

In this issue

The search for the building blocks of matter

This issue carries two articles on one of the oldest basic themes in physics—the effort to unravel the nature and behaviour of matter at smaller and smaller length scales, which implies higher and higher energy scales. The hope is that the search will reveal a reasonably small number of basic constituents as well as the laws governing their interactions, which include creation and destruction. K. V. L. Sarma's article on 'The ultimate constituents of matter' (page 605) is a broad overview, tracing the history all the way up to current developments. A. Kshirsagar's article 'Discovery of top quark at Fermilab' (page 599) focuses on a recent experiment which has excited particle physicists because it suggests that one more piece can be fitted into the jigsaw puzzle. Perhaps the last such similar occasion occurred a little

more than twenty years ago, when the so-called charmed quark made its presence felt in experiments, for which Ting and Richter later received the Nobel prize. It is worth noting that groups from Bombay and Chandigarh have also played a role in the large international collaboration at Fermilab. Both the articles are particularly timely because a confirmation of the top quark results with improved statistics was announced only weeks ago.

R. N.

Probing viral surfaces

Monoclonal antibodies (Mabs) are exquisitely specific reagents for mapping the antigenic segments (epitopes) of macromolecules, particularly proteins. Their application as probes to the study of the surface topography of complex structures is best ex-

emplified by work on viruses, which provide a remarkable example of self-organization in biology. Kekuda *et al.* (page 611) review the use of Mabs in the study of plant viruses. Since the protein coat is composed of specifically organized subunits, the generation of epitopes that are characteristic of quaternary structure is a real possibility. This expectation is indeed borne out in studies of tobacco mosaic virus, where about half the antiviral Mabs are specific for quaternary structural features. The authors also point to the use of strain-specific Mabs in the classification of viruses. Clearly, the availability of antibodies that recognize appropriately structured segments on the viral coat proteins should prove of immense value in dissecting the molecular events in the disassembly-assembly process.

P. B.