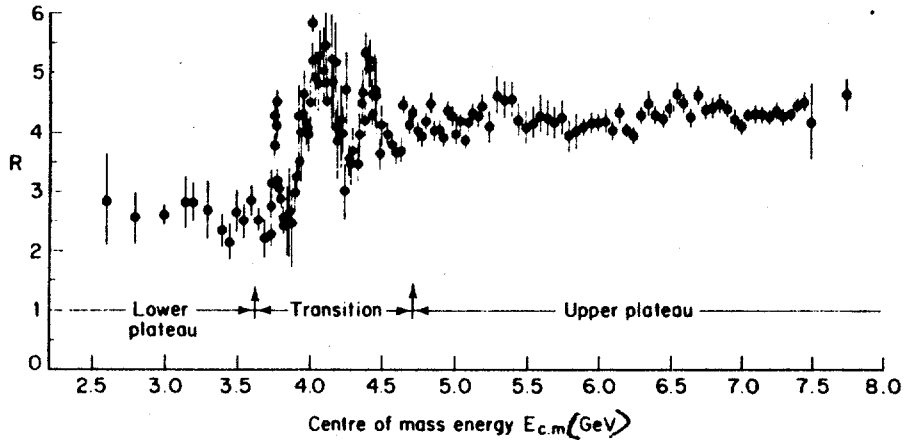

Fig. 19. The ratio R of formation of hadrons to that of lepton pairs resulting from the annihilation of electrons and positrons, plotted as a function of the energy of the colliding electrons and positrons.

general picture confirms the interpretation of the peaks, which gave the initial incentive to the November Revolution, as being pairs of charmed quarks. Again, as in some of the previous examples, detailed quantitative comparison of this simple picture with the data shows some discrepancies; and again we can learn from reconciling these differences more about the detailed dynamics of the processes involved. Thus, just as the deviation from the simple scaling relationship has taught us something about the strength of the interactions among the quarks in the proton, so too can we learn from the discrepancies between the exact numerical predictions concerning annihilation cross-sections and the experimental results how quarks interact with one another once they are formed.

The story I have described is, of course, only a small fragment of the evolution of our understanding of particle substructure during the century. What I hope, however, is that this sketch makes clear that we are witnessing an amazing contrast between the surprising new discoveries paced by the evolution of technology, on the one hand, and a consistency of general approach and motivation and of overriding physical principles, on the other. It is this contrast between sameness and change that has made this period one of the most exciting epochs in physical discovery.

DISCLAIMER