ration, explosives, and propellants in some detail. One of his wilder ideas is the "terrajet," which digs its way through solid earth, ejecting liquid and gaseous slags to the rear. Others include the design of a manned camp on the moon, and moving the sun (and solar system) to a different location in the Galaxy.

The textual style is sometimes ponderous, giving the impression that Zwicky has thought of everything worth thinking about in the last 50 years, but no reader can doubt that he has had many original ideas, some of them highly productive.

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An Influential Pseudoscience

Mesmerism and the End of the Enlightenment in France. ROBERT DARNTON. Harvard University Press, Cambridge, Mass., 1968. xiv + 218 pp., illus. $5.95.

Like many of his scientific betters—Buffon, Laplace, Newton himself—Franz Anton Mesmer postulated a subtle, universal fluid. Linking his fluid to health and promoting his therapeutic salon with consummate showmanship, Mesmer converted animal magnetism into probably the most widely discussed theme in France during most of the 1780's. In a decade during which an equally invisible fluid could raise balloons aloft, mesmerism found easy popular acceptance.

Critique from the establishment fostered rather than weakened the hold of mesmerism on the popular mind. No matter that the royal commission condemning mesmerism consisted of notables from both the Faculty of Medicine and the Academy of Sciences, Guillotin, Bailly, Lavoisier, and Franklin among them. Several of Mesmer's closest associates, thwarted in their efforts to rise to high levels of honor, hated the scientific establishment. The pamphleteering defense of mesmerism by Brissot, Marat, Bergasse, and others pushed beyond mere pseudoscientific theory into a closely linked political theory, bringing the essence of Rousseau's revolutionary concepts into the common consciousness charged with an air of "scientific" certainty. Some of the pamphleteers, though not Mesmer, played political roles after revolution came.

Mesmerism was thus a major mediating force in the transition from "the cold rationalism of the midcentury" to "a more exotic intellectual diet" marked by a yearning for "the suprarational and the scientifically mysterious." Many Frenchmen "buried Voltaire and flocked to Mesmer." This trend accelerated after the Revolution came to an end. Elements of mesmerism stoked romantic fires. Political systems, such as the Holy Alliance, and political theorists, such as Fourier and Owen, owed debts to the radical strain mesmerism embodied. Mesmer's fluid also influenced the views on the supernatural of important writers, Dumas and Gautier, Balzac and Hugo.

Such is the argument of Darnton's excellent and exemplary study in the history of ideas. Based on a thorough study of manuscripts, pamphlets, and journals, learned in its broad setting and persuasive in its internal logic, supported by richly relevant quotations and reproductions of contemporary engravings, *Mesmerism and the End of the Enlightenment in France* provides a commendable model for those interested in the way "true" and "false" ideas interact and broadly influence behavior.

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Excavator and Prehistorian

Earl Morris and Southwestern Archaeology. FLORENCE C. LISTER and ROBERT H. LISTER. University of New Mexico Press, Albuquerque, 1968. xviii + 204 pp., illus. $7.95.

Archeology is becoming of increasing interest to social scientists because of the possibilities it offers for making long-term predictions regarding human behavior and cultural processes. Hence this book appears at a moment when archeologists are reexamining their philosophies, methods, and goals. To me, whose professional life partly spans Earl Morris' career as well as the "revolution" in archeology that appears to be in the making, the book serves as a welcome reminder of the great debt that Southwestern archeologists owe to Morris and others of his generation. Morris and these others possessed extraordinary intellectual and other endowments that enabled them to create a paradigm that was to serve archeology for 50 years. Curiosity about the history of the Indians of the Southwest gave Morris courage for over half a century to forge ahead in spite of many obstacles.

Morris was trained but little in archeological field schools or in the classroom; rather, he learned archeology in a practical manner, by digging. He was launched on his career when he was about four years old by his father, who gave him a shovel and told him to dig in a nearby ruin. Retrieving antiquities and selling them was then commonly regarded as a legitimate way of supplementing income.

As a student at the University of Colorado Morris became a friend of Junius Henderson, curator of the University Museum, and through him met other great masters in the archeological world—Hewitt, Fewkes, Cummings, Nelson, Kidder, and Judd. He received field training at the ruin of Puye, the first archeological field school in the Southwest. Later he worked with Nelson, who was the first archeologist in the United States to adopt a method of sequence determination, or stratigraphy. Thus, having begun as a pothunter, Morris became a zealous archeologist trained in the most sophisticated methods of the day by one of the best men in the field. Just as contemporary archeologists are wont to criticize their elders, so Morris thought the archeological work of Fewkes was ineffectual, superficial, and destructive. In making this judgment Morris realized that there was more to archeology than digging up pottery. He was one of the first young men in the Southwest to be aware of the profounder aspects of his research.

With roughly 20 years of digging behind him plus his university training and his apprenticeship in the field, Morris was ready to launch himself on a professional career. His boyhood had been spent in the shadow of the now-famous ruin of Aztec, New Mexico, and his fondest dream of excavating and restoring it was now about to be realized. For several seasons, beginning in 1916, Morris labored to reconstruct the complex history of this site—a site that had been intensively occupied for a number of centuries. Often with inadequate funds, but always with the enthusiastic support of the American Museum in New York, Morris excavated nearly 200 secular rooms and the Great Kiva. With this success his professional standing was assured. From

then on, Morris was conceded to be a master craftsman, and he brought to his profession an artistry in digging that has not been surpassed.

Morris put on a firm footing many of the basic ideas concerning Southwestern cultures and their sequences. To him we owe one of the first published (1921) syntheses of the chronology of the San Juan River drainage. Basing his analysis in part on the work of others, he delineated four stages of cultural development in the San Juan area. Characteristics of each stage were listed, but an absolute chronology for these developments had not yet been worked out.

The period during which most of the most famous and spectacular prehistoric Southwestern sites and materials were discovered was roughly 1890 to 1940. How fortunate for Southwestern archeologists that Morris happened to live and work during this span of time, for he made some of the most notable contributions to answering such questions as How long has man occupied the New World? and What factors caused the development of complex and varied cultures in such a harsh, arid environment? No other archeologist in the Southwest has been associated with or has contributed directly to so many of the conspicuous and significant advances in the field: the delineation of the major cultural periods of the prehistoric Pueblo Indians; the discovery of hundreds of sites of all time periods in the San Juan River area and the excavation of many of these, including the renowned cliff houses in Canyon de Chelly and Canyon del Muerto; the complete reconstruction of a Great Kiva at Aztec; the organization of the first Pecos Conference (1927), an informal meeting of some 40 persons who were eager to take stock of the rapidly accumulating mass of data and to chart future research in the Southwest (the Pecos Conference is still held annually); the systematic and untiring contribution of raw data to the science of dendrochronology; and, perhaps most significant of all, the discovery of unique Basket-Maker II houses grouped together in a village—the earliest date of which was about A.D. 46, and which was the first such site ever reported.

This book relates many of the exciting discoveries that Morris made. Most of the facts it contains were well known to me, for I knew Morris for 30 years, in Yucatan and the Southwest. I was thrilled, nevertheless, to read the chronicle of this eminent, tireless, scholarly man. It is a stirring tale that I hope many of the younger archeologists will read. The facets of Morris' life that I missed most in the book were his intellectual achievements; his reflections on the dynamics of cultures; his interest in new techniques, in philosophy of science, in new goals; and his devotion to students who were just starting out. But these things were not to be found in his notes, letters, or monographs. They became known only to a few of us in informal bull sessions and were off the record, so to speak. Morris never committed these to paper, for he shrank from advancing such radical but untested ideas to his colleagues. What a pity!

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