near a fence . . . the one down the street, you know. But what happened was that the image fused with that of the fence and I walked right on past without noticing it. . . . *Banner*, of course, means the Red Banner. But, you know, the building which houses the Moscow City Soviet of Workers' Deputies is also red, and since I'd put the banner close to one of the walls of the building I just walked on without seeing it."

We can well imagine that while with many people the problem is how to remember, S.'s problem is how to forget. He suddenly discovers one day that if he *wishes* the accumulated pile of irrelevant nonsensical material to disappear, it will disappear, blow away, without any sign of direct effort. "What explanation was there for the fact that the hundreds and thousands of series he recalled did not have the effect of inhibiting one another, but that S. could select at will any series ten, twelve, or even seventeen years after he had originally memorized it?"

Luria describes tests that show some voluntary control of pulse and body temperature. S. simply imagines himself running or slowing down, and his pulse goes from 70–72 to 80–96 and finally to 100, and then slows down to 64–66. He imagines he is holding a piece of ice in his left hand, and the hand becomes measurably colder. He reports voluntary control likewise over pain: "I'm going to the dentist. . . . when the pain starts I feel it . . . it's a tiny, orange-red thread . . . So I cut the thread, make it smaller and smaller, until it's just a tiny point. And the pain disappears."

Luria makes the case that there is much more here than extraordinary memory, that there is a wide variety of curious perceptual, imaginative, and what appear to be autonomic effects as well. He believes not only that S. was gifted with unusual powers, but that his personality was profoundly molded by these capacities. The book is essentially a rich, ingenious documentation of a very extraordinary gift, which, along with real satisfaction, brought some strange consequences upon its possessor.

Jerome Bruner, who writes a vivid foreword to the book, comments wisely upon Luria's experimental and clinical skill.

GARDNER MURPHY
Menninger Foundation, Topeka, Kansas

Lavas from the Earth's Mantle

Basalts. The Poldervaart Treatise on Rocks of Basaltic Composition. H. H. HESS and ARIE POLDERVAART, Eds. Interscience (Wiley), New York, 1967–68. Vol. 1, xvi + 495 pp., illus.; vol. 2, viii + 400 pp., illus. $22 each.

Experimental laboratory studies on silicate systems at high pressures and temperatures, hydrous and anhydrous, have increasingly in the last two decades come to provide critical data in the field of petrogenesis. This new experimental approach has been especially fruitful in tackling the genetic problems of the more common rock types. The decade of the 1950's saw the rise and decline of the "granite controversy," a debate eventually much resolved by the impact of experimental studies. In the present decade attention in research and discussion has turned particularly to basalts, the most widespread of superficial volcanic rocks. Experimental studies both at atmospheric and at high pressures have played and continue to play an even more significant part in genetic studies of lavas and their melts.

The volumes now under review purport to give a modern account of basaltic rocks, their nature, their physical and chemical properties, and the source and mode of generation of their magmas. The symposium project was conceived and organized by Arie Poldervaart, who invited manuscripts from contributors and acted as editor until his untimely death in 1964. The project was taken over and completed under the editorship of H. H. Hess.

The two volumes consist of 20 chapters contributed by 21 authors, the first volume being prefaced by a biographical memoir of Poldervaart contributed by the late Walter Bucher. Almost every aspect of the study of basalts is represented. Their geologic setting, their mineralogy and petrography, their classification and differentiation, their trace elements and isotope geochemistry—all are systematically treated.

Many experimental data are incorporated in the articles. There are four chapters devoted almost wholly to pressure-temperature laboratory studies—of the effects of water and oxygen pressure on the crystallization of basalts, silicate systems related to basaltic rocks, and the generation of melts at high pressures comparable to those prevalent in the earth's upper mantle.

Missing is a description of anhydrous low-pressure experiments on the melting behavior of basalts in the laboratory. The rich harvest of results on the field measurement of temperatures and crystallization of lava lakes at Kilauea (particularly of 1959–1960) made available by the U.S. Geological Survey in 1966 possibly came too late for insertion.

The scope of the whole project has been very liberally interpreted, for the survey includes chapters on the recrystallization of basalts under graded metamorphic conditions and on their eclogitic representatives. A place has even been found for a chapter on rhythmic and cryptic layering in mafic and ultramafic layered intrusions.

The wide coverage of these volumes, the clear, factual, and well-illustrated presentation of individual chapters, and the welcome emphasis given to the results of experimental laboratory studies serve to provide an authoritative modern survey which should prove indispensable to specialist researcher and student alike. The editors are to be congratulated on the selection and marshaling of the collective contributions.

C. E. TILLEY
Department of Mineralogy and Petrology, University of Cambridge, Cambridge, England

Detectors

Bubble and Spark Chambers. Principles and Use. R. P. SHUTT, Ed. Academic Press, New York, 1967. Vol. 1, xiv + 425 pp., illus., $18.50; vol. 2, xii + 319 pp., illus. $16.

The use of the bubble chamber as a detector in high-energy physics experiments has had a momentous impact in this field of research. Even though bubble chambers have been in use only for a decade, their construction and operation involve a large effort; the analysis and digestion of the data collected on bubble-chamber film involve an equally large effort. As a consequence, a new and separate discipline has evolved to the point that an experimentalist in high-energy physics is characterized as a "bubble-chamber man" or a "counter man" and only seldom as both. A spark chamber is easier to construct and operate, and even though it has, as a detector, topological similarities to the bubble chamber, it is a quite different instrument.

It is therefore fitting and most welcome that R. P. Shutt has collected in