Book Reviews

Individuals and Crisis

The Kennedy Assassination and the American Public: Communication in Crisis. Bradley S. Greenberg and Edwin B. Parker, Eds. Stanford University Press, Stanford, Calif., 1965. xiv + 392 pp. $8.95.

Inevitably, this book forces us to relive and rethink the painful time from the terrible moment when, in a cheering Dallas street, John F. Kennedy was assassinated, to his burial in a quieter hill in Arlington. For 4 days the populace was transfixed by television, radio, newspapers, and conversation bringing continual news and confirmation of that unwanted event; of the capture, hectic display, and murder of the assassin who thus departed from history as abruptly as he had intruded upon it; and of the accession of a new President, the lying-in-state of the old and the presence of his widow, the gathering of the mighty, and the long, lingering funeral procession.

What human meaning can now be found in this meaningless crime? Can some solace, some measure of redemption, a deeper truth, or a fuller sense of closure be derived from yet another visit to the still-fresh grave of so many of our expectations and assumptions, and of the vital young President with whom, more than we had realized, they were intertwined? Surely, it is, in part, a search for this missing meaning that leads us to dwell on one or another aspect of John F. Kennedy's assassination.

Unfortunately, little of this meaning is discernible in the 27 papers and 78 tables and charts that 38 social scientists and journalists have prepared for this volume. Their work will presumably interest certain denizens of their artificial world of "hypotheses" and "predictions," laced with allusions to "cognitive dissonance," "neurotic undercontrol," "attitudinal strategies," "factor loadings," "Mean Influence Index for Single-Leader Trials (MA_oO_v)," and "Final Varimax Rotated Matrices of Orthogonal Factors in Attitude Questionnaire Items." But the ordinary civilized reader will know very little more about what he would like to know after he has read the book than he knew before.

From this general judgment, the journalists and a few academic contributors should be exempted. Tom Wicker and Harrison Salisbury of the New York *Times*, Tom Pettit of the National Broadcasting Company, and Elmer Lower of the American Broadcasting Company give straightforward accounts of their experience. William Rivers of Stanford supplies a valuable summary of the press's accuracy and errors under stress, and Sidney Verba, also of Stanford, a thoughtful discussion of the political significance of our "primordial emotional attachment" to the President. Ruth Love of CBS reports the most interesting fresh information: NBC, on the basis of wire-service advice and White House tips, had doubled its usual Presidential coverage for the Dallas visit and missed televising the assassination by one block. As an NBC respondent declared, " . . . the routine of covering a President is always that the guy is going to get killed. . . . It is a normal feeling, and that is the reason you cover him 24 hours . . . because he is going to be shot." ABC had only one mobile unit free in Dallas on Sunday morning. Should it be placed at the city jail or at the county jail? The events show that Peter Ustinov was not far wrong, in *The Love of Four Colonels*, about the role of psychiatrists in America. "Someone called a psychiatrist he knew and asked him if Oswald was to be shot where would it happen? He said near the scene of the . . . assassination—the county jail." And, thereby, ABC missed live coverage of the murder. The two networks had a chance to bid on the amateur's film of the assassination (which *Life* later bought), but, to their credit, neither did.

The social scientists tell us how large a proportion of people had various symptoms of physical and emotional distress (68 percent felt very nervous and tense, 53 percent cried, 48 percent had trouble getting to sleep), the proportion who watched TV or listened to the radio and for how many hours; how, and how rapidly, the news spread; the extent of belief in a conspiracy; and the relative number of Democrats and Republicans, Negroes and whites, males and females who felt, did, or thought such things. They tell us this repeatedly, and that is about all they tell us. Their chapters are a triumph of surveys over other methods (the writers of only three papers were so bold as simply to arrange lengthy discussions with small groups or individuals and then report what they said); of speed over depth (some interviewing started an hour after the assassination, and half an hour after Oswald's murder!); of methodicalness over insightfulness; of sums over substance. They bring to mind Mannheim's observation about social scientists: "Instead of attempting to discover what is most significant with the highest degree of precision possible under the existing circumstances . . . [they tend] to attribute importance to what is measurable merely because it happens to be measurable."

Nowhere does anyone suggest that the idle cutting down in his stride of the most powerful man in the world showed how thin is the thread that ties each of us to life, and that, in those 4 days, we mourned not only for our President but for ourselves.

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Pollination Ecology

Flower Pollination in the Phlox Family. Verne Grant and Karen A. Grant. Columbia University Press, New York, 1965. 224 pp. Illus. $5.75.

The study of evolution certainly can be called a classical area of biology, yet it retains a remarkable vitality even today, when so much of biological research is directed less at whole organisms than at the biochemical details of cells and genes. There is a never failing challenge in revealing and

systematizing the multiplicity of details which the "natural history" of organisms provides. Verne Grant is an evolutionist who has concentrated his attention for some 20 years on the angiosperm family Polemoniaceae. With regard to the fashions of biology, his search for data spans the equivalent of a time scale from present-day genetics to observations of floral ecology that were popular in the heyday of Darwinian naturalists.

The question that Verne and Karen Grant take as the theme of their book is, "Do the various flower forms within a diversified family represent floral mechanisms specialized for pollination by different kinds of agents?" This question seems innocuous, and its answer is easily anticipated by anyone convinced of the importance of natural selection in evolution; yet surprisingly, there are strong and conflicting opinions among students of pollination ecology. The Grants' position is safely in line with neo-Darwinian theory. The major portion of their text consists of a systematic presentation of data concerning floral mechanisms, breeding systems, and animal visitors for 18 genera and some 122 species (out of about 327 in the family). Such topics as flower form, color, odor, and periodicity comprise the sections on floral mechanisms; data on breeding systems come from experimental studies; the kinds of animal visitors and their relative effectiveness as pollinators are described principally from the authors' own field observations. Cross-pollination by animals falls into nine modes: bees (see cover on this issue of *Science*), long-tongued flies, scavenger flies, hummingbirds, butterflies, hawkmoths, noctuid moths, beetles, and bats. In genera of temperate zones, bee pollination is most common and is considered the original mode. Autogamy is frequent, but wind pollination is absent.

The many pages of descriptive material will be a most useful reference for future students, and will be of immediate interest to those familiar with the phlox family or with the numerous groups of insects mentioned. The book is profusely illustrated with life-sized drawings of the plants and their pollinators. A summary chapter presents an interpretation of evolution along orthodox lines that are a modern extension of classical floral biology. Differences in modes of pollination between races of a species are believed to arise gradually in allopatric populations, by adaptation to different spectra of flower-visiting animals. The authors hold the widely accepted view that speciation is an extension of race formation. An alternative idea, put forward by another student of the California flora, is that species barriers of a genetic sort may arise swiftly, in ecologically marginal populations subjected periodically to catastrophic decline in numbers. Many of the Grants' examples of racial and species diversity, as in *Gilia*, are in desert-border regions where "catastrophic selection" may be significant for rapid changes in flower form, and this should perhaps not be overlooked in the analysis of evolution in Polemoniaceae.

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History of Technology

A Theatre of Machines. A. G. Keller. Macmillan, New York, 1965. vi + 115 pp. Illus. $6.

Near the turn of the 16th Century there appeared three books of mechanical inventions that were intended to show the potentialities of machinery derived from the Middle Ages, in particular the waterwheel and windmill, and which also attempted to show the artisan how important it was to apply theoretical considerations to machines, instead of merely putting the machines together by rule of thumb. The books were Besson's *Livre des Instruments Mathematiques et Mechaniques* (1571–1572), Ramelli's *Diverse et Artificiose Machine* (1588), and Zonca's *Teatro Nuovo di Machine et Edificii* (1607). Although the mechanical inventions depicted in these books were not revolutionary, and it is doubtful whether some of them could ever have worked in practice, they provide historians with insight into the level of early modern technology as well as the imaginative quality of Renaissance technicians. Unfortunately, the fascinating illustrations that form the core of these books on machines are seldom reproduced and are known to only a handful of scholars who consult the original editions in collections of rare books.

Now Keller, who teaches the history of science at the University of Leicester (England), has compiled an anthology of 52 of the most interesting plates from the three major books of mechanical inventions, as well as from some minor sources. Choosing his plates on the basis of esthetic attraction, the boldness of their creator's mechanical imagination, or as early crude prototypes of what later became important inventions, Keller proceeds to indicate the particular machine's interest from the standpoint of the history of technology and to show how the machine worked—providing it could work at all.

Most of the plates depict hydraulic engineering machines; for the late Renaissance was fascinated with waterwheels and pumps, partly because of the needs for drainage and irrigation, but also because of the esthetic appreciation accorded fountains. But Keller does not neglect war engines, cranes and hoists, ingenious devices for the transmission of power, and other machines, including a homely "instrument for keeping the feet warm" and a pioneer parachute—an essential for an age whose technical imagination overflew its technological capabilities.

Keller has selected his illustrations well, and they are reproduced in good size with fidelity to the detail shown in the originals. Above all, he has written perceptively, and wittily, about the accomplishments and limitations of the Renaissance technologist. This book will fascinate, enlighten, and entertain all those who are interested in the development of mechanical inventions.

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Snow Line between Cultures

Wayward Servants: The Two Worlds of the African Pygmies. Colin M. Turnbull. Published for the American Museum of Natural History by Natural History Press, Garden City, N.Y., 1965. xiv + 390 pp. Illus. $7.95.

Colin Turnbull is one of those rare and hardy anthropologists who has studied a single band of forest nomads intensively throughout a calendar year. He was prompted to make this micro-sociological study of net-hunting Mbuti pygmies of the Ituri Forest in the northeast Congo (Leopoldville) in order to arrive at a valid picture of the