

SUGIMOTO Masayoshi and David L. SWAIN. *Science and culture in traditional Japan: A.D. 600-1854*. [No. 6 in the M.I.T. East Asian Science Series, Nathan Sivin, General Editor.] Cambridge, Massachusetts: The MIT Press, 1978. xxxvii + 498 pp., including appen-

dix (18 pp.), bibliography (24 pp.), and index (58 pp.). Hard cover. No price.

The appearance of this book is an event. From now on, anyone with a serious interest in Japanese social and intellectual history will have to take this study into account.

Intended for general readers as well as specialists, *Science and culture in traditional Japan* focuses on the problem of understanding, and making understandable, the processes by which premodern science and learning entered and transformed Japanese society. Nathan Sivin, in a foreword, aptly characterizes the theme of the book as "among the largest of all historical themes—the movement of knowledge and ideas into a society and the rhythm of their assimilation." The story the authors tell is that of how Japanese social and intellectual leaders, not least those we would today call "dissenters," responded to and took over waves of learning from China and the West, thus laying a foundation that enabled Japan to see the need for discarding traditional philosophical and cosmological presuppositions in favor of the strange new science of the West. The result is more than a highly convincing and highly readable tale. It is a new way of framing and interpreting an immensely significant stream of events that have gone into the shaping of present-day Japan.

Over fifty years ago Ernst Troeltsch, in a work intended to clarify the logical problems involved in developing a philosophy of history, devoted an entire section of his concluding chapter to "the problem of objective periodization." He concluded that an objective periodization, because it rests on the socioeconomic, political, and legal infrastructures upon which all expressions of culture and the human spirit depend, penetrates deeply into "the movement of the inner life" (*Der Historismus und seine Probleme*, 1922, p. 756). This view is amply borne out by the work under review. Central to its structure is the insight that the development of learning and science in Japan can usefully be perceived in relation to waves of influence from abroad. The authors identify two widely separated Chinese waves, two narrowly separated Western waves, and two periods of indigenous

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development comparatively free of incoming influences. The results are presented in a chronological table (p. xxv) that serves at once as a graphic formulation of their periodization scheme and a kind of "road map" through the data.

For each period, an initial general picture of sociopolitical and intellectual conditions is followed by a treatment of developments in three specific fields: calendrical astronomy, mathematics, and medicine. One is introduced to an almost encyclopedic range of persons, concepts, institutions, and their interrelations. Particularly appreciated by this reader is the care the authors took to specify the criteria they used when identifying certain newly adopted techniques as "strategic for modernizing processes." Techniques having to do with the production and use of firearms and cannon, shipbuilding and navigation, mining, metallurgy, and printing were assessed as contributing to modernization if they met three criteria: (1) their use had to encourage forms of social change in spheres beyond those of the immediate users, (2) the agents of their introduction were largely motivated by secular concerns and were not directly bound up with the major power groups, and (3) the techniques themselves could be directly related to the basic sciences (p. 170). In contrast to the loose and ambiguous ways the term "modernization" is sometimes employed, this specification of criteria is exemplary.

The story this book tells is so informative and at times so fascinating that it is only in the sense of grace notes to a symphony that I venture to add a few demurrers.

In discussing the sociopolitical context of the intellectual outburst that occurred, enigmatically, during the period of isolation, the authors say that "Buddhism had a *minor* role in stamping out Catholic influences, in that all citizens *other than samurai* were required to register at some local temple" (p. 231, my italics). The reading I have done in this area suggests, on the contrary, that the Buddhist role, far from being a minor one, was in fact of major importance. Subjects were required not only to register at a local temple but also to obtain *annually* from its priest a statement certifying that they were innocent of association with Christianity and other illegal forms of religion. Priests were assigned ranks by the government and received government stipends as rewards for helping maintain the

status quo. I am not convinced, moreover, that samurai were excluded from the temple registration and annual certification requirement. The logic of the control mechanism would seem to require that they be included, and other sources say that this was the case. Perhaps there were de facto local variations, but in the absence of evidence showing that samurai as a class were not bound by this requirement, I incline toward the view that at this point the authors, despite a substantiating reference, made a statement a bit stronger than presently warranted.

Another point that cannot escape the critic's eye is that in just a few cases, terms that require explanation are introduced "bare," so to speak, the explanation not being given till later, if at all. The terms "Daigakuryō" and "Ten'yakuryō," for example, occur without explanation on p. 30 and with explanation on p. 31. The *T'ai-chu li* calendar (p. 48) is referred to without any explanation, a procedure that contrasts sharply with the careful introduction of the *Ssu-fen li* calendar (p. 47). Most problematic is the term *sukuyōdō*, first used on p. 57 but not adequately explained until p. 125.

These defects, however, are at least partially redeemed by the splendid 58-page index. In it one finds for each major figure not only the birth and death dates (when known) but also an identifying tag and, for Chinese and Japanese people, the ideographs for their names. Institutions are identified in English paraphrase, ideographs, and romanized readings of the ideographs. With an index like this, it is easy to find one's way not only to the references in the text but also to collateral source materials, many of which are listed (again with ideographs, their romanized readings, and English paraphrases of the titles) in the excellent bibliography.

In short, this is a work that is bound to have a significant influence on all future scholarly considerations of Japan's premodern social and intellectual history. It is a book I have read with great profit and expect to refer to frequently. The promised companion volume, *Science and culture in modern Japan*, is eagerly awaited.

Though no price is indicated, I have been informed that the book sells for \$39.95. The decision to fix the price at this high level is deeply regrettable, for it means that sales will for the most part be limited to institutional libraries. A book like this, though, deserves a wider readership and, therefore, a lower price tag. Perhaps after

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the captive market (the market of institutional libraries) has been exploited, there will be opportunity to consider reprinting it in a paperback edition. Such a consummation is devoutly to be wished.

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