

TABLE I
Low temperature PMR spectra of $C_2H_5CO_2H$ in
 $CDCl_3 + 50 \text{ Vol} \% CS_2$

$t, ^\circ C$	CH_3 group, δ ppm (J-values, Hz), t	$-CH_2$ group, δ ppm (J-values, Hz), q	$-SH$ group, δ ppm ($b_{1/2}$, Hz)
+ 5	1.134 (7.50)	2.634 (7.33)	4.576 (1.5)
- 10	1.130 (7.45)	2.640 (7.34)	4.578 (1.7)
- 30	1.096 (7.25)	2.642 (7.50)	4.693 (2.0)
- 40	1.092 (7.20)	2.652 (7.50)	4.700 (2.0)
- 56	1.084 (7.00)	2.672 (7.50)	4.800 (2.0)
- 70	1.086 (7.00)	2.705 (7.48)	4.850 (2.5)
- 84	1.088 (7.00)	2.755 (7.00)	4.951 (4.0)
- 90	1.086 (7.00)	2.756 (7.01)	4.981 (5.2)
- 97	1.088 (7.01)	2.755 (7.00)	5.008 (7.1)
- 101	1.088 (7.00)	2.755 (7.00)	5.010 (8.4)
- 108	1.088 (7.00)	2.755 (7.00)	5.010 (10.0)
- 111	1.080 (7.25)	2.775 (7.166)	5.010 (10.0)
- 113	1.080 (7.25)	2.775 (7.166)	5.011 (10.0)

t —triplet; q —quartet; $b_{1/2}$ —half band width.

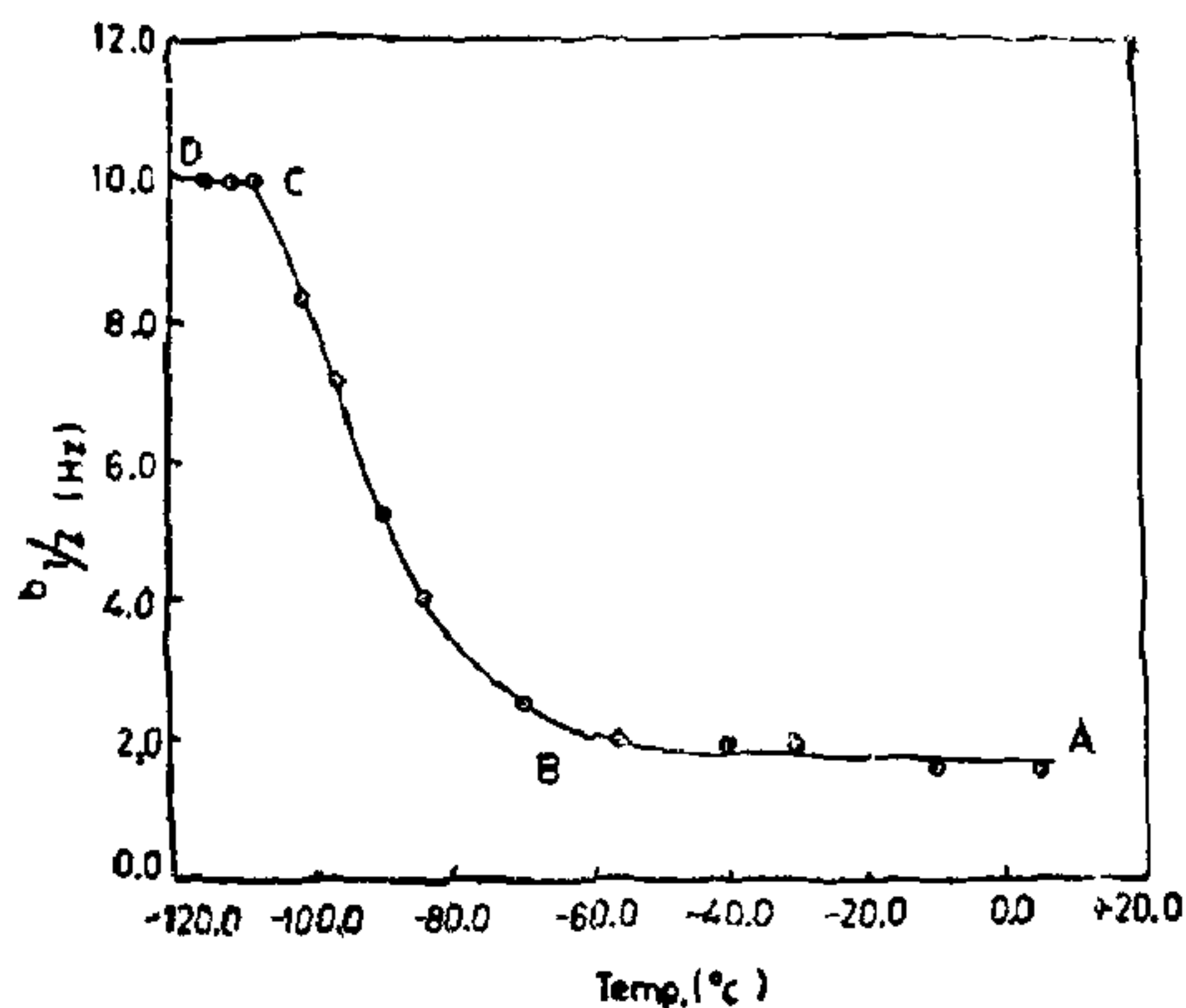


FIG. 1. Half band width variation of $-SH$ proton with temperature on 60 MHz varian NV-14 spectrometer.

The CD portion of the curve may then be attributed to be mainly due to cyclic H-bonded dimer.

The author is indebted to CSIR (India) and Alexander Von Humboldt Stiftung, West Germany, for the financial assistance. Thanks are also due to D^r. C. O. Meese for recording the PMR spectra.

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May 11, 1978.

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OCCURRENCE OF TRACE FOSSIL *PALAEODICTYON CARPATHICUM* IN THE UPPER FLYSCH SUCCESSION (UPPER CRETACEOUS), MALLA JOHAR AREA, PITHORAGARH DISTRICT, UTTAR PRADESH

THE trace fossils are bioturbation structures having a well defined shape. The study of trace fossils is quite useful in the reconstruction of environment of deposition as the type of burrows (trace fossils) generally reflect the ecological conditions and thus characterise an environment (Seilacher)⁵.

The present note records the occurrence of *Palaeodictyon carpathicum* Matyasovzky for the first time from Indian subcontinent and perhaps from Asia. It has been seen as a net in the grayish black calcareous shale of the Upper Flysch succession of Malla Johar area, Pithoragarh district, U.P. It is recorded from the exposures north of Sancha Malla on the Sancha Malla—Balcha Dhura mule track.

The Upper Flysch sequence is the youngest formation of the Tethyan succession of Kumaon Himalaya, U.P. It overlies the Giumal Sandstone of Lower Cretaceous age and underlies the Exotic Blocks (Heim and Gansser)¹. It, however, shows a tectonic contact with the Exotic Blocks. The Upper Flysch sediments are characterised by good development of *Globotruncana* and radiolarian oozes and are considered as deep sea deposits (Heim and Gansser¹, Mungain and Sastry³).

Systematic Description

The scheme proposed by Nowak⁴ for the classification of *Palaeodictyon* into different species has not been found useful and thus the old scheme of classification is followed in the present work (Ksiazkiewicz)².

Palaeodictyon carpathicum Matyasovzky (Fig. 1)

Meshes about 5 to 9 mm wide consisting of pentagons and hexagons, often irregular. Smaller the size of the meshes, more regular the network. Ridges are less than 1 mm to 2 mm in thickness,

Remark : The form resembles *Palaeodictyon carpathicum* Matyasovzky described from Polish Carpathian Flysch by Ksiazkiewicz² where it is considered as post-depositional burrows and has been recorded from almost all the stratigraphic tectonic units beginning with the Lower Cretaceous upto Oligocene (Nowak)⁴.



FIG. 1. Trace fossil *Palaeodictyon carpathicum*, Upper Flysch succession. Sancha Malla area, Pithoragarh district, U.P., Scale is equal to 2 cm.

The present discovery of *Palaeodictyon* from the Upper Flysch succession is quite significant as it has been recorded along with other feeding burrows of *Rhizocorallium*, *Zoophycus*, and *Planolites* affinities. These feeding burrows are in conformity with the scheme suggested by Seilacher⁵ for the distribution of trace fossils and also give a basis for the comparative study of the Tethyan sediments and the Carpathian Flysch succession of Europe.

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FIRST RECORD OF MAXILLARY DENTITION OF *SAYIMYS PERPLEXUS* (CTENODACTYLIDAE)

FROM THE INDIAN SIVALIKS

In the Indian subcontinent the family Ctenodactylidae is not well represented, there being only a single genus *Sayimys* with two species namely, a smaller *Sayimys*

sivalensis from the Chinji formations of Attock district in Pakistan, and another a larger species *Sayimys perplexus* from the Nagri formation of Haritalyangar, Bilaspur district of Himachal Pradesh, India. The Ctenodactylids probably originated and radiated in Asia first. They migrated to North Africa sometime during Miocene times, giving rise to the Pleistocene genera *Africanomys* and further radiated into four genera presently existing there. The Asiatic stock evidently did not exist beyond Pliocene with terminal genus *Sayimys*, playing no part in the ancestry of African radiation Black¹.

The genus *Sayimys perplexus* was erected by Wood² and was diagnosed on the basis of a lower left mandibular fragment YPM 13800 with P/4-M/3. The holotype was recovered by G. E. Lewis in 1932 from the Nagri formation exposed in the east of Haritalyangar village in Bilaspur district of Himachal Pradesh. Other workers who have studied this genus and species include Prasad³ and Black¹.

The existing diagnosis of this genus and species based on only mandibular teeth is incomplete. The recovery of two maxillary fragments PUA 70-11 (Fig. 1) consisting of right M¹ and M² and PUA

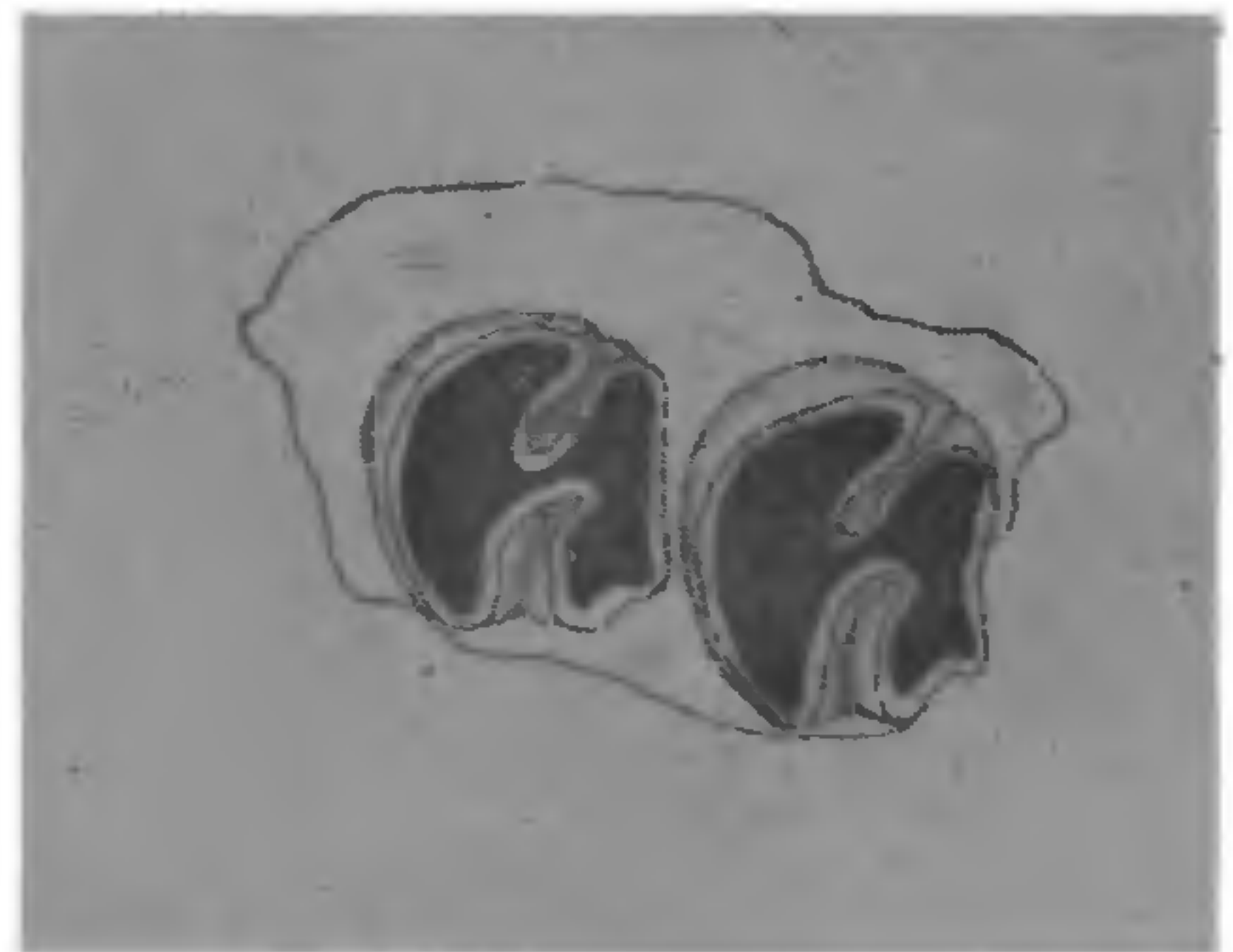


FIG. 1

71-13 a left maxillary fragment with M³ and partly broken M¹ and spaces for P⁴ and M² from Nagri formation at Haritalyangar has provided a great deal of information regarding the morphology of upper dentition of this genus and species. Considering the significance of the totally new information available from the upper dentition, it has been found worthwhile to record it here. While the morphological characters are dealt with here, detailed description of the material shall be published shortly. The modified diagnosis is as under:

Dental formula $I \frac{2}{1} C \frac{0}{0} P \frac{1}{1} M \frac{3}{3}$. Jaw with very heavy masseteric crest and gently sloping coronoid; angle not continuous with lower end of