

Statement for Dr Weaver by  
J R Oppenheimer.

You point out in your letter that the natural radioactive elements, and in the higher energy ranges the cosmic rays, provide us with the elements of a high voltage laboratory, and emphasize that the most important discoveries of the last years have been made with these as instruments, and not the cyclotron. That is true. But the implication that our knowledge of high energy collisions, or the mesotron, can best be extended by studying cosmic rays is probably not true, because of the essential uncontrollability, the essential observational and not experimental character of cosmic ray research. And for quantitative study (it should be remembered that even the mesotron mass has so far been measured only roughly) the superiority of the cyclotron, which on quite conservative estimates will give a million times the mesotron intensity of cosmic rays, is evident enough.

There is a more general point. The purpose of physics is not only knowledge--and certainly not such "headline" knowledge as the discovery of a new particle; it is equally, perhaps more, the power to control physical behavior. A new discovery about the structure of matter is instrumental in making that possible, and so is a cyclotron. Rutherford's discovery of the possibility of atomic transmutation was for over a decade an isolated discovery; only the development of new techniques has rendered it, scientifically and technically, fertile. The case we would make for the big cyclotron is that it can do this for a new domain.