Do you ever feel more than slightly guilty about that site you excavated years ago but never wrote up, and do you ever feel too embarrassed to publish due to the time elapsed since digging? Then take heart for Isabel McBryde has shown that it is possible to assure that guilt and to present data that, while gathered at a time when research questions were slightly different than those of today, are still most useful to current issues in Australian coastal archaeology.

*Coast and Estuary* is essentially a report of two sites on the northeast coast of New South Wales, Australia. Wombah, a large midden complex in the Clarence River estuary, was excavated in 1963 while Schnapper Point, a deflated coastal site some 20 miles to the north, was subjected to surface collection in 1971. Both were salvage operations. McBryde has published the two reports together in order to juxtapose sites from two different environmental settings within a geographically small area so that their complementarity may be demonstrated in terms of research questions mainly concerning subsistence, seasonality, and settlement. The reports are written by McBryde, but they also contain useful appendices by V. M. Campbell (shell analysis of Wombah and site survey in Evans Head district), K. H. Lane (Historical Archaeology-mining), K. McQueen (petrology) and N. A. Wakefield (Wombah mammals).

The Wombah midden complex was excavated in two localities because McBryde wished to sample the site to assess the composition of a mound and to isolate midden dumps from other activity areas. Thus, two grids of five 5' x 5' squares separated by approximately 2' baulks were dug in each locality. Fill was removed in 4 cm spits and sieved through a 6.4 mm mesh. Artifacts were recorded in three dimensions and “grab samples” (p. 6) of shells and column samples were taken for analysis. Excavation and subsequent radiocarbon determinations revealed that Wombah is a Holocene midden deposit dating from c. 3200 B.P. that overlies Pleistocene sand deposits. Oysters predominate the shellfish remains (up to 100 percent) with whelks, cockles, and occasional pips making up the remainder. Vertebrae are relatively rare and are represented by only seven mammals and a small number of unidentified fish. Of interest was the presence of Dingo at the earliest dated level. Stone artifacts were not abundant but the assemblages were sufficient to indicate a close relationship with industries from other sites in the region that date within the past 4000 years (i.e., uniface pebble tools, backed blades and other small flaked tools, and edge-ground artifacts). McBryde provides a detailed analysis of the stone material; the photographs and data-rich tables are most useful for comparative purposes. Structural features include a hearth and an interesting pattern of shallow “post holes” suggestive of a round hut of the type known to have been used by Aborigines in historic times in this region.

The Schnapper Point site, in contrast to the stratified Wombah middens, is a large
eroded and deflated surface scatter of stone artifacts and pebbles that were exposed during severe storms in 1971. It lay on an indurated sandstone and continued under dune sand, which had not been eroded. Due to its extensive nature, McBryde undertook a systematic sampling of the material including the collection of seven distinct localities. The collection was “dominated numerically by the unmodified pebbles” (p. 59) with artifacts comprising less than 40 percent. Artifacts included uniface pebble tools, scrapers, bipolar pieces, elouera, burins, utilized flakes and ground edge artifacts, flakes and pebbles with concavities, core straightening flakes, cores, flakes, chips, grinding slabs, anvil stones, hammerstones and modified pebbles. McBryde again provides a wealth of measurements and other tabulated data on this collection as well as good photographs and illustrations. She also offers comparisons with other assemblages from the northeastern New South Wales region. Finally the site is interpreted as a stone working locality of recent origin.

Although both sites were investigated for reasons of salvage, McBryde is to be complemented for having a clear research design prior to conducting the fieldwork. In 1963 when Wombah was excavated (and the same can be said for 1971 when Schnapper Point was investigated), the major question in coastal Australia concerned the building of regional chronologies. Thus “greater emphasis was given to investigation of technological evidence and chronology than would be given now” (p. 3). In 1980, when Coast and Estuary was actually written, questions had shifted to economy and seasonality. McBryde has done a creditable job on the latter given the former emphasis. While one might criticize aspects of her conclusions from a hindsight position in 1986 after much new evidence and interpretation have subsequently become available for the region, in this case it is more productive to stress the positive aspects of the work. I thus note the wealth of comparative data on stone and shell. Most importantly, here is detailed, well-tabulated and illustrated data on sites that are now unavailable for study, bound in an easily obtainable publication, which will suit the student of prehistory both in terms of comparative study and the pocketbook.


Reviewed by RITA P. WRIGHT, The College of William and Mary

This book presents the results of a seminar, entitled “Ceramics as Archaeological Material,” held at the National Bureau of Standards and the Smithsonian Institution in October 1980 and organized by the editors of the volume, J. Olin and A. Franklin. The principal theme of the seminar was the demonstration of the use of laboratory techniques in the study of archaeological ceramics and a discussion of some specific questions to which laboratory analyses could be applied. The division of the book into three sections—Methodology, Physical and Chemical Methods, and Archaeological Examples—reflects these concerns. In all, 22 articles are included in the volume. Taken together, they provide essential reference material for both archaeologists and materials scientists with an interest in ancient ceramics. The volume also raises many questions relevant to the future of analytical studies.

The methodological section is the most stimulating segment of the volume, as it addresses the central problem facing archaeometry (defined in the volume as “the physical and biological sciences applied to problems in archaeology”), which is how laboratory analyses can be made relevant to the field of archaeology. Each contributor addresses the problem from a unique perspective. Two of the contributors, F. Mat-
son and P. Rice, review specific problems that have been studied in the past and offer a set of new problems for the future. Matson reviews the early work on ceramics since the 1930s to the present and provides a useful summary of the major research laboratories and programs that have developed over the past 50 years. In the same vein, he makes suggestions for future directions; specifically, he points to the need for the development of data base repositories and the provision of funding for interdisciplinary training of students. Rice concentrates on considerations more exclusively of relevance to the archaeologist, attempting to incorporate the new data base into long-standing archaeological issues. She singles out two areas of research—production and trade—as natural extensions of the archaeologist's preoccupation with spatio/temporal relationships and offers suggestions for how analytical studies might be incorporated into our taxonomic systems. The article by W. D. Kingery, a materials scientist, shifts the focus to developing a general model for ceramic artifact examination and outlines the sorts of information that can be obtained from it. Kingery presents an elaborate model, adapted from Polya's *Patterns of Plausible Inference*, but the major contribution of the article is in advocating the use of multiple measurements for obtaining credible support for hypotheses. The two remaining articles touch on specific archaeological problems and are followed by case studies. F. Widemann of the Groupe d'archéologie nucléaire d'Orsay-Saclay (CNRS) decries the lack of communication between archaeologists and materials scientists (an issue to be discussed in more detail below) and the methodological hazards of engaging in research that is "...cut off from their...applications." Widemann's case study involves the collaboration of an interdisciplinary team consisting of archaeologists, physicists, and chemists at CNRS, and their work is illustrated through a comprehensive study of Roman amphorae in France. The final article, by C. Lemoine (et al.), also advocates interdisciplinary approaches and illustrates its value through a study of medieval Spanish ceramics found in France.

Section II of the volume contains a series of articles, each of which demonstrates an analytical technique or sets of techniques applied to problems of provenience or the reconstruction of ceramic technology. In this short review, I can only list the contributions. Issues regarding provenience are G. Harbottle's discussion of neutron activation analysis and the state of research on the calibration of standards, a comparison of neutron activation and electron microprobe analyses by De Atley (et al.), the use of proton probe in elemental analysis by C. P. Swann, and photoacoustic examination of ceramic surface layers by A. D. Frost. Papers that focus on some aspect of ceramic technology include the assessment of firing temperatures using X-ray diffraction, thin section microscopy, and a variety of other methods (R. Heimann); firing temperature and atmosphere using Mossbauer spectroscopy (Y. Maniatis et al.); raw material processing and firing procedures through a combination of scanning electron microscopy (S.E.M.), X-ray diffraction, and thin section analysis (Tite et al.); firing temperature and atmosphere using X-ray diffraction and petrographic thin sections (Maggetti et al.); and xeroradiography applied to a variety of problems and materials, but especially construction techniques in pottery production (R. Alexander and R. Johnston).

The third section of the volume—Archaeological Examples—contains eight contributions by archaeologists and materials scientists. They represent a range of geographic areas and time periods and include P. Vandiver's study of faience from the Predynastic to the Roman periods in Egypt, P. Betancourt's East Creton White-on-Dark ware project, W. Payne's ethnoarchaeological studies of contemporary potters in Mexico, C. Kolb's analysis of Mesoamerican and Baluchistan (Afghanistan) pottery, R. Heimann's study of relative porosity levels for discriminating different ceramics, and Stimmel (et al.'s) Indian pottery from the Mississippi Valley. The issues addressed in these studies fall into the following categories: studies of single technologies over broad time ranges (Vandiver), development of specific technologies to determine provenience (Betancourt), ethnoarchaeological studies as an aid to field identification of kiln sites (Payne), and comparison of ceramics (Hei-
The article by Stimmell (et al.) stands out in this group in that it is the only one that deals with a specific cultural problem, namely the technological adaptations made by potters in Mississippian times and the interrelationship of these adaptations to developments in trade.

Two other articles deal with specialized problems somewhat peripheral to the volume. One, by R. Tylecote, examines metallurgical crucibles and crucible slags and, the other, an analysis of nonmetallic phases in metallic artifacts (M. Notis).

There are two aspects of this review that deserve elaboration: (1) how the book can be used as a reference volume and (2) developments in archaeological ceramics since the original seminar. Use of the volume for reference lies mainly in the range of techniques discussed and the geographical distribution of artifacts studied. Archaeologists with special interests in the materials studied will have no trouble using the results, although they may have difficulty in evaluating the validity of conclusions since many are based on small samples. Archaeologists can, however, regard conclusions as pilot projects subject to additional analyses. This can be done either in collaboration with the authors of the original articles or by the archaeologists themselves. Secondly, the specific techniques or sets of techniques used can serve as models for the development of research projects using ceramics from different cultures. It is in this sense that the book is an essential reference.

The second issue—the present state of ceramic analytical studies—is more complex. The significant questions proposed in the volume and still relevant today are (a) Who will formulate the research problems?, (b) Who will carry out the research? and (c) Who will provide the institutional and foundation support to carry out programs of research? The answers to these questions can, as the volume shows, be answered in a variety of ways. Answers will necessarily differ depending upon whether one is asking an archaeometrist or an archaeologist. This gap is aptly illustrated by a question and a statement cited by F. Widemann. The question, asked by an archaeologist, “Why is archaeometry so boring?” and the statement, made by a materials scientist at an archaeometry symposium, “Thank God archaeologists are not coming!” expresses this polarity. It is a problem that persists. While this gap may be spanned by bridging mechanisms such as the Smithsonian’s seminar or through collaborative research, the contents of this volume demonstrate that at least three different perspectives are being pursued. In general, the materials scientists stress either (1) technique development or (2) the historical development of technology. Their primary concern is to document human invention and the transformation of materials by humans. The third perspective, the focus of archaeological research, emphasizes the interaction of the transformation of materials by humans within the context of other cultural developments and basic anthropological theory. There are exceptions, of course, to this categorization on both the archaeological and the archaeometric side.

These differences suggest that archaeologists will have to take the lead in developing their own lines of inquiry. As with any other field, the results of analytical studies have posed new questions even as they have answered old ones. It is in these new questions that the potential of laboratory analyses will be realized and the methodological and theoretical breakthroughs that relate to cultural problems will have to come from the archaeologists themselves.

Highly fired, glazed ceramics from Southeast Asian kilns first came to the attention of Western art historians and archaeologists in the early part of this century. They were found, often in significant numbers, together with Chinese export wares in archaeological sites throughout Malaysia, Indonesia, and the Philippines. These pots represented an enigma in the context of traditional knowledge and assumptions about Oriental ceramics, as they were then based on the study of Chinese historical documents and of established collections in East and West. Although it was recognized early on that some of these wares originated in Viet Nam, the Vietnamese materials seemed to be particularly elusive: they were often difficult to distinguish from Chinese counterparts and their chronology was highly problematical.

Among early pioneers studying Southeast Asian ceramic wares were H. Otley Beyer in the Philippines and E. W. van Orsouy de Flines in Indonesia. Okuda Seiichi published a monograph devoted specifically to Vietnamese ceramics in 1954. Much has happened since then and many have contributed to the elucidation of a fascinating subject that has numerous ramifications regarding Southeast Asian history in general. The Southeast Asian Ceramic Society, located in Singapore, has accumulated particular merit in this field. Its contributions began with an exhibit of Southeast Asian ceramic art in Singapore in 1971, accompanied by a catalog with a seminal introduction by William Willetts. In it Willetts pointed out important stylistic and chronological relationships of certain forms of Vietnamese ceramic wares with Chinese and other Southeast Asian wares. At about that time, Roxanna M. Brown began to work with Willetts and eventually wrote a master’s thesis that was published in 1977 as “The Ceramics of South-East Asia” and has become a standard reference. In this book, Brown contributed much new information about provenance, identification, and dating of Vietnamese pottery. Among others, she distinguished for the first time between Vietnamese ceramics proper and Cham ceramics manufactured probably in the area of Go-sanh near Qui Nhon City, Binh Dinh Province. She reviewed and clarified the nearly 2000 years of continuous ceramic production in Viet Nam, and elaborated on the apparent stylistic relationships with Chinese, Khmer, and Thai pottery, suggesting that, contrary to Thai traditions, the Sukhothai kilns may perhaps have been founded by Vietnamese rather than Chinese potters.

The publication under review catalogs another exhibition organized by the Southeast Asian Ceramic Society, this time focusing exclusively on Vietnamese ceramics, and held in Singapore in 1982. The catalog itself is preceded by six introductory essays: W. Willetts on “Bridges: Internal and External Formal Relationships in Vietnamese Ceramics of the 11th–16th Centuries” is a slightly rambling disposition on a number of issues concerning stylistic relationships and their bearing on dating, historical relationships, and the aesthetic, social, and commercial concerns that likely governed the production of Vietnamese ceramics. K. W. Taylor’s “A Brief Summary of Vietnamese History” is useful as a background to reading the essays of the ceramic specialists. John C. Shaw contributes a brief “Comment on the Vietnamese–Thai Connection.” John Guy discusses “Vietnamese Trade Ceramics,” reviewing their varying distribution from Japan through the Middle East. Abu Ridho contributes a short essay on a specialized topic entitled “Notes on the Wall Tiles of the Mosque at Demak.” Finally, Barbara Harrison furnishes a lengthy article dealing with “Correlations and Types of Vietnamese Trade Wares: 13th–19th Centuries” in which she draws for comparative materials primarily on the collections of the Prinssesehof Museum in Holland.

The six essays do not add up to a cohesive, and certainly not to an easily readable, introduction to Vietnamese ceramics. For such purposes, Roxanna Brown’s book remains the best resource. Rather, they constitute a state-of-the-art discussion presented to an audience of informed, although not necessarily specialized, readers. Specialists will
invariably disagree on some points made by various authors. Not being a ceramic specialist myself, I prefer not to enter the fray. However, potential disagreements on some specific points notwithstanding, from the six essays emerges a picture of tremendous progress in the study of Vietnamese ceramics over the past 30 years, albeit with large areas of uncertainty and debate remaining. Further progress is hampered by the fact that still no certain kiln sites have been discovered in Viet Nam, so that it remains unknown, for instance, to what extent the pots found in the Philippines, Indonesia, and other countries represent special export wares or exported items of a ware also consumed domestically. As Guy points out, a review of the exported materials indicates clearly that production for foreign markets must have been important, suggested among others by the existence of types that were evidently manufactured in response to peculiar local demands, such as the ceramic tiles found in Java. Clear evidence has emerged that Chinese, Vietnamese, and Thai ceramics were, at least on occasion, shipped together; this has important implications concerning the likely nature of the network that accounts for the distribution of trade ceramics throughout Southeast Asia, although even here many questions remain.

At this point, the great majority of Vietnamese ceramic specimens known come from archaeological sites outside of Viet Nam. It is a great pity, therefore, that almost all the sites in question have been looted. Besides the deplorable destruction of the cultural context in which the trade ceramics were found, this makes it nearly impossible to use them with confidence in studies of dating or of distribution patterns beyond simply noting presence/absence. Nevertheless, the Singapore catalog shows that if we have come a long way since the 1920s and 1930s. It is an important publication for art historians and archaeologists interested in Southeast Asia. The book is well produced. All the exhibited items are illustrated in color. Descriptions accompanying the plates are, unfortunately, quite laconic and, most important, do not refer back to discussions in the introductory essays. The catalog closes with a useful selected bibliography. Once again, we are indebted to the Southeast Asian Ceramic Society.


 Reviewed by VINSON H. SUTLIVE, JR., *The College of William and Mary*

This extensive bibliography originally was intended "as a reference work for anthropologists," but as the editors proceeded with their work, they found it necessary to include titles from other disciplines. The publication is "a general bibliography for all disciplines, covering such categories as physical and cultural anthropology, exploration and travel, history, natural sciences (including such subjects as physical geography, topography, geology, zoology and botany), technology, economy, demography, government, education, health, hygiene, medicine, 'missiology', language and ethnic classification and belles-lettres" (p. 1).

The editors also originally intended to limit citations to West Kalimantan, the area of their competence. But ethnic groupings and relationships extending to other parts of Borneo, as well as topics and cultural traits of more general distribution led them to include titles from other political divisions of the island.

As a result, the editors have produced an invaluable resource work for students of Borneo and Southeast Asia.
They begin with maps identifying the principal residential areas, the administrative districts in 1919 and in 1983, and an "Ethnic Sketch-Map." The "Introduction" describes the development of the project and an explanation for the categories into which the titles are divided. These include: I. General works and articles, II. Exploration and travels, III. History, IV. Natural sciences, V. Technology, VI. Economy, VII. Humanities, VIII. Museums, and IX. Chinese.

Compiled between 1977 and 1983, the bibliography includes a preponderance of Dutch references. A majority of the titles was obtained by the editors from libraries in the Netherlands. As they acknowledge, they were unable to identify as many references as they would have liked in Indonesian or on post-1945 Kalimantan because many of the works are not easily available and because it was impossible for the editors to undertake "a period of intensive bibliographical research in Indonesia" (p. 3).

The editors cite the most important bibliographies and repositories, viz. "the several ethnographic museums" (p. 5). The important role of these museums prompted the editors to include a special section on them (pp. 219–223).

Sections in the "Introduction" on background information for West Kalimantan, main sources on West Kalimantan, and the persistent challenge of ethnic classification are useful to specialists and nonspecialists.

This book is a valuable contribution for which the editors are to be thanked and congratulated. They are aware and acknowledge the limitations of the bibliography, and we may encourage Indonesian scholars to provide post-1945 titles and references to literature such as government reports, which are important but difficult to obtain.


Reviewed by DAVID W. GOODRICH, Anthropology Department, Yale University

_The Origins of Chinese Civilization_ contains papers from a conference on that subject held in 1978. David Keightley has assembled pieces by 17 contributors into a volume that is far more comprehensive in scope than a book by any one scholar. Centered around the "origins" theme, the contributions from various disciplines fit together remarkably well, due no doubt to the efforts of the organizers, but perhaps also in part because Chinese archaeology is just now entering its "golden age" as a field of study.

The first four papers form a section on the natural conditions for the development of agriculture. The authors are specialists in botany and biogeography and, like the other contributors, they do not oversimplify. Their papers may seem slow going at times, but are certainly worth the effort. For example, Whyte and Li Hui-lin illuminate the complexities of ecological reconstructions for the Chinese Neolithic and Bronze Ages. Chang Te-tzu's able discussion of food crops seems to favor rice as the grain of choice, but this is balanced by Fogg's ethnographic observation of reasons for preferring millet. Fogg's study of functioning swidden agriculture for possible Neolithic analogies is fascinating. It sheds light even on philological questions such as the interpretation of variant terms for millet.

The second section of the book is devoted to some of the human foundations for the emergence of Chinese civilization: its cultural, technological, and physical characteristics. It begins with three papers on the Chinese Neolithic. Pearson, Meacham and Huber, in different ways, stress the local
evolution of Neolithic cultures and traditions along the eastern and southeastern coasts; all three use recent discoveries and radiocarbon dates to oppose the formerly common assumption that Chinese civilization arose from a single center in North China. Pearson and Meacham are cautious in linking local Neolithic traditions to the historical Shang civilization; Huber suggests that the legendary predecessor of the Shang Dynasty, the Hsia, will be defined by a tradition of wrought metal vessels, so far hypothetical. Jettmar summarizes Soviet work on early China, drawing particular attention to the work of the physical anthropologist Cheboksarov. Jettmar's view that Soviet works overemphasize exogenous factors in the formation of Chinese civilization is too broad. It is all too easy to see political motivations behind the conclusions of some, notably Vasil'ev and Okladnikov, but others do not deserve to be tarred with the same brush. Kuczera's useful book, barely mentioned, demonstrates a careful balancing of the evidence; Kriukov's hypothesis about the southern origins of the Chinese Neolithic was not uniquely Soviet, and was conceived when evidence for the Early Neolithic stage in North China was so sparse it was not recognized even in China.

Metallurgy, the hallmark of the Chinese Bronze Age civilization, is the subject of papers by Barnard and Franklin. Barnard restates his view that metallurgy was an independent invention in China, and also elaborates his views on the process of diffusion. Franklin's stimulating contribution focuses on the social conditions required by the scale of Shang metallurgy; she suggests that bronze was more a symptom than a cause of social change.

The question of what is "Chinese," raised by Meacham and in the Soviet work summarized by Jettmar, is addressed in terms of physical ethnology by Howells. His reconstruction of basic homogeneity since the Neolithic is cautiously tentative. His explanation of this caution is itself instructive, and will alert the non-specialist to pitfalls in assessing matters of race.

The third section comprises two papers on language and writing. Cheung discusses (and illustrates) hundreds of pottery marks from various stages and cultures of the Neolithic, compares them with later material, and concludes that primitive forms of written characters can be traced back to about 4000 B.C. Just when these evolved into a writing system is much more speculative, of course, and Cheung is properly imprecise on this point. Li Fang Kuei provides an introduction to the phonological reconstruction of Archaic Chinese, discussing both the accomplishments and current goals of this venerable field.

The final section is entitled "Tribe and State." It begins with Pulleyblank's summary of linguistic evidence concerning the early Chinese and their neighbors. His careful interleaving of linguistic and historical material makes his tentative synthesis useful for all scholars of early China. Fried challenges the common assumption that the state evolved from the tribe, in China or anywhere else, preferring to see tribes as political units created by states for their own, generally coercive, purposes; he finds support in the growing variety of archaeological cultures in China. K. C. Chang offers a model for state evolution that is consonant with Fried's theory but much more concrete; he enlivens recent archaeology with dynastic legend to suggest that the traditional succession of the Hsia, Shang, and Chou Dynasties imperfectly reflects the circumstances in which at least three states emerged, through mutual interaction, as distinct cultural and political units within a single culture. Keightley traces the structure of the Shang state using information culled from the oracle bone inscriptions, the only contemporary records. His analysis of that structure through the late Shang period assumes a more formal definition of the state than Fried and Chang, so that in his view the Shang qualifies as an incipient dynastic state. His methodology and conclusions are very useful for Sinologists and comparative scholars.

The definitive work on the origins of Chinese civilization cannot yet be written. This volume summarizes much of what is known on the subject, from many angles, and suggests many avenues for future research. Two major aims of the organizers
were to stimulate cross-fertilization among various disciplines bearing on ancient China and to make Chinese material more available to scholars outside Sinology; they have succeeded in both. The care taken in preparation of the volume is evident in a detail that all Orientalists will appreciate—the inclusion of Chinese characters in the text. Such a summary review cannot do justice to so useful a book.


Reviewed by Jan Wiseman Christie, Centre for Southeast Asian Studies, University of Hull, England

This latest of Dr. Wheatley's studies of early urbanization is essentially an extended elaboration upon a thesis he first proposed at the London Colloquy of 1973 (published in R. B. Smith and W. Watson, eds., Early South East Asia, 1979, Oxford) concerning the nature of state formation and urbanization in early Southeast Asia. This thesis, simply stated, is that urbanization occurred in the region in two ways. In the western portions of Southeast Asia the development was inextricably bound up with the process of "Indi-anization" (or, as the author would prefer, "Hinduization"). Cities and states in this sector "evolved" only after several of the region's lowland farming cultures made substantial borrowings from the repertoire of Indian religious, political, and legal cultures. This process began early in the Christian era, involved active mediation by immigrant Indian traders, adventurers, and religious practitioners, and was still incomplete, particularly in the maritime region, at the end of the first millennium. In the other sector, comprising the lowlands of northern Viet Nam, urbanization took the form of "urban imposition." It began slightly earlier here than in the western sector, was carried out in the context of Chinese colonial rule, and produced changes both more abrupt, and in a sense more profound. In neither case does the author accept the possibility of any effective, preexisting, endogenous developments in the direction of "urban civilization." None of these ideas is new, and many of them have a venerable history in orientalist circles.

Much of the force of the author's arguments depends upon the definitions he has selected for "city" and "state" (chapter one), and upon his reading of the data available for the conditions prevailing in late prehistoric Southeast Asia (chapter two). Neither of the above is likely to be completely acceptable to most archaeologists now active in Southeast Asia. His definitions are more narrow than those now being accepted by many anthropologists and archaeologists. In addition, his ground for assuming that early indigenous polities lacked certain of the features he feels are diagnostic of true statehood are somewhat unclear, given the serious dearth of information available at present. In many cases the archaeological and epigraphic data fail to confirm the conclusions that the author has reached based largely upon his interpretation of ambiguous and often undatable Chinese and Indian records.

Dr. Wheatley's great strength is the competence and caution with which he deals with primary literary material in several Asian languages. He is, unfortunately, on much more uncertain ground when dealing with the archaeological data from Southeast Asia. The upsurge of archaeological activity in the region during the last two decades has produced so much new, and often controversial, data that archaeologists are themselves hard-pressed to evaluate the material and sort out the implications for this critical early state-
forming period. On the whole, the author’s attempt to deal with these data has not been very successful, but then he is at present in very good company. He does, however, appear to have been largely oblivious of the implications of much of the recent data he mentions in passing.

The case studies of early urban remains (chapters three through six) are interesting and most useful in that they collect together in one volume plans and descriptions of the major protohistoric sites so far excavated in Southeast Asia. But here again discussion rests heavily upon Chinese records, and examination of the more recent archaeological data is surprisingly sketchy. Moreover a signal opportunity to discuss these urban remains comparatively has been largely overlooked. The large quantities of data available for such sites as Chansen (discussed by B. Bronson in the London Colloquy volume) are seriously underutilized. More surprising still is the dismissive manner in which recent work in the Khorat region of Thailand (see C. Higham and Amphan Kjingam, “Irregular earthworks in N.E. Thailand: new insight,” Antiquity 56 (1982): 102–110) has been dealt with. Whatever the merit of the application of Thiessen polygons to the map of sites, the author’s failure to discuss adequately research on the only possibly early settlement hierarchy so far identified in Southeast Asia casts doubt upon his familiarity with the debate now in progress within archaeological circles concerning the very subject with which he is dealing. One cannot avoid feeling that the archaeological data which do not fit comfortably into the author’s schema have received less serious attention than they deserve. It is also apparent, both from the individual case studies and from the broader discussions of urbanization contained in chapters seven and eight, that the author’s main interest lies in the “existential” city, the symbolic and ceremonial life of which transcends its mere physical form. Unfortunately we are now left with the prosaic remains of the substantive cities of the past, none of which appear to reflect the ceremonial role that the author feels was fundamental to their development. The Hindu cult of Shaivism, which the author proposes as the main driving force of state formation in the “Indianized” territories, appears to have interested none of the early inhabitants of the cities closely examined.

As a study that draws together the many scattered references to the early external records concerning Southeast Asia, this volume is very valuable. The work would have been of even greater value as a reference had it included a proper bibliography. It is a mine of detail, but must be read with care. The liberal sprinkling in the text, not only of untranslated snippets in a number of living and dead European languages, but also of a number of undefined Sanskrit terms unlikely to be familiar to most readers, somewhat impedes the argument. Choice of terms is, in addition, sometimes rather confusing: why, for instance, the author has chosen to highlight the Sanskrit term nāgara (citizen) rather than nāgara (city) throughout the text is not at all clear. The general theme and approach in this volume are perhaps best summed up in the fragment by Rabindranath Tagore quoted (unfortunately only in Bengali) at the end of the text:

(To Java):

In a dim and distant unrecorded age
we had met thou and I,—
When my speech became tangled in thine
and my life in thy life. . .
The great God—Visnu spoke to me
and spoke Uma, the ten-armed Goddess:
"Make ready thy boat, carry the rites of
our worship
across the unknown sea."
The Ganges stretched her arm to the eastern ocean
in a flow of majestic gesture. . .
And the heart of my land murmured to me
its hope
that it might build its nest of love
in a far-away land of its dream.

This study of urbanization in Southeast Asia is as essentially romantic as it is literary. It breaks no new ground, but it is a work that a student of early state formation in Southeast Asia, while perhaps not agreeing with the conclusions, cannot afford to ignore.
Over the past 15 years the Department of Anthropology of the University of Otago has emerged as the leading center for archaeological research on the mainland of Southeast Asia. The regular series, *Studies in Prehistoric Anthropology*, contains five monographs on the research by Bayard, Higham, their collaborators, and students in northeast Thailand. The department has hosted the first major conference on Southeast Asian archaeology in ten years, in Dunedin in February 1983. This volume, swiftly and ably edited by Bayard is the outcome of that meeting. It contains 24 contributions together with an introduction and a summary of discussions by the editor, and, as an Appendix, a useful list of the 78 radiocarbon dates so far reported from Viet Nam, computer sorted under various headings—site name, laboratory code, culture period, and age. The papers are grouped into four sections: Thailand, Viet Nam and South China, Island Southeast Asia, and Metallurgy.

A volume of conference papers is inevitably uneven in style, content, and direction. This work is no exception. Even less than the book *Early South-East Asia* stemming from the 1973 London Colloquy (Smith and Watson, *Oxford University Press*, 1979), this one does not pretend to be comprehensive in geographical or temporal coverage, nor does it aim to be a teaching textbook. The participants present in Dunedin in February 1983 were either locally resident or had the time, money, motivation, or grants to get themselves there, and there are many regrettable gaps. There is only one paper on the Philippines, that by Peter Coutts on his work on Panay Island in the Visayan group; two on Indonesia—by John Miksic on the structure of trade in the Malaccia Straits in the mid first millennium B.C., and by Satyawati Suleman on early state formation in western Indonesia. The many research projects instigated by the Anthropology Division of the National Museum of the Philippines as well as by provincial universities in that country, and by Soejono and his colleagues from the National Archaeological Institute of Indonesia are unreported here. Indeed the whole prehistory of the most populous state of the region is entirely neglected, as is that of Malaysia. But rather than worry about what is missing it is better to concentrate on what is good and included in the volume, and there is much of that.

The first section of 14 papers, which takes up more than half the volume, is devoted to Thailand and contains analyses by Pornchai Suchitta of data from the important neolithic coastal settlement mound of Kok Phanom Di, Cholburi Province. An unusual approach to the technical investigation of ceramics from some newly excavated Hoabinhian cave sites near Ban Kao, Kanchanaburi Province is reported by Surin Pookajorn; and there are five contributions arising out of the 1980–1981 excavations at Ban Na Di. These include a summary of the main features of the site, its stratigraphy and chronology by Anphan Kijingam; a discussion of aspects of the palaeodemography of northeast Thailand based on a comparison of the 73 inhumation burials from Ban Na Di with those from Ban Chiang and Non Nok Tha by Warrachai Wiriyaromp; a preliminary report on a major project of fabric analysis on the burial pottery by Brian Vincent; the non-burial pottery by Metha Wichakana; and a rather speculative investigation into the social structure of prehistoric Ban Na Di by Charles Higham in which he analyzes the grave goods and structure of the Phase I cemetery. His conclusion, that a weakly-ranked society inhabited the village between the late second to first millennium B.C. must depend as much on general assumptions about the relationship between burial rituals and social order, as on the evidence from Ban Na Di itself. As Ucko (*WA* 1(2): 262–280, 1969) has shown almost
every generalization about such relationships can be refuted by well-documented ethnographic case studies.

The remaining papers on Thai archaeology include another investigation into prehistoric social ranking—by Donn Bayard using the much larger data set of 217 burials from Non Nok Tha. Using rather different criteria and analytical methods, but working with the same broad set of assumptions about the regularities between wealth and status in life and the elaboration of burial facilities and quantity of grave goods, Bayard comes to rather similar conclusions; namely that ascriptive ranking existed from the very earliest use of the burial ground at Non Nok Tha, but became more marked with the appearance of bronze tools and new pottery types in the Middle Period. Payom Chantaranyakarn reports on excavations at Ban Chiang Hian, a moated site on the Chi River and is able to show that some of Higham's earlier generalizations about the late settlement of the Mun-Chi basin are clearly wrong. David Welch presents a preliminary analysis of settlement patterns in the Phimai area with the aim of investigating changing political and economic structures in the early second millennium A.D.—a period which was marked by Khmer dominance of much of Thailand; and Penny reports on a survey of iron age sites in the Loei district in the northern Petchabuan Range. Sent there to test Gorman's hypothesis about the role of piedmont zones in a Hoabinhian-lowland settlement shift in the mid-Recent period he was unable to locate any occupation earlier than the bronze age-iron age transition at the end of the second millennium B.C. when the area developed rapidly on account of its abundant and diverse metal ore resources. This research shows clearly enough that it is more important for ideas, in archaeology as in most sciences, to be productive and to lead to new discoveries, than to be true.

In contrast to the contributions on Thai archaeology which, for the main part present a wealth of new and detailed information from excavations and surveys, the two Vietnamese papers are rather general statements on the state of knowledge, or thinking, in particular fields—on metallurgy by Pham Minh Huyen, and on state formation by Nguyen Duy Hinh. But both writers provide yet more evidence that archaeological research in Viet Nam is thriving, that new discoveries from systematic fieldwork abound, and that there is no lack of debate within Viet Nam about how to interpret the new data. Pham Minh Huyen in particular provides a tantalizing glimpse of the many technical investigations into ancient metallurgy, which are reported in the annual *New Archaeological Discoveries [Nhung Phat Hien Moi Ve Khao Co Hoc]*; a publication rarely available in the West.

Ancient metallurgy is also the topic of the last section with D. P. Agrawal taking a broad look at the development of bronze metallurgy in Asia. He argues that traditional explanatory models, whether evolutionary or diffusionist, are inadequate, and a new approach is needed. Unfortunately he does not suggest what he thinks this approach might be. I. R. Selimkhanov takes up again the problem of tin in ancient West and Central Asia. Could tin from the world's richest and most accessible deposits, those of Southeast Asia, have been traded to the west in prehistory? The answer still seems to be "Possibly, but there is no good evidence before the Middle Ages." And finally, Piggott and Marder look at that crucial technical transition, from bronze to iron, which seems to have been made in parts of Southeast Asia in the early first millennium B.C. Claims that this occurred in the mid-second millennium B.C. must, in this reviewer's opinion be resisted until the evidence is much better than it is at present. They also present some technical analyses of early iron tools from Penny's surveys and excavations in Loei Province, northeast Thailand.

With such disparate material and varied approaches to studying the past, it is impossible for a reviewer to come up with a coherent and short evaluation of this volume. At one level one can say that there is something in it for everyone; those who are impatient with mere technical reporting can take refuge in the anthropological speculations on prehistoric wealth and ranking. And those who dislike the North American anthropological approach can seek solace in a Euro-
pean sociological approach to material culture exemplified by von Dewall’s discussion of sociocultural change in Southwest China. Traditional historical methods have their place as Miksic and Satyawati Suleiman clearly demonstrate. Certainly this reviewer found much to take note of and to admire. But above all, perhaps, we should be grateful to the editor, Donn Bayard, who in a characteristically modest introduction explains how he achieved the miracle of getting such a substantial and well-presented book into print in less than two years. That is an example we would all do well to follow.


**Reviewed by Richard A. Gould, Brown University**

This report focuses on the excavation of Cave Bay Cave, a stratified site containing evidence of both Pleistocene and post-Pleistocene human habitation on what is now the shoreline of Hunter Island, off the northwest coast of Tasmania. A detailed account of the excavations is provided, in which the depositional history of the site is described in relation to a series of $^{14}$C dates from three excavated trenches with the cave. These excavations provide clear indications of human use of the cave during the Pleistocene from at least 23,000 years ago until around 18,000 B.P. This was followed by a hiatus in human habitation except for a single dated hearth from 15,400 B.P. until about 6600 years ago, when a more apparently coastal-marine economy was present until around 4000 B.P. (the Lower Midden). After another hiatus until about 2600 years ago, human use of the site resumed on a limited basis until final abandonment within the last 1000 years, but before the arrival of Europeans (the Upper Midden). Important differences were noted between each phase of occupation, and much of the report consists of a detailed analytical effort to relate these changes to alterations in sea levels, flora, fauna, and other biogeographical factors. While general trends can be observed, the primary value of Bowdler’s site analysis rests on its adherence to the strictly archaeological principle of accounting as fully and parsimoniously as possible for all aspects of the excavated data.

The most important body of material from the site consisted of faunal remains totalling over 20 kg of bone, representing over 4000 individual animals. Bowdler’s analysis of the excavated bone materials goes beyond the more usual archaeological approaches of measuring relative densities of bone (by weight per volume of excavated deposits) and minimum number estimates to encompass explicitly taphonomic considerations. Specifically, the author addresses the question of how much of bones accurately reflect human dietary behavior as opposed to natural factors such as nonhuman predation and other uses by animals of the cave. Bowdler’s concern for accounting as fully as possible for the total bone assemblage represents perhaps the most challenging and innovative aspect of this monograph, at least from a methodological point of view. She concludes that during the Pleistocene occupation of the site, man and Tasmanian devils (*Sarcophilus harrisii*) accounted for most of the remains of larger animals, while the masked owl (*Tyto novaehollandiae*) and other owls accounted for the bones of rodents. In the post-Pleistocene deposits, man and peregrine falcons were regarded as the principal contributors of bones to the site. Bowdler’s efforts to control for
differences in frequencies and characteristics of faunal remains at Cave Bay Cave serve effectively as a caution to archaeologists everywhere against assuming that human beings were necessarily the principal agents structuring the relative species frequencies, breakage patterns, and deposition of bones at archaeological sites—even those occupied, as in this case, by hunter-gatherers.

According to recent studies by Chappell and others, sea levels 23,000 years ago stood approximately 90 m lower than at present. A look at local nautical charts shows that Hunter Island would, in fact, have stood as a hill upon a wide plain across what is now the Bass Strait, with the coast about 25–30 km to the west. Further lowering of sea levels took place during the glacial maxima to about 130 m below present level during the period when Cave Bay Cave was unoccupied, with the coast then about 65–70 km away. The 6600 B.P. reoccupation of the site (Lower Midden) appears to coincide with evidence indicating an ocean rise to the present sea level at around 6000 B.P. At this point it is unclear whether the site was on an island or a peninsula, and some apparent contradictions exist between the archaeological and geological evidence on this point (noted but not resolved by Bowdler). However, this "islanding" process represents a major organizing theme of the report and explains the monograph’s title. Closer proximity of the site to the shore brought about by the rise in sea levels accounts for the appearance of shellfish, crustacean, and seabird remains in the post-Pleistocene components of the site, while marsupial (e.g., terrestrial) fauna were dominant within the Pleistocene-age component, when the shoreline was farther away. Even after one accepts Bowdler’s arguments for the faunal remains of these Pleistocene marsupials as being primarily of nonhuman origin, a gross shift at Cave Bay Cave these sea level/shoreline changes.

While this report represents a high standard of attention to detail, it also contains larger implications for the worldwide study of human hunter-gatherer adaptations. Because of their unusual geographical situation, the Tasmanian Aborigines have always attracted interest. The early literature regarded the historic Tasmanian Aborigines as conservative and unchanging relics of an early stage of human evolution—"survivals" in the Tylorian sense of the word. This view, in turn reflected a widely-held assumption, based upon conjectural history, that the present was the past in Tasmania (and, it might be added, in Aboriginal Australia more generally). Thus anthropologists were encouraged to regard the historic Tasmanian Aborigines as modern analogues of the earlier inhabitants of the region. Prior to the advent of stratigraphically-controlled archaeology in Tasmania, this view seems to have been tacitly accepted by archaeologists as well as ethnographers. The view was that Tasmania, due to rising sea levels, preserved a kind of generic "bottomoid" Aboriginal culture that was altered on the mainland once small tools began to appear.

Bowdler’s report, building upon earlier archaeological studies by Rhys Jones at Rocky Cape in northwestern Tasmania, describes a sequence of adaptive changes that effectively challenges the notion that the historic Tasmanian Aborigines can be regarded as analogues for earlier cultural systems in the region. Not only do her findings support observations of changes noted previously by Jones in such things as the prehistoric demise of scaled-fish consumption and the use of bone points, but her paleoenvironmental conclusions demonstrate that the Pleistocene habitat of this region was a dry and generally treeless grassland environment unlike any in the area today. Her use of the faunal evidence is particularly compelling on this point, and it is supported in a limited way by pollen studies done on materials from the site by G. S. Hope. Unfortunately, the stone artifact assemblages associated with the occupied levels of the site were relatively small and consisted largely of quartz items that were not especially diagnostic of changes or relationships to other areas. Even though remains of extinct Pleistocene megafauna were absent from the deposits at Cave Bay Cave, the Pleistocene habitat there clearly required an adaptation different from that of the historic Tasmanian Aborigines of the adjacent coast, and future efforts to model that adapta-
tion will depend more upon archaeological and paleoecological criteria and contrastive approaches to ethnographic evidence than upon similarities to known ethnographic analogues from the region. Bowdler has, in this report, performed a valuable service to Pacific and world archaeology by both documenting the existence of human societies in relation to unique paleoenvironmental factors and by showing how such adaptations must be viewed without undue reliance upon conservative assumptions derived from resemblances to ethnographic analogies drawn from historic Tasmanian Aborigines.


Reviewed by MICHAEL PIETRUSEWSKY, University of Hawaii-Manoa

This edited volume contains the revised papers from the Wenner-Gren-sponsored Conference on Paleopathology and Socioeconomic Change at the Origins of Agriculture held 25 April–1 May 1982, at Plattsburgh, New York. Thirty-seven contributors from four countries (the majority are from the U.S.) present syntheses of the archaeological and skeletal data for various parts of the world, where reasonably good data are obtainable for comparing the health and nutritional status of prehistoric human populations before, during, and after the Neolithic Revolution. The relevant paleopathological and paleodemographic data for each region are summarized to address the above issues as well as those of broader theoretical interest, such as the evolutionary history of human ecology and the processes of cultural evolution. It is one of the first attempts to synthesize, on a world level, the direct evidence for prehistoric population pressure and how this pressure correlates with changes in the health and economy of prehistoric populations.

After an introductory chapter by the senior editor and one by Goodman et al., which provides an overview of many of the commonly used skeletal/dental indicators of stress, 19 chapters are devoted to presenting regional sequences. There are eight regional sequences from the United States including California by Dickel et al. (Chapter 17), Ohio by Perzigian et al. (Chapter 13), Kentucky by Cassidy (Chapter 12), Georgia by Larsen (Chapter 14), Lower Mississippi by Rose et al. (Chapter 15), Southwest by Palkovich (Chapter 16), and three papers from Illinois by Goodman et al. (Chapter 11), Buikstra (Chapter 9), and Cook (Chapter 10). There is one study from lower Central America by Norr (Chapter 18), one from Ecuador by Ubelaker (Chapter 19), and two from Peru-Chile by Benfer (Chapter 21) and Allison (Chapter 20). There are two papers from Europe [Eastern Mediterranean by Angel (Chapter 3) and Western Europe by Meiklejohn et al. (Chapter 4)], two are from the Middle East [the Levant by Smith et al. (Chapter 5), Iran and Iraq by Rathbun (Chapter 6)], one from South Asia by Kennedy (Chapter 7), and one from North African Nubia by Martin et al. (Chapter 8). The conclusions of the conference are discussed in the last two chapters by Anna Roosevelt (Chapter 22) and by the editors (Chapter 23).

There are no studies from Canada, sub-Saharan Africa, much of South America outside the Andean region, central and eastern Europe nor, with the exception of South Asia and the Middle East, are there any for Asia. This is unfortunate as, contrary to the assertions of the editors, some reasonably good data are available for some of these regions (e.g., Southeast Asia and East Asia).

The papers follow a similar format, which
allows comparisons to be made. As expected, however, these contributions provide data of varying quality and coverage. Generally, the better described sequences are from the continental United States although there are exceptions. Some of the quantifiable indicators of biological stress summarized include assessment of growth (e.g., stature, sexual dimorphism), disruption of growth (e.g., Harris lines, enamel hypoplasias), and disease (e.g., porotic hyperostosis, incidence of nonspecific and specific infectious diseases, trauma, and degenerative changes). Evidence provided by new chemical and atomic methods (e.g., trace element analysis and stable carbon isotopic analysis), which provide valuable indexes of paleonutrition are, where available, also reported.

Despite some of the obvious limitations of comparing evidence provided by many different regional studies, a number of clear trends do seem to emerge. Many of these have important implications for testing theories of cultural ecological evolution. Generally poorer health and nutrition and an overall decline in the quality (and probably length) of life associated with the adoption of agriculture would seem to support, at least in broad outline, the Boserupian population pressure model of agricultural origins.

The volume, while skewed toward the continental United States in its regional representation, does provide a fairly up-to-date synthesis of the existing data on the changes in health and nutrition associated with the transition to agriculture. The book, written mostly by skeletal biologists, will be an eye-opener to both physical anthropologists and archaeologists in demonstrating the great wealth of data to be harvested in projects that combine members of both subdisciplines in collecting, preserving, and analyzing prehistoric human osseous and dental remains. The benefits of integrating paleopathology with paleoecology are well illustrated in these papers. This book, the first of its kind, will long serve as a useful reference and source-book for those interested in ecological prehistory, skeletal biology, paleopathology, as well as subjects of broader scholarly interest.

The contents of the present volume are well worth the price despite the difficult-to-read type selected for this Rapid Manuscript Reproduction.

**The People of South Asia: The Biological Anthropology of India, Pakistan, and Nepal.** John R. Lukacs, ed. New York: Plenum Press, 1984. xxiv + 465 pp., illus., indexed. $55.00 (clothbound)

*Reviewed by MICHAEL PIETRUSEWSKY, University of Hawaii–Manoa*

Physical anthropological research of South Asia, while slow at its inception, has produced a rich and varied record of achievement beginning with large-scale anthropometric surveys of the Indian subcontinent in the early part of the twentieth century. The present edited volume adds to this already impressive record of research by offering glimpses of the current offerings in biological anthropology of India, Pakistan, and Nepal. As acknowledged in the preface, this volume developed from a session on biological anthropology of South Asia at the Ninth Wisconsin Conference on South Asia held in Madison, in November, 1980. The present work brings together original research and review articles written by indigenous and Western authors about the biological anthropology of living and prehistoric South Asians. In all, 20 papers authored by 28 specialists are included and organized in two sections: Part I, Paleoanthropology, and Part II, Biological Anthropology of Living.

The papers cover a wide range of topics including the Miocene hominoids from northern Pakistan, post-Pleistocene hominid remains, subsistence strategies and genetic, dermatoglyphic, demographic, growth and
ecological studies of living populations. The equal blend of indigenous and Western authors provides a good cross section of different research methodologies and design currently in use.

Despite a relatively rich archaeological record indicating human presence, no definite Pleistocene hominid fossils are known from South Asia. After a general survey and paleoecological reconstruction of the Miocene hominoids from the Potwar Plateau by Catherine Badgley and colleagues, there are two papers that deal with post-Pleistocene human skeletal series from South Asia. Kenneth A. R. Kennedy reports on two important Mesolithic sites on the Ganga Plain of North India and Pratap C. Dutta summarizes his reanalysis of protohistoric human remains from Harappa of the Indus Valley. The paper by H. D. Sankalia and colleagues on settlement pattern and socioeconomic variation at Inamgaon, an early farming village in western India, provides an important framework for John R. Lukacs and S. R. Walimbe’s summary of the paleodemography and paleopathology of this site. Jim G. Schaffer addresses the much discussed Indo-Aryan invasion of the South Asian subcontinent. Another paper by the editor, Lukacs, summarizes studies in dental anthropology of South Asian populations. A very useful reference compendium of prehistoric human skeletal remains and burial practices provided by Kenneth Kennedy and P. C. Caldwell rounds out the paleoanthropology section.

There are 12 papers on the biological anthropology of living. Samvit S. Kaul and R. S. Corruccini’s epidemiological study of occlusal variation among urban and rural children of northern India is followed by a historical review and recent research from dermatoglyphic studies in the subcontinent by P. Dash Sharma. Four papers deal with genetic topics. These include papers by P. S. Sundar Rao on inbreeding in South India, taxonomic distances among Indian populations by Russell M. Reid, a study of genetic distances between Indian and neighboring populations by A. K. Roychoudhury, and an investigation of population structure among the Dhangar caste-cluster of Maharashtra by K. C. Malhotra. Two papers that investigate demographic aspects of South Indian populations are C. A. Weitz’s investigation of the introduction of irrigation on the Peshawar Basin and Amitabha Basu et al.’s examination of demographic data from northwestern India and eastern Nepal. Cynthia M. Beall presents an interesting paper on growth, development and aging in the high altitude population of Upper Chimik, Nepal. A second paper by C. A. Weitz discusses the biocultural adaptations of high altitude Sherpas of Nepal. A paper of similar research design by S. L. Malik and I. P. Singh examines biological and cultural adaptations of the Ladakis of the western Himalayan Mountains. The final paper by K. C. Malhotra and M. Gadgil examines subsistence strategies among the pastoralists of Maharashtra.

While slightly unbalanced, the volume’s major objective of bringing together original research and review articles about the biological anthropology of prehistoric and living inhabitants of South Asia is achieved. The heavier concentration on the living is probably an accurate reflection of the current emphasis in physical anthropology in the subcontinent.

Inclusion of papers from both paleoanthropology and human biology will hopefully encourage greater cooperation and collaboration between these two areas for solving problems of human adaptation and evolution. It’s a pity, however, that a paper attempting such a synthesis was not included in the present volume; one which would have at least outlined some of the general areas where collaboration is feasible given the present state of knowledge. Equally informative would have been a review of the paleoanthropology of South Asia, a lacuna which will undoubtedly be filled with the publication of Kenneth Kennedy’s forthcoming book on this very subject.

One final criticism is the underrepresentation of some parts of South Asia in the present volume and the tendency for some authors not to look beyond South Asia in interpreting their results. These are minor criticisms in a volume with many major pluses.

As an outsider, I found much of the evidence presented on human evolution and biological adaptation of South Asia intellec-
tually stimulating and worthy of additional attention in my own research area, Southeast Asia and the Pacific. The readers of Asian Perspectives and students outside biological anthropology will equally benefit from the broader focus this volume provides.

The People of South Asia is a valuable addition, on an international scale, to an already immensely rich record of research in the physical anthropology of South Asia. The editor and authors are to be highly commended.


Reviewed by Michael Pietrusewsky, University of Hawaii–Manoa

As mentioned in the preface to this book, not since 1958 has there been a major work that reviews, from a worldwide perspective, the paleoanthropological evidence for the Upper Pleistocene and the origins of anatomically modern Homo sapiens. The present volume fills that void by bringing together original papers by 17 authors, from six countries, who consider the nature and evolutionary implications of the available skeletal record bearing on the appearance of Homo sapiens sapiens.

After an introduction by F. Clark Howell, the book is divided into ten chapters. The first, by F. Spencer, is a historical survey of the significance of Neanderthal man. The next two chapters examine the evidence from Western (C. B. Stringer, J. J. Hublin and D. Vanmeersch), Central, and Eastern (F. H. Smith) Europe. The fourth chapter by D. W. Frayer summarizes the biocultural changes in Europe during the Pleistocene–Holocene transition. The following three chapters review the paleoanthropological evidence from Western Asia (E. Trinkaus), Sub-Saharan Africa (G. P. Rightmire) and greater Africa (G. Bauer). A theory of human evolution based on evidence from East Asia (=China), Indonesia, and Australia is hypothesized in a paper by M. H. Wolpoff, Wu Xin Zhi, and A. G. Thorne. Using dental metrics, C. L. Brace, Shao Xiangqin, and Zhang Zhenbiao summarize post-Pleistocene changes in East Asia. The final chapter by R. C. Owen focuses on the arrival of Homo sapiens sapiens in the New World, which argues against a Pleistocene occupation of the Americas.

Readers of AP will be most interested in the two chapters that examine the evidence from East Asia and, in a more limited way, Indonesia and Australia. For this reason and because of the amount of space available, most of my remaining comments will be directed to these two chapters.

The paper by Brace et al. using a rather limited and meager data base, comprised largely of dental measurements, concludes that the origin of modern Chinese populations is in Southeastern China and adjacent Southeast Asia, where selective forces and food preparation practices have been in operation longer resulting in the smallest dentitions in this part of the world. The samples include one Mesolithic (three casts of crania from the Upper Cave at Zhoukoudian), three Neolithic, and six modern Chinese samples.

Wolpoff and colleagues present a lengthy review of the historical and some more recent paleoanthropological interpretations of the evidence from China and Australasia relevant to the origin of modern humans. The paper is largely theoretical and is curious for its lack of empirical data. Their major conclusion is that the transition to modern populations in Asia was a gradual process of indigenous derivation thus rejecting the rapid replacement (or punctuated model) and a major migration of modern populations from elsewhere into the region. They further
propose "sinking" the taxon, *H. erectus*, and further question a worldwide transition from an archaic to a modern grade of human evolution. Two of the same authors (Wolpoff and Thorne) have previously explained discontinuous morphological clades in Australasia by invoking the so-called, "multiregional hypothesis." This same hypothesis is here proposed to explain the morphological variability exhibited by East Asian populations. The hypothesis involves two separate stages; one that involves an initially genetically and morphologically impoverished founding population, which then undergoes subsequent adaptive changes in response to a particular geographical and environmental situation. The result is that the peripheral populations, like those in the north (China) and those in the south (Australia and Sunda Shelf populations), exhibit sharply divergent morphologies. Unfortunately, there is little in the way of fossil evidence to test the hypothesis due to the almost complete absence of Upper Pleistocene fossils from China. The authors suggest the same explanation is equally applicable to Europe.

Possibly to the despair of Asian specialists, the two papers on East Asia are perhaps the most disappointing of the volume. This is not necessarily the fault of the authors, but rather the meager skeletal record from this part of the world to examine the transition from *erectus* to *sapiens* or from archaic to modern *Homo sapiens*. The discussions of Upper Pleistocene fossils from Europe, Western Asia, and Africa are much more substantive.

Although a major consensus on the origins of anatomically modern *Homo sapiens* is not reached among the authors represented in this volume, these papers do demonstrate that substantial progress has been made toward understanding this late stage of human evolution and for this reason alone it is a most welcomed addition.

Some of the photographic reproductions of fossil material are of poor quality. While a thick volume, the price of the cloth bound edition is rather excessive.


Reviewed by Michael Pietrusewsky, University of Hawaii-Manoa

The 21 papers presented in this edited volume resulted from a symposium held in Amsterdam on 23–25 April 1981, organized by the editors at the request of the First Intercongress of the International Union of Anthropological and Ethnological Sciences. Recognizing a need to refine multivariate statistical techniques, which are now in wide use in physical anthropology, these papers are devoted to the new methodology developed in recent years and to the practical application of these techniques to problems in physical anthropology. A total of 26 contributors, not all in attendance at the symposium, from the United States, Western Europe and Australia are represented.

The suite of papers exposes anthropologists to some of the newer methodology and the limitations and potential uses of mathematical models and methods. It also exposes the more mathematically inclined to a variety of biological problems encountered in physical anthropology. While not free of its blindspots, the traditionally long-standing association between physical anthropologists and statisticians has been a fruitful one. The present volume is a reflection of some of these current connections, which will hope-
fully inspire further uses in the years to follow.

Some of the papers dwell more on the refinement of technique and some of the shortcomings of applying multivariate procedures, while others provide detailed examples of more practical applications of these improved methods, many of which are devoted to studies of fossil hominids.

The volume opens with a richly informative introduction by W. W. Howells, which provides a brief history of multivariate statistics as they specifically apply to physical anthropology, a general outline of the scope and nature of the these studies, and some of the problems encountered in their application. R. S. Corruccini's paper raises one fairly specific point of attributing biological significance to linear discriminant functions. The paper by J. C. Gower and P. G. N. Digby examines generalized distances generated from different subsets of data recorded on identical populations. Methods for dealing with missing data are discussed in W. H. V. de Goede's paper while C. R. Rao discusses some of the theoretical and practical considerations in the choice of genetic measures of distance. The paper by M. Finnegan and R. M. Rubison addresses the problem of classifying a single cranium or skeleton into one of several known populations using non-metric traits of the skull.

Several papers deal with familial studies of anthropometric and osteological characters. C. Susanne, for example, explores the environmental/genetic component of certain anthropometric variables through generalized distance, while T. Sjovold reports on the recent results of his hereditability studies of some metric and nonmetric cranial variables using material of known identity and familial relationship from Hallstatt, Austria. The stability of nonmetric traits over time using similarly well provenanced crania from Portugal is examined by J.-P. Bocquet-Appel.

A number of papers introduce new refinements and illustrate their application by using fossil hominid material. Examples of these latter include E. Defrise-Gussenhouven and R. Orban-Segebarth's study of modern and fossil hominid femora and A. W. Amberger and W. Schaafsma's use of posterior probability scores to assign individual specimens like the Border Cave cranium. Four of the papers, ones authored by G. N. van Vark, A. Bilsborough, D. W. Read, and N. A. Campbell likewise introduce refinements of methodology and apply them to problems of individual assignment of fossil hominids and for interpreting the fossil record.

More cautionary and conceptual papers are those provided by G. Rhoads and S. R. Wilson. A paper by C. E. Oxnard addresses the question of sexual dimorphism in primates, while J. Hiernaux's paper is more concerned with ecology and morphological variables in central African populations. A review of cluster analysis, its history of use and application in physical anthropology is given in a two-part paper by F. W. Wilmink and H. T. Uyttershout. Finally, I. Schwidetzky stresses the importance of maintaining reliable data repositories like those found in Mainz and Geneva.

The present volume, attractive in layout, provides a solid foundation for reviewing the current state of development of multivariate statistics in physical anthropology. Many of the papers make substantial contributions to the refinement of technique in multivariate statistics, and for this reason alone, will be welcomed by physical anthropologists and statisticians alike. Other papers provide important insights into understanding the fossil hominid record and how multivariate procedures help us to understand more about the heritability of cranio/mineral traits, ecology, and the processes of evolution.

The statistically-minded and biologically-inclined readership of Asian Perspectives will particularly benefit from the contents of this well-conceived volume edited by two of the leading figures in the development and use of multivariate statistical methods in physical anthropology. One negative criticism is the rather steep price for the cloth bound edition.
**Between Plateau and Plain: Flexible Responses to Varied Environments in Southwestern Australia.** June Anderson. Occasional Papers in Prehistory 4, Department of Prehistory, Research School of Pacific Studies, Australian National University, Canberra. N.D. vi + 44 pp., 10 figs., bibliography. (paperbound)

Reviewed by RICHARD A. GOULD, Brown University

This brief monograph represents an example of a new style of archaeological reporting in Australia that is intended to impart scholarly goals and elements of research design to research done under contract to a public agency—in this case, as part of an inundation study for the Perth Metropolitan Water Authority, Western Australia. Such efforts are already well known to archaeologists in the United States, although, as in Australia, these contract reports are not always published. It also represents an important “first cut” at surveying and describing an area of Australia that has generally been underreported and where the publication of primary archaeological evidence is especially welcome.

The survey described in this monograph covers an area in the vicinity of Perth, Western Australia, encompassing three principal habitats—the Swan Coastal Plain, the sloping escarpment to the east and southeast called the Darling Range, and the edge of the interior plateau at the top of the escarpment. As this reviewer knows from firsthand experience, this region places heavy demands upon anyone attempting systematic archaeological surveys because of the relatively small scale and ephemeral nature of evidence for Aboriginal human activity there. Much of the area, especially the Darling Range, is heavily covered with eucalypt vegetation and brush and presents serious problems of archaeological visibility. The fact that 20 sites were located and reported in the South Canning River area (within the Darling Range segment of the survey) is a tribute to the organized and systematic nature of this research.

On the Swan Coastal Plain the principal survey effort occurred in the vicinity of the Perth Airport, another area of heavy vegetational cover. The headwaters of the Avon River near Yealering were investigated in the plateau segment of the survey, which, when combined with the other studies, produced a transect from the plateau to the shore that extends considerably beyond the immediate limits to the area to be flooded by the proposed South Canning River Dam. This willingness to incorporate adjacent areas to that immediately affected by the proposed development reflects an important element of this kind of study, namely the need to attempt holistic rather than piecemeal interpretations of the region under impact by development. Archaeological studies that are confined to simple right-of-way or inundation-area research risk producing uncontrolled samples of data that cannot be related coherently into a wider picture of regional prehistory. Such narrowly-conceived studies in archaeological salvage have occurred many times in the United States and elsewhere and have sometimes been almost as destructive of the archaeological evidence as the development itself. In this context, it is heartening to see Anderson’s efforts to deal in an integrated way with this archaeological domain, and the further use of ecological and topographical units as controls in studies of this kind should be encouraged.

All of the sites discussed in the survey are open-air localities, subject to varying degrees and kinds of erosional disturbance and to the chronological constraints imposed upon surface deposits. Moreover, only lithic artifacts were preserved at these sites, and these were predominantly of quartz (especially in the Darling Range and plateau sites). As any lithic analyst knows, quartz is an exceedingly difficult material to study, since flaking patterns are hard to discern or measure. Thus, the stone artifacts in much of the survey area cannot be expected to produce much in the way of chronologically or culturally diagnostic features. Even on the coastal plain sites, where a wider variety of lithic raw materials...
was in use, it is difficult to go beyond a very basic classification of implements. Anderson, however, notes that aside from fossiliferous cherts, all of the lithic materials present in coastal plain sites must have been transported or traded in from beyond the Darling escarpment or from some other distant areas. Further surveys, with larger samples of lithic materials—especially worked items—should enable archaeologists in the future to move beyond these preliminary conclusions.

Given the basically ecological framework of this study, it would have been useful to see the author extend her ecosystemic reasoning more firmly into the archaeological analysis, even if only on a trial basis. A closer treatment of plant and animal resources in the three different habitats under discussion in relation to such middle-level ecological theories as the principle of edges or optimal foraging would have been appropriate and could be expected to produce more convincing results than the ethnohistorical analogues cited in the monograph. Fluidity of group composition and complex networks of kin ties are notable features of many traditional Aborigine societies besides the ones described ethnohistorically for this region. Behavior of this sort among hunter-gatherers in Australia, no less than anywhere else, needs to be explained rather than assumed or used as an explanation before it has itself been explained in relation to the adaptive requirements of the area. Anderson’s brief discussion of seasonality on pp. 30–32 suggests possibilities for explaining differential movements and aggregations of Aborigines in this region, but no systematic effort is made to analyze the relationships between such seasonal aggregation and disaggregation and such key questions as the enhancement of the food supply by means of mechanisms promoting optimal food procurement, such as fishweirs or other facilities, or risk-minimizing behavior during possible periods of dietary stress, such as long-distance kin sharing networks. Such analyses could be expected to bring the ecological and archaeological components of research programs closer together. They afford the opportunity for positing potential archaeological signatures that could be expected to result from particular ecosystemic relations.

My comments here are not intended to detract from what I regard as a substantial contribution to the literature on Australian archaeology, but are meant to show how the approach taken by this study could be extended as part of the basis for further work of this kind. Anderson has already shown us the value of an organized and holistic approach to contract-based studies in regional archaeology in Australia, and now the stage is set for more comprehensive, analytical treatments that will enlarge the data base and test its relevance to key concepts of hunter-gatherer adaptation at the same time.