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## Murals of Ajanta

The increasing interest of the conservators and art historians in the caves of Ajanta as part of the World Heritage Site is more than justified. Ajanta is a sole monumental record of classical Buddhist Culture in a land which gave birth to this religion, which also influenced the culture of other Asian countries. The

thirty-odd caves cut into horse shoe shaped scrap of a steep cliff overlooking the Wagora River are the best creations of the time which inspired Buddhist in central Asia, China and south-east Asia. The Ajanta paintings are not just a milestone in the history of development of world art, but they also convey unique insights about the life of ancient Indian and their culture. Ajanta painters were guided by a highly developed sense of blending of colours with a view to produce total impression with three-dimensional effects giving true perspective to lines and planes. Ajanta may be the opportunity to experience a master teacher at work as the human and spiritual aspects of life are so skillfully blended in the art of Ajanta.

If the Ajanta paintings until now have not received the attention that they deserve, then this is very much due to their poor state of preservation. The cave temple stood all the vagaries of time and barbarity of man and serving as good remains for the scientific scrutiny in the laboratory. Many paintings have fallen off the walls with the layer of plaster on which they were painted and hence irretrievably lost, parts that are preserved are often faded or worn off, darkened by soot or washed out by bats' urine, badly scratched by visitors graffiti or discoloured/masked by earlier varnishes applied during coping or for restoration purpose. Although the caves are thermally stable, the environmental impact in the form of variation in humidity, $CO_2$ concentration, more impact of vibrations, light, etc. have deleterious effect on pigment and plaster at Ajanta. To save the paintings for posterity there is a need for trained conservators with extraordinary dexterity and sound knowledge of art who can really look to the problem in totality for taking suitable conservation measures. **See page 89**.

## Methane emission from Indian dry roughages

Indian livestock industry primarily sustains on dry roughages composed of crop residues and grasses which are usually characterized by low nutritive value. Nutritive value of any crop plant material is governed by concentration/contents of nutrients and their chemical makeup which influence the release of end products of rumen digestion/fermentation, particularly the volatile fatty acid (VFA) composition and this VFA concentration has great bearing on $CH_4$ production. Commonly fed dry roughages (straws, stovers and grass) were characterized for carbohydrate and protein fractions with $CH_4$ emission to develop $CH_4$ emission equations. **See page 57**.

## Photosynthesis, a global sensor of environmental stress

The molecular details of the stress response of green plants are yet to be worked out. However, new and novel ideas have emerged in recent years on the perception of stress signal and its transduction into appropriate metabolic response in photosynthetic tissues. Photosynthetic organelle in green plants has a high degree of structural integrity and an extensive functional network. Most of its components are extremely sensitive to environmental stress and therefore, the process is considered as a global sensor of stress. Among all the components, photosystem II (PS II) of thylakoid membranes and ribulose bisphosphate carboxylase oxygenase (Rubisco), an important enzyme of Calvin–Benson cycle of photosynthetic apparatus, are considered to be the major stress sensors. Stress sensing is primarily reflected in cellular energy imbalance, which in this review (**page 47**), is discussed in terms of perturbation in photostasis and imbalance in redox homeostasis. Signals generated by these changes bring about photochemical, metabolic and molecular reprogramming for stress adaptation through different signal transduction pathways.

Sugar, in addition to its role as a major source of energy, acts as a signalling molecule in cellular and whole plant metabolic network. Sugar production through photosynthesis and changes in its level at different environmental conditions modulate stress response. A critical discussion has been made on stress-induced changes in photosynthetic production of sugar, sugar sensing mechanism, signalling and metabolic reprogramming. The review summarizes several models on sugar signalling, their limitation and future work.