Cosmic Rays by B. ROSSI; 268 pp; $5.95 cloth, $2.95 paper; McGraw-Hill Book Co., 1964.

Studies of the cosmic radiation have been immensely fruitful for twentieth century physics. Prior to development of high-energy particle accelerators, cosmic ray phenomena constituted the sole clue to the realms of subnuclear processes lying beyond those hinted by radioactivity. The history of the use of cosmic rays as a tool for prying into those secrets has now been retold in fascinating form by an investigator who has himself been intimately involved in that history for several decades.

Rossi's book can be enthusiastically recommended to a broad range of readers. Specialists in the field of cosmic radiation should find his narrative exciting. At the other extreme, even undergraduate science students will find this an outstanding (the outstanding!) account of the intriguing area of cosmic radiation. Historians of science must not fail to take notice of Rossi's book, for it gives a deeply discerning treatment of a field rich in implications for modern science history and studded with surprising twists and turns of interplay between theory and observation.

From the heroic age of cosmic ray research, beginning with the 1912 balloon ascent of Victor Hess, and moving on after the war years to the energetic field-work of Millikan (who coined the slightly unfortunate name "cosmic rays" because he felt sure for many disputatious years that these were extra-energetic gamma rays) and Compton (whose observations were instrumental

in revealing that the "rays" were in fact charged particles), Rossi traces expertly and engagingly the steps by which two generations of diligent physicists sorted out the almost unfairly confusing array of events that comprise the atmospheric interactions of the cosmic radiation. Clarifications ran neck and neck with new confusions through the thirties; but after World War II attacks on many fronts nearly cleared the field within ten years. Today the great remaining question is: where and how are the cosmic ray primaries formed?

Rossi, in a final epilog suggests that future historians of science may "close the chapter on cosmic rays with the fiftieth anniversary of Hess's discovery." That may or may not be what the future holds; but Rossi's retelling of those fifty years of cosmic ray research will probably be the definitive historical treatment for years to come.

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