health, and greater concern than ever about the availability of such services. While they recognize that mental handicap, mental illness, and other chronic conditions constitute major health challenges, for the most part they give little attention to the incorporation of care for such problems in their efficiency model of health services. Populations have sought the help of physicians for centuries, and during much of this history the probability of doing more harm than good, technically speaking, has been very large. But throughout history the doctor has performed not only a technical role but also a sustaining function, offering hope and support to those who have no place else to go. With increasing impersonality in modern society it would be a tragic mistake to assume that this aspect of medical care is no longer important. A medical care system organized to achieve maximum productivity and efficiency through a highly specialized division of labor may be ill-suited to meet these needs.

Much of the work of the health professions is a response to the problems that people present and the conceptions they have of medical services, and many of the efforts of the doctor are devoted to what in olden times was called the "art of medicine." No matter how irrational such demands may be or how ill-suited to the scientific character of the modern medical image, they are there and they must be dealt with; and there are still some doctors who view such functions as basic to good medical practice.

The position of the authors that the doctor shortage is highly exaggerated given the substantial growth of ancillary health workers in recent decades is convincing only if one conceives of the doctor as a very limited health technician. But this is not the image of the doctor that most people have or want, and it is not at all clear that it is an image that particularly fits the human needs of patients. The proliferation of new health professions reflects as much the dominant technical orientations of medical practice as it does the rational organization of an effective system of medical care. Ginzberg describes the tremendous expansion of clinical laboratory personnel, but he does not inquire as to whether this expansion is a balanced one or whether it in part reflects distorted medical priorities.

The nature of our investments in medical care in the future will depend on the values we promote. Ginzberg and Ostow accept gross inequalities in medical care and different systems of medical care for the rich and the poor as a reasonable and permissible cost of preserving the autonomy of the professional in respect to where and how he practices. Although fully appreciative of the irrationalities and inefficiencies that result, they see little sign of public intolerance toward entrenched professional institutions. There is, however, significant dissatisfaction among minority segments of the population concerning the medical services they receive, and it is not at all clear that they are ready to accept what they regard as "lesser professionals" and "lesser services" than those available to other citizens. That the form of these services may not make much difference to health and life is not crucial, for the consequences flow from what men define as reality, not from reality itself. Similarly, with increased inflation in medical care prices and persistent problems of maldistribution of resources, it is not inconceivable that others will support growing protests about the organization and distribution of medical care. As such voices become organized, they will be heard by government, and the third of the medical-care dollar that government provides, if used judiciously, will be no insignificant wedge in the health industry. We are a long way from anything resembling a revolution in medical care, but I, for one, am not betting on the status quo.

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Evolution of the Americans

The Civilizational Process. DARCY RIBEIRO. Translated from the Portuguese by Betty J. Meggers. Smithsonian Institution Press, Washington, D.C., 1968 (distributed by Random House, New York). xviii + 206 pp. + plates. $6.50. Smithsonian Publication 4749.

This is the first in a series of four volumes in which the author will deal with the processes of formation and the possibility for self-advancement of the American peoples. In this volume he sets the stage for his subsequent volumes by synthesizing the last 10,000 years of human development. To facilitate this overwhelming task he correlates major technological, economic, and social revolutions with various historically connected stages of cultural development. Thus he begins his synthesis with the Agricultural Revolution, which saw the establishment of Undifferentiated Agricultural Villages that led in turn to Privatistic and Collectivistic Rural Craftsman States and Nomadic Pastoral Hordes. Later in history, to give another example, he cites the Mercantile Revolution that resulted in the growth of Capitalistic Mercantile Empires, Salvationist Mercantile Empires, and various forms of colonialism. The synthesis ends with the Thermonuclear Revolution and Future Societies.

Ribeiro states his theoretical position as follows:

> 1) The development of societies and cultures is regulated by an orientational principle originating from the cumulative development of productive and military technology; 2) certain advances in this technology represent quantitative changes of a radical character that make it possible to distinguish stages or phases of sociocultural evolution; and 3) these progressive technological stages correlate with necessary, and consequently uniform, alterations in social organization and ideological configuration [p. 6].

Thus social organization is ultimately determined by the mode of production.

Ribeiro has managed to summarize 10,000 years of history in less than 100 pages. Although he frankly concedes that this is a trial formulation, one wonders if he has not sacrificed accuracy for simplicity and explanation for description. He sometimes merely announces that things happened (for example, "new industries appeared"), and he often misuses ethnographic analogy to flesh out his speculations. With reference to the early cities he says, "A deep-rooted hostility developed toward city populations, based on the notion that urban residents were incapable of doing real work, and that they lived by exploitation of the peasants, and were consequently responsible for the latter's misfortunes, including wars and pestilences" (p. 42). This conclusion is based on anthropological studies of modern peoples, and their relevance to emerging states 5000 years earlier is not clear. Perhaps here, as elsewhere, Ribeiro tries to compress too much history into too narrow a format. The specialist will remain unconvinced when he knows of no primary evidence supporting many of Ribeiro's assertions.

It would be possible to cite a number of examples where Ribeiro's exposition confuses cause and effect, and others where his argument is tautological: "With the passage of time both Privatis-

tic and Collectivistic types of State take on a militaristic configuration as a result of emergence to predominance of the military hierarchy" (p. 49). Such statements make much of what he says appear to be description rather than reasoned analysis.

While it is possible to pick out many details that offend both the specialist and the thoughtful nonspecialist, there are also instances of insight that are worth considering. For example, Ribeiro discusses the Salvationist Empires in contrast to Capitalistic Empires. The impetus for the former is religion while mercantile activities characterize the latter. Tracing these two forms of society historically one can see that the forms taken by modern states cannot be understood without reference to their unique historical development. When modern planners recognize that the rationale of today's states is deeply rooted in their histories, they must seriously consider how they can hope to impose quite different systems of values on, for example, emerging nations. The difficulty of the task is seen in the frustration of most aid programs.

The basic problem with this book is that it simply tries to do too much with an insufficient theoretical model. Ribeiro has chosen cultural evolution as his explanatory framework. In his view evolution consists of a series of stages which are "models of social life" that result from technological innovation and are rationalized through ideology. The difficulty with this approach is that one tends to become transfixed by the task of putting societies into their proper typological slots, to focus on stages as if they have some inherently interesting properties and to neglect the factors that cause them. Cultural evolution is a descriptive, not an explanatory, model. It is not clear that this model can lead to significant insight into the causes of behavior. It seems rather that the model is inappropriate to the task. Ribeiro wants to understand process, but he gives us generalized views in stop action—the antithesis of process. And the same criticism can be leveled against other such attempts.

Perhaps it would be better to view isolated phenomena rather than whole societies. For example, what effect do sheer numbers of people have on social organization and communication, or surplus, scarcity, and differential distribution of resources on the forms society may take? We might consider cultures as ongoing life systems that exist in cooperation and competition with other, similar systems and whose internal organization is the result of a complex interplay of decisions in response to a series of conflicting demands, pressures, and opportunities. By examining decision making in regard to certain common phenomena rather than results (that is, evolutionary stages) we might get closer to the causal factors that social scientists discuss at length but rarely succeed in identifying.

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Zymology

The Yeasts. Vol. 1, Biology of Yeasts. ANTHONY H. ROSE and J. S. HARRISON, Eds. Academic Press, New York, 1969. xiv + 510 pp., illus. $19.50.

The 14 authors and editors of this volume have performed a commendable service for persons interested in the relatively small but diversified group of fungi known as the yeasts. This book deals with taxonomy, habitat, pathogenicity, cytology, life cycles, sporulation, hybridization, and genetics (two later volumes will cover physiology and biochemistry and yeast technology). It is a well-written and abundantly illustrated review of current knowledge.

Recent studies of yeasts that live in association with plants, insects, mammals, and marine environments have revealed many new species. Improved taxonomic procedures have added new genera of basidiomycetous yeasts to the many previously known ascomycetous genera. The chapter on taxonomy by Kreger-van Rij anticipates generic diagnoses that will be set forth in the author's chapter in the second edition of *The Yeasts: A Taxonomic Study* (J. Lodder, Ed.), now in preparation.

Of the few yeasts causing disease in animals, *Candida albicans* and *Cryptococcus neoformans* receive the large attention they deserve. Species of lesser importance in *Candida, Torulopsis, Trichosporon, Rhodotorula,* and *Pityrosporum* are considered. Serological and therapeutic aspects are discussed by authors who evidently know patients as well as yeasts that infect them.

Cytological features of *Saccharomyces cerevisiae* and some of the ascosporogenous fission yeasts are amply illustrated by electron micrographs. Those produced by the freeze-etch procedure are notable for their three-dimensional appearance. The functions of cell wall, plasma membrane, the endoplasmic reticulum and related organelles, vacuoles, mitochondria, and other components of the cytoplasm are discussed. The cytologically refractory nucleus is found to be similar to hyphal nuclei of other simple species of Ascomycetes such as *Aspergillus nidulans* and *Ceratocystis.*

Factors involving success of the acetate sporulation media commonly used in genetic studies of *Saccharomyces* and sporulation processes in haploid and diploid species are presented in detail. The various aspects of heterothallism and homothallism as viewed by geneticists are explained. Functions and mechanisms of sexual agglutination and conjugation are described, as are the procedures involved in hybridization of yeasts. The last half of the book is largely oriented to genetics and reaches its climax in a chapter covering life cycles, methodology, linkages, gene action, mutant characterization, suppression, and cytoplasmic inheritance. A discussion of types of life cycles and their evolutionary significance terminates the book.

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Ancient Maladies

Palaeopathology. Diseases and Injuries of Prehistoric Man. PAUL A. JANSSENS. Translated by Ida Dequeecker. Baker, London, and Humanities Press, New York, 1970. xiv + 170 pp. + plates. $8.50.

It is safe to say that scarcely a single English-speaking student of ancient diseases, except Calvin Wells in England, has been aware of the author of this little book and his wide-ranging medico-historical interests. Even the publisher is secretive on this score, revealing only that Janssens "is an industrial medical officer of the City of Antwerp and collaborator of the board of the Belgium National Service of Archaeological [*sic*] Excavations." However, his 20 listed publications (mainly in Dutch, French, and Spanish) indicate that he became interested initially (1957) in prehistoric representations of human hands and other anatomical details, perhaps as a result of having excavated in the caves around Santander, Spain, where there are some fine cave paintings. Subsequently he seems to have concentrated