de Beauregard argues for a philosophy of being from relativity theory, while Miliĉ Ĉapek counters with an argument for a philosophy of becoming. The controversy centers around the problem of whether or not there is a process of becoming in the physical world which runs parallel to our experience. Ĉapek argues that there is an objective succession of moments in the objective world corresponding to the transient character of our mental present. Costa de Beauregard argues for covariance. Approaching the problem from still another perspective, Herbert Dingle explores the question of whether time in relativity theory is a measurement or a coordinate of the universe. His conclusion is "that the physical phenomena which have led to the theory of relativity have no contribution to make to the solution of problems concerned with time." The reason for his conclusion is based on the proposition that relativity theory is concerned only with "time at a distance" and all metaphysical and psychological problems of time *here* are irrelevant to the theory of relativity.

There are also essays in this part on time and quantum theory (E. J. Zimmerman), time and thermodynamics (Richard Schlegel), time and the probabilistic view of the world (Satosi Watanabe), and time and the universe (G. J. Whitrow), and a summary essay on the study of time by the editor.

One of the most important characteristics of these essays is that their authors have written them around challenging and suggestive interpretations. They have made no concessions to popularization, but neither have they indulged in obscurity or ambiguity. The editor could have made additional choices for inclusion, but the selections he did make are excellent, and he deserves the highest praise for bringing together in a single volume such a cluster of distinguished scholarship.

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## European Prehistory

It has long been customary for archeologists to consider man's prehistoric past in terms of stages of technological development: our traditional reference scheme of the three consecutive ages of Stone, Bronze, and Iron dates to the publication (1836) of C. J. Thomsen's classification of the archeological collections in what is now the National Museum in Copenhagen. During the past three decades, some archeologists have made conscious efforts to extend the breadth and scope of such a limiting conceptual model of the past. The archeologist, by drawing on techniques primarily scientific in character, can now incorporate in his interpretation data concerning changes in particular aspects of the natural environment and in the economic activities of extinct, nonliterate societies. The resultant technological-economic interpretive schemes are, manifestly, essentially interdisciplinary—ideally, "scientific archeology" is a bridge between C. P. Snow's Two Cultures.

Professor Stuart Piggott's **Ancient Europe, A Survey** (Aldine, Chicago, 1966. 367 pp., $7.50) embraces the up-to-date "scientific" archeologist's interest in man's mastery over particular environments and various technical problems. But as Piggott demonstrates most admirably, the writing of prehistory involves far more than the description and classification of economic activities, artifacts, and cultures. Essentially, prehistory is a part of history. It is a matter of an individual prehistorian's interpretation of man's achievement in his past. In this the prehistorian, like the historian, will be influenced by the standards of his age. Piggott's private view is a particularly timely one: the omnipresent conflict between innovators and conservators, between developed and underdeveloped peoples.

This survey begins with the spread of the first agricultural communities from the Aegean to the Baltic and Atlantic seaboards in the period 6000 to 2500 B.C. As innovations transmitted by movements of peoples and by assimilation, the arts of animal domestication and cereal cultivation, and the custom of living in permanent or semi-permanent villages, contrast strongly with the primary Paleolithic-Mesolithic traditions of the indigenous hunter-fishers. The consequent development of this basic stratum of stone-using farmers is disrupted by pastoralist immigrants from the Russian steppeland, who may have been associated with the dispersal of the Indo-European languages, and who seem to have provided a dominant element in the society that was to follow.

With the development of copper and soon bronze technology, Piggott traces the establishment of patterns of trade relations and the first stammering beginnings of an armaments race. Increase in trade, carrying with it a growing awareness, in a now predominantly Celtic Central Europe, of the rich civilizations of the Aegean and Orient, and increasing technological development and improvements in the art of war lead to a buildup of the European economic position, and, ultimately, to the collapse of the Mycenaean world. Subsequent shifts in the balance of power and movements of peoples all over mainland Europe, together with the acquisition of techniques of working iron, form the background to the final confrontation: that of the Roman and the Barbarian documented in classical sources.

Piggott's enquiry into the ancient origins of historical Europe is original, closely argued, and fascinating. Although Piggott disarmingly claims that his book is one man's view of European prehistory, this landmark in archeological writing will gain many converts among layman and specialist alike.

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## Biochemistry

The new, completely revised and reset third edition of Lester Smith's monograph **Vitamin $B_{12}$** (Methuen, London; Wiley, New York, ed. 3, 1965. 192 pp., $4.25) demonstrates the considerable progress in the chemistry and biochemistry of vitamin $B_{12}$ made during a 5-year period as a result of the discovery of the vitamin $B_{12}$-coenzymes in 1958. In a style that is admirably compact but nevertheless readable the author describes the frontiers of research and considers the literature up to 1963. Several chapters cover, sometimes in detail, the origin, distribution, isolation, chemistry, and nomenclature of vitamin $B_{12}$ and vitamin $B_{12}$-coenzyme, as well as their derivatives and analogues including the vitamin $B_{12}$ antagonists. Probably because of limited space the biological and medical aspects of vitamin $B_{12}$ and intrinsic factor are only described as a selected treatise. The short chapters on the assay and mechanism of action of vitamin $B_{12}$, vitamin $B_{12}$-coenzyme and intrinsic factor, vitamin $B_{12}$-binding factors, the metabolism of vitamin $B_{12}$ in mammalians and man, and the diagnosis and therapy of vitamin $B_{12}$ deficiency and nutritional aspects do not