes include contraction and different stages of condensation of chromosomes, chromosome breakage, stickiness and clumping of chromosomes and erosion of chromatin material. The morphological changes observed in the present study agree with the results of previous workers[1–4].

The mitotic inhibiting action of aspirin include, stopping of the entering of cells into division, inhibitory action on spindle apparatus and prevention of cell wall development at telophase. After treatment with aspirin majority of the early prophase cells revert back to the interphase condition. This reveals its action as 'Preprophase inhibitor of mitosis'[6]. Further, aspirin does not inhibit chromosome reproduction and division, reverting its action only in G2 stage of interphase. Based on mutagenic and spindle inhibiting action, aspirin could be assigned to a 'Mitotic poison with radiomimetic action'[7–8].