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Indus script deciphered: the method of semblance at work

Srinivasan *et al*. (**page 268**) have traced out the evolution of consonant–vowel sequence from a combination of initial-vowel and consonant sign from Bryan Wells (BW) corpus on Indus writing. This system of writing later developed into devising medial-vowel signs for easy representation of consonant–vowels. Having discerned the Indus writing to be part-syllabic in type and multilingual in nature (see *Curr. Sci*., 2012, **103**, 147–157), the authors applied a strategy to short-list the consonants present in Iravatham Mahadevan corpus and decipher the Indus script. The Indus signs that commute with each other and followed by medial-vowel signs to the left form the aksharas. Instances of conflated Indus signs that represent the yuktāksharas are also brought out. The semblance of those signs that begin with the basic consonant ‘k’ or ending up with the akshara ‘ya’ are shown for both Indus and Kannada writing.

The authors show the six fish-like symbols: , , , , , found from Indus text bear semblance with Kannada aksharas: ವ, ಪ, ಮ, ಬ, ಷ, ಘ. These correspond to the phonemic values for consonant-vowels: va, pa, ma, ba, ṣa, gha. Further two anticipated labial aksharas for ‘pha’ and ‘bha’ from Indus text namely, () and have been found from BW corpus. There are two ways of depicting the consonant–vowel ‘mī’ in Kannada. They are ಮೀ and ಮಿಾ. Likewise we find two bigrams of this kind in Indus text: they are , . This observation leads us to assign the medial-vowel signs and to be the Kannada mathra symbols ೀ and ಾ respectively.

The authors identify the aspirated plosive signs, the semi-vowel ‘y’ and spirant ‘h’ from the Indus text. Further, the Tamil-like and Kannada-like semblance features found in Indus text are also brought out. Five alternate methods to short-list the consonants from Indus text are also described. From the bigrams involving the known phonemes the plausible phonemic values for other select Indus signs have been read. Based on the above reading, the interpretation of text appearing in three Indus seals has been elucidated.

Numerical signs denoting whole numbers and fractions are also identified from Indus text. The evolution of number system starting from an elementary notation of representing digits 1 to 10 into a polynomial system to the base 10 is traced. The presence of Tamil-like and Singhalese-like numeral systems is also brought out. The conflated signs involving the sign (or) for number 1,000 and the sign (or) for number 10 depict the higher-order numbers ranging from 1,000 to 10,000,000. The six basic fractional units to denote hexadecimal fractions namely {1/4, 1/2, 3/4} and (1/16, 1/8, 3/16) are identified. The Indus sign is discerned to stand for the fractional value 9/10. The semblance between Roman numerals and Indus signs is brought out. From the plausible phonemic values of Indus signs, the Indus notation for the seven musical notes is inferred.

Calcium oxalate nanoparticles formation in leaves

Calcium oxalate is found in more than 215 plant families. Many cell processes (like calcium-dependent signalling, microskeletal dynamics) in plants can be affected by high concentration of calcium ions which is toxic to some species. Calcium oxalate accumulation in human body has been observed as kidney stones where excess of calcium forms calcium oxalate in presence of lipids. Calcium oxalate crystal formation in the cells is dependent on the calcium ion concentration. Ahmed *et al*. (**page 293**) show that nanostructured calcium oxalate monohydrate (COM) nanoparticle formation takes place in leaves in the presence of excess calcium ions. At room temperature and at physiological condition (pH ~ 7.0), growth of crystalline COM nanoparticles in leaves depends on the water content of the leaves. They find that though water in leaves is important for oxalate formation, it has an inverse effect on the amount of COM formation. They show that the secretion of oxalate ions (to form COM) from the cells occurs even in leaves which have been removed from the living plants and the ability to secrete oxalate ions increases with the age of the leaf (water content decreases with the age of the leaves). External complexing agents like citric acid (which binds to Ca^{2+}) inhibits secretion of oxalate ions from the cells.

Foraging behaviour of Malabar giant squirrel on the fruits of *Terminalia bellirica*

Seed predation, being an important selective pressure, affects plant community structure, population density, species richness and spatial dynamics of plant recruitment in tropics. Despite, our knowledge on the natural history of plant–animal interaction of Indian wild plants is extremely poor. Sinu (**page 309**) has studied the species-specific natural history and basic ecological aspects of *Terminalia bellirica*, a medicinally important wild tree, to understand the arboreal and terrestrial seed predator assemblages and to identify the factors that limit recruitment of the species both at the seed and seedling stage in two habitats, evergreen forests and coffee agroforests of the Western Ghats biodiversity hotspot. The foraging behaviour of Malabar giant squirrel on the fruits of *T. bellirica* has been studied in detail. The study found larvae of an unidentified weevil and Malabar giant squirrel as major arboreal predators of *T. bellirica*. Ground predators include unidentified rat species, Malabar spiny dormouse and Indian porcupine. Predation marks on the seed coat was species-specific among the predators. Overall, 97% of the fruits of *T. bellirica* were preyed upon by arboreal and terrestrial seed predators. The predation rate was different between habitats. The study suggests that the seed loss of this rate to the predators has important implications on the natural recruitment of the species.