which indicate that the aminophosphine is acting as a bidentate ligand, since both nitrogen and phosphorus atoms contain lone pair of electrons. Tetra- and hexa-coordinated complexes are formed in the case of copper(II), cobalt(II), and nickel(II) respectively.

Copper(II) complex: The μ_{eff} value of the complex is 1·90 B.M. characteristic of square planar structure. In confirmation of this structure, only one band is seen in the entire visible region at 680 nm corresponding to the D_q value of 146 cm^{-1}.

Cobalt(II) complex: The complex possesses higr spin octahedral structure as shown by (*i*) its μ_{eff} value which is 4·60 B.M. and (*ii*) the presence of ν_3 and ν_1 transitions at 20·00 kK and 9·99 kK respectively. The ν_2 band is not clearly visible in the spectrum. The D_q and B values for the complex are calculated to be 844·0 and 879·2 cm^{-1}.

Nickel(II) complex: This dark pink complex gives a μ_{eff} value of 3·80 B.M. suggesting the octahedral disposition of ligands around the metal. As seen in case of other octahedral complexes of the metal, three bands are observed in the spectrum at 8·9, 14·5 and 27·3 kK which have been assigned to be ν_1, ν_2 and ν_3 transitions. The values for the two ligand field parameters, *i.e.*, D & B are 900·1 and 905 cm^{-1} respectively.

These compounds belong to the class of mixed ligand complexes, as different ligands are coordinated to the metal and the D_q values indicate that the ligand fields around the metal ion is quite strong[7]. The Racah parameter B is reduced to some 80–90% of the free ion value for the cobalt(II) and nickel(II) complexes respectively, suggesting a considerable degree of covalency in the complexes.

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OCCURRENCE OF SEISMITE IN THE PRECAMBRIAN ROCKS OF RAJASTHAN, INDIA

Observations:

The semipelites of the Aravalli Supergroup (Precambrian) exposed in the Anas river show intraformational micro-faults, 2·5 Km test of Chandanwara Fort (Lar N 23° 27', Long. E 74° 06' 30") Banswara District, Rajasthan, India. Intraformational faulting was observed in a zone of 25 cm over a strike length of one metre, In strike continuity seismite grades to wave disturbed rocks.

Soupy Zone and *Segmented Zone* of the fault graded seismites described by Seilacher[1] are recognisable in outcrop, as described in Plate I.

PLATE I. Section along strike of seismite bed and perpendicular to bedding (Pencil for scale, 12 cm). *a*–Soupy Zone, *b*–Segmented Zone, *c*-Undisturbed Sediments.

Soupy Zone: It is characterised by indistinct lamination near the base and structureless admixture of quartz and sheet minerals towards the top. In the proximity of the faults of 10 cm to 15 cm vertical length flocculation has obliterated earlier depositional structures.

Segmented Zone: It represents coherent layers at the sediment water interface and slightly below. The zone is characterised by micro-faults which extend vertically from 2 mm to 15 cm, showing vertical displacement of 1 mm to 5 mm and occur as step faults. In some of the layers, the faults cut both top and bottom of the beds, but in a few layers these are confined to the bottom, the top surface of the bed remain unaffected. The step faults are both normal and reverse type. In both normal and reverse faults, the fault planes dip towards southwest.

Undisturbed Sediment: This zone represents undeformed laminations and a sort of micro-uncon-

formity exists between the *Soupy Zone* and *Undisturbed Sediment.*

Discussion

Fault graded beds are geopetal in distribution. Seilacher (*op. cit.*) was first to recognise them as seismites and suggested their possible use as palaeoseismograms.

In the present area, the beds are characterised by lack of basal slip surface and presence of top soupy layer. The micro-faults are confined to a few layers, with overlying and underlying beds in normal setting, undisturbed and traceable with micro-unconformity above the *Soupy Zone.* These features suggest penecontemporaneous seismic shocks. The alteration of *Undisturbed Sediment* and *Segmented Zone* are indicative of repetitious shocks. An interesting feature is the presence of normal and reverse faults in the *Segmented Zones*, separated by *Undis urbed Sediment* zone. These changes in the fautt styles are attributable to the changes in the nature of the seismic impulses.

Seilacher (*op. cit.*) suggested the use of fault graded beds as palaeoslope indicators. In the present area, the fault planes for both normal and reverse faults dip towards southwest. The local direction of palaeoslope as interpreted from *a*-axes orientation of cross-bed dip azimuth, show parallelism with the dip direction of the fault planes of the *Segmented Zones*, thus confirming the reliability of using the fault graded beds as palaeoslope indicators.

In the Upper Aravalli rocks of Rajasthan and Gujarat, soft rock deformation has been observed to be confined to a definite stratigraphic horizon comprising semipelite, with intercalations of pelite and arenite layers. The present find of Seismite within a section of the said horizon is interesting, in as much as, it provides a key to the understanding and interpretation of the soft-rock deformation of the associated rocks. The existence of penecontemporaneous seismic activity makes it tempting to conceive a genetic correlation between Seismite and soft-rock deformation of the area. The palaeo-seismic activity triggered the sliding process, but before the sliding process was fully developed, in some of the beds the deformational structures were 'fossilised' without undergoing lateral transport, giving rise to Seismite, whereas others experienced the effects of sliding and gave rise to slump structures.

The spatial distribution of slump structures in the Upper Aravalli rocks of Rajasthan and Gujarat defines the geographical limits of a palaeoseismic belt, whose recognition is of utmost significance for the geoscientists engaged in geodynamic projects.

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CYTOGENETICAL STUDY IN *IPOMOEA PES-TIGRIDIS* LINN.

TWO morphological variants of *Ipomoea pes-tigridis* Linn., one with lobed leaves and the other with entire leaves, were taken for the study. Already the cytological characters of these two varieties have been published by the author[1-3]. In order to study the genetics of the lobing of leaves, the crosses were attempted, the results of which are presented in this paper. The types were true breeding as studied for three generations by repeated selfing. The F_1s were selfed to get F_2. The parents, F_1 and F_2 were raised in flats.

The flowerbuds have been emasculated and bagged to prevent natural pollination. The next morning, the pollen grains from the desired variety were dusted. The bags were removed after three days subsequent to pollination. It took 25 to 29 days for the fruits to attain maturity after pollination. The average number of seeds per pod was 3·06. The flowerbuds from the parents as well as from hybrids used for cytological observations were fixed in 1 : 3 acetic alcohol for a minimum period of 24 hours.

The leaves of F_1 plants were lobed and F_2 generation showed segregation of 3 lobed : 1 entire, indicating the dominance of lobed nature over the entire (Table I, Fig. 1).

TABLE I

Characters	Observed	Expected	X^2 value (calculated)
Lobed	125	126	0·0309
Entire	43	42	(Table: 3·841)

Both the varieties have been found to possess $2n = 28$ chromosomes in the somatic cells. The flowers of *I. pes-tigridis* lobed variety were slightly larger than those of the other variety. It is particularly noteworthy that these two varieties are so