This issue

The contributions gathered here taken as a whole must serve to depict the vast canvas of palaeobotany in the broadest sense—a Sahni's vision come true. The major themes of the issue are thus extinct plants, evolution, and Earth's history.

In an effort to provide a glimpse of the spirit of Sahni, we reproduce, in full, three of his papers. Of these one (**page 609**) is an original research contribution on an extinct plant, and depicts rather well his inimitable way of carrying out a study and presenting the results. The other two (**page 594** and **page 601**) are the texts of lectures on topics that excited Sahni's enthusiasm and imagination and, by their very nature, are controversial: They serve to project the enthusiasm of a man who wanted to share his excitement with those around him. What Sahni spoke while inviting Jawaharlal Nehru to lay the foundation stone of the Institute of Palaeobotany (**page 560**) and Nehru's remarks (**page 562**) are also reproduced.

D. L. Dilcher (**page 627**) underlines the importance of anatomy and whole-plant reconstruction in palaeobotany. There is a need, he says: 'for palaeobotanists to reconstruct whole fossil plants, to study details of plant anatomy and morphology, and to *search for characters that will allow us to draw clear distinctions between extinct and living plants.* Just as the horse has a complex fossil history, and just as the dinosaurs represent an extinct major group of animals, there are similar patterns of complex fossil histories and extinctions of groups in vascular land plants.' Paying a tribute to Sahni, Dilcher says: 'Sahni, Krausel and Harris each demonstrated through their research the importance of plant anatomy in bringing together the scattered organs of extinct plants. They chose to study fossil plants that were structurally preserved, they developed special techniques to make anatomical preparations of fossil plant remains, and they endeavoured to extract the maximum anatomical detail possible from their fossil material.'

In somewhat similar vein, V. Puri (**page 634**) quite convincingly argues for studies on the morphology and anatomy of extant plants along with those on extinct plants. P. N. Mehra (**page 659**) does exactly this when he reports a study of the anatomy and ecology of the tree fern *Hemitelea brunonia*. And, among extinct plants, novelties continue to be discovered and described from various geological strata, as one may see from T. Kimura's short contribution (**page 657**).

One hardly ever thinks of extinct plants without considering their evolution. N. F. Hughes (**page 630**) stresses the need of new thinking on methods of classification of fossil plants and suggests that a distinction be made between *traditional classification* methods and a new *period classification for fossils only*. The usual unimaginative arrangement of these plants into pteridosperms, cycadophytes and coniferophytes derives from the traditional consideration of the very small number of living members of this large, ancient group. After all, the majority of living gymnosperms are conifers. Hughes makes the significant point that continuing to view the Mesozoic gymnosperm flora with the same 'blinkered approach' would be of little help in tracing angiosperm origins. And here, Sahni continues to inspire: for Hughes concludes, 'At the distance of over forty years, Birbal Sahni and his contemporaries appear not to have been inhibited by such narrow concepts of evolutionary connections; they made correspondingly more progress.'

Not only new thinking, but new techniques and innovative approaches are required for the progress of our science. The review of recent work on the ultrastructure of fossil plant cuticles by S. Archangelsky (**page 676**) is, therefore, timely and pertinent.

One of the difficult and unanswered problems of palynology is the precise nature of sporopollenin. Sporopollenin provides the structural basis for the walls of most palynomorphs. The indestructible nature of sporopollenin, pollen and spore exines ensures their preservation. A. Traverse (**page 678**) reports on his study of 'opercula' and 'ubisch bodies' in *Passiflora* and *Ipomoea* pollen. These are 'throwaway' structures in nature. Whatever their function, these structures are certainly sources of practically pure sporopollenin and can be analysed chemically by modern techniques. This may be the way to an answer to an age-old question.

Another contribution that introduces novel techniques comes from D. Lal *et al.* (**page 636**). Underlining the importance of studying soil erosion and soil formation rates in geomorphology, biological production and carbon sink–source functions, Lal and his collaborators discuss two quantitative nuclear methods for the study of soil formation and soil erosion rates. Soil studies help in deciphering climatic/vegetation changes during the Quaternary and earlier periods. The study of soil formation and soil characteristics, especially potential for sustainable biological production, is of great interest.

The fascination the Deccan traps provided for Sahni find expression in his address as general president of the Indian Science Congress in Madras in 1941. Since then, there have been assaults on Wegener's theory of continental drift, and some support too. Ashok Sahni (**page 654**) summarizes the present status of the problem. Dealing with the Deccan volcanic episode, B. P. Radhakrishna (**page 641**) presents a model accounting for a great many of the observed facts concerning the geology and geomorphology of the Indian subcontinent. The model stems from the plate tectonic theory, which is considered to explain continental drift.

Germane to Wegener's theory and the Gondwanaland concept is the mapping of the Gondwana flora, past and present, a task to which Sahni devoted himself. His early work on microfossils opened up new vistas, of which palynology has been a productive and challenging area. The impact of Sahni's work on later studies in this area is brought out clearly by the reviews by H. P. Singh (**page 692**), R. S. Tiwari (**page 682**), K. P. Jain (**page 697**), and B. K. Misra and Anand-Prakash (**page 687**). The original contributions by Caratini *et al.* (**page 669**) and Venkatachala *et al.* (**page 673**) further serve to highlight the value of palynological data in deciphering Earth history, palaeoclimate and vegetational changes.

Sahni's interest in Earth history and archaeology is well known. K. S. Valdiya (**page 664**) reviews critically recent neotectonic studies on the history of the northwest Himalaya and notes how these give support to Sahni's deduction that the Kashmir Himalaya did not form an effective barrier to movement of Palaeolithic Neolithic Man. H. M. Kapoor and H. K. Maheshwari (**page 648**) deal with Early Permian palaeogeography of the Perigondwana in the Indian segment.