erences for or against dadia segments, which demonstrates that here, as in the Middle East, endogamy is the primary means for maintaining the internal solidarity of kin groups. Quantitative information on different villages, village social organizations, dadias, kin group positions, and distance measures provides support for relational propositions. The Geertzes clearly demonstrate that marriage by capture, as an index of the intensity of hostility within communities, is a reflection of the degree of differentiation of the kinship system.

The world of the gentry dadia is a somewhat different matter: here the dadia emerges as the basic building block of the classical Balinese state, a medium of dynastic competition for men's allegiance. Through an intricate conjoining of historical reconstruction with social anthropology, the Geertzes give us the flavor of a feudal-style order set in a Polynesian mold: core and cadet lineages, preferential endogamous marriage coupled with hypergamy, and the principle of sinking status. Among the gentry, in contrast to the commoners, titles are used rather than teknonymy, and there are different means for expressing differences of rank among houses within the royal dadia, having to do with styles of eating, address, the politics of marriage, and architectural discriminations. Once again, the central point comes across clearly: to speak of kinship in Bali as a distinct institution, a set of intellectual categories, or a residue of affective and normative constraints is at best to employ a convenient fiction and at worst to distort severely the experiential bases of what it means to be Balinese.

The book includes appendices on Balinese kinship terminology, a family history, and basic village regulations.

Hildred and Clifford Geertz do exactly what they say they are going to do: they illustrate that the institutionalized divisions of social anthropology have, at the outer limits, no more than pedagogic value, being a kind of fiction convenient for authors and users of textbooks. When it comes down to concrete, ethnographic cases, kinship is revealed to be a dialect that serves to communicate how things are and therefore how one must act in the world. This dialect cannot be understood as a thing apart from the other theaters of collective thought and activity. As a work of ethnographic synthesis, the Geertzes' book gives a polyphonous rendering of Balinese culture and a proof of the intertranslatability of social idioms which transcends any particular culture.

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Roots of Technology

The Maze of Ingenuity. Ideas and Idealism in the Development of Technology. ARNOLD PACEY. Holmes and Meier, New York, 1975. 350 pp., illus. $12.95.

In debates regarding social problems resulting from our technological ingenuity, surprisingly little attention has been paid to the development of technology from the standpoint of the technologist. If we are willing to accept the notion that men work only for the money they may earn, then the development of technology can be explained in a series of responses to economic incentives. If, on the other hand, we stand the economic explanation on its head and insist that economics tells us only how and not why technological change occurs, then we may begin to recognize important ways in which craftsmen and technologists have determined the shape of Western civilization. Pacey's "ideas and idealism" are concerned with the numerous noneconomic incentives to technological development.

Not only during the Renaissance did technologists seek patrons to support their innovative work. In every age invention has been the mother of necessity and supply has caused demand. Ideas in the heads of technologists were the sparks that started the conflagration of Western technology. Pacey shows us in this book that the most important and far-reaching technical ideas were not economically motivated. For example, the men who devised mathematical procedures for the solution of real technical problems were much more interested in intellectual than in real problems. Yet their work had a staggering effect upon future technical capabilities and eventually on economic realities.

Pacey's narrative, which traces the history of technology from the age of cathedral building through the Industrial Revolution, is unfortunately pedestrian, and his arresting ideas are too often submerged in cautious, unprovocative paragraphs. This is doubly unfortunate, because this work contains many fresh insights and observations that are urgently needed in the current debates. Pacey believes that technological progress can take us in any one of several directions, and that we ought to decide in which direction we wish to go. He observes that the analytical methods used by engineers require problems to be broken down into manageable parts. This generally means that the technical parts of problems are separated from the social parts. The engineer sees the separation as a practical necessity, but the result is not so much a practical view of reality as a disconnected view. Numerical methods can be used to solve the technical parts of problems; in the absence of numerical statements, the social parts of problems are often overlooked. Pacey suggests that a new and refined "systems" approach may bring back together the technical and social parts of problems, but that is a statement of his faith and is not supported by the history in his book.

Pacey's ideas are needed not only in current debates but also in the study of the history of technology. His ideas and insights, which are only sampled here, are of the kind that historians of technology should be arguing about. Pacey quotes Huizinga: "To discover economic causes is to some degree a craze with us, and sometimes leads us to forget a much simpler psychological explanation of the facts." Pacey does not pursue this argument as vigorously as I think he might. Rather than seek a technologist's motivation in "ideals and idealism," we might observe that technologists are obsessed by technical problems. They will do anything that will permit them to pursue their obsessions. The present state of Western technology attests to their success in finding patrons to support their work.

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Electrophilic Reactions

Cationic Polymerization of Olefins. A Critical Inventory. JOSEPH P. KENNEDY. Wiley-Interscience, New York, 1975. xiv, 338 pp., illus. $22.50.

This detailed survey of the literature on all important aspects of cationic polymerization of olefin monomers is important to both the technologist and the scientist. The survey is said to be complete up to 1973 and includes, for all olefins that research workers have attempted, successfully or unsuccessfully, to polymerize with cationic initiators, a description of polymerization behavior and of the physical properties of the polymers or oligomers obtained.

The book begins with a chapter on terminology that includes a treatment of the controversy over the term carbenium ion versus carbonium ion, a historical survey of all the important scientific and industrial developments in cationic polymerization dating back to 1839, and a general discussion of the types and behavior of monomers that polymerize by this mechanism. This 35-page introduction is followed by a tabulation of the structures of all of the monomers (including 296 different olefins) covered in the survey into two major (ali-

phatic and aromatic) and several minor categories. For the aliphatic olefins, the minor categories include straight-chain olefins, nonconjugated diolefins, and branched, alicyclic, conjugated, and bicyclic olefins and their derivatives. For the aromatic monomers, the minor categories include styrenes, indenes, and miscellaneous olefins. For each type the literature survey contains a review of the conditions used for the polymerization reaction, the types of products obtained if known, kinetic data if available, and the possible utility of the polymerization reaction and its products.

Of all of the monomers surveyed in this book, only isobutene is polymerized cationically today in industry on a large scale, and Kennedy is regarded as one of the pioneers in this field. Naturally, the behavior of this monomer is covered in greatest detail, approximately 50 pages being devoted to the academic and industrial research related to butyl rubber. Almost 30 pages are devoted to styrene, ten to butadiene, and from three pages to one paragraph to each of the other olefins. The book is a valuable and up-to-date survey, informed throughout by the insight of an author who has made major contributions to the field.

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Relativistic Stars

Neutron Stars, Black Holes and Binary X-Ray Sources. Papers from an AAAS symposium, San Francisco, Feb. 1974. HERBERT GURSKY and REMO RUFFINI, Eds. Reidel, Boston, 1975. xii, 444 pp., illus. Cloth, $54; paper, $38. Astrophysics and Space Science Library, vol. 48.

This volume is principally a collection of review papers that grew out of a set of lectures given at the 1974 AAAS meeting. The authors have substantially expanded their contributions in them for publication, and the level of a number of the articles is such that the volume forms a reasonably complete and timely review of theories and observations of relativistic stars. In addition, the editors have appended a well-chosen group of reprints of some classic papers in which the existence of neutron stars and of unending gravitational collapse was predicted 30 years ago and some more recent papers that are relevant to the observation of these bodies.

Groth's review of observations of pulsars is particularly comprehensive. All the known phenomena (as of mid-1974) are at least briefly described, and complete references are given. Kraft's review of the evolution of binary star systems and its relevance to x-ray sources is quite enlightening; he focuses clearly on the essential question of how a "young" normal star can coexist with a collapsed, old, yet lower-mass companion. The review of galactic x-ray sources by Gursky and Schreier is also useful, although here the rapid advance of satellite observations has made the details a little more dated than those in Groth's paper. The theoretical reviews of supernovae by Colgate and of collapsed star physics by Ruffini are more idiosyncratic; they provide good guides to the particular lines of research in which the authors have participated but are less useful as complete reviews of their fields. All the review papers are useful compendiums of information and references; none is deeply critical. On the whole, this is a useful volume for specialists in this rapidly advancing field, but it is not well suited to newcomers or for teaching, except in very advanced courses.

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