

ents and ore distribution; pottery kilns and bronze casting furnaces; crucibles; master patterns, models, and molds; iron foundries and forges; and techniques and metals.

The essay is followed by a 132-page table of sites and remains and 23 distribution maps.

The table, which is printed in Chinese, provides "a classified index to the sources consulted of all sites [in China] that have yielded metal artifacts . . . of Han [206 B.C.–A.D. 220] or of earlier date" (p. xxi). It presents all the data the authors found in a search of Chinese archeological publications up to mid-1966. There are three indexes to the table. For those who can use it, the table furnishes the most comprehensive source to date of information on the metal objects found in China that can be dated earlier than A.D. 220.

Much essential information in the table also appears in the distribution maps, which are fully explained in English. The maps show the distribution of bronze artifacts (on separate maps according to such periods as Shang, Western Chou, Spring-and-Autumn, Warring-States, Western Han, and Eastern Han); of gold, silver, lead, and iron artifacts; and of types of artifacts such as horse-and-chariot fittings, swords, crossbow mechanisms, bronze ko halberds, belt hooks, mirrors, seals, and various bronze vessels. The maps are clearly drawn and fully explained. They supplement the table, and they can also stand on their own.

The distribution patterns that appear in the maps lend additional support to Barnard's original view. As he writes in his essay:

It will be seen from the Distribution Maps that 50 years of archaeological discovery in China covering nearly 440 site-areas which have yielded metal artifacts, results in distinct centrifugal patterns. . . . The metallurgical culture of ancient China has its earliest production centres grouped very closely together and datable probably from around 1850 B.C. From this nucleus the spread of the art of metallurgy and the dispersal of metal artifacts proceeded gradually over the period of two millennia embraced by our survey reaching the northern, western, and southern limits of modern China during Han times. . . . As to the source of stimulation which led to the commencement of metallurgy some time prior to Early Shang, there is no evidence, within the confines of modern China, which may be claimed to point towards an alien metallurgical civilization as the contributing party. On the contrary, all relevant data indicate, without any ambiguity, the presence of a highly advanced ceramic civilization in the Nuclear Area which sometime, and somehow, during the third millennium B.C. was to discover copper and tin and to produce bronze [p. 85].

This is a strong statement; however, it is based upon meticulous scholarship and generally impeccable data. There are still many unknowns and uncertainties in Barnard's story. He is aware of them, but he is not afraid of cautious speculation. For example, he suggests that, according to the patterns of change that can be inferred from the available bronze and pottery data, "the earliest casting of receptacles in bronze took the shapes that were later to evolve into the *Chüeh*- and *Chia*-wine-cups" (p. 7). The thesis is already beginning to be supported by new archeological evidence: two *chüeh*-cups of bronze were reportedly found at an Early Shang site in Yen-shih in the past year. Perhaps no student of the past can count on the good fortune of having every prediction proved true. But in the face of the mass of data painstakingly assembled by Barnard and Satō, one would be surprised indeed if archeological finds in the next decade or two were to fundamentally alter Barnard's thesis about the autochthonous origins of metallurgy in China.

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Harvard University,
Cambridge, Massachusetts 02138

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Psychologist. Ph.D. 1967. Teach and research in general, social, motivation-emotion, learning-conditioning, biopsychology, experimental methods. Publications with human and animal subjects. Seeks position in psychology department of medical school. Box 318, SCIENCE. X

POSITIONS WANTED

Marine Biologist. Ph.D. Expertise in marine invertebrate, poikilothermic and mammalian cell culture, virology, ecology, and electron microscopy. Teaching and research background, publications. Desires position teaching, research, or administration. Will relocate. Phone 201-635-7869. 16 Sussex Avenue, Chatham, New Jersey 07928. 8/26; 9/2

POSITIONS OPEN

ADMINISTRATIVE ASSISTANT. WAMI Program at Montana State University. Minimum qualifications: M.S. degree or equivalent; experience in student counseling and advising, basic knowledge of medical education, and understanding of health care systems. Desirable qualifications: teaching and research experience at university level, demonstrated effectiveness in dealing with students and faculty. Send curriculum vitae to: **Frank Newman, Director, WAMI Program, Montana State University, Bozeman, Montana 59715.** Deadline for applications is 15 September 1977. Starting date for the position will be 1 December 1977. *Montana State University is an Equal Opportunity/Affirmative Action Employer.*

ASSISTANT PROFESSOR. Developmental Anatomy. Baruch College—City University of New York. For 1 year only. Academic year 1977–78. Salary up to \$16,130. Ph.D. required. Specialist in developmental anatomy and vertebrate anatomy. Apply immediately to: **Dr. Morris Winokur, Chairman, Department of Natural Sciences, Bernard M. Baruch College, Box 349, 17 Lexington Ave., New York, N.Y. 10010.** *An Equal Opportunity/Affirmative Action Employer.*

Ph.D. in Quantitative Genetics and Biometrics at the **ASSISTANT PROFESSOR** level. Persons applying should be capable in multivariate statistics. Teaching duties will consist of courses at the graduate and undergraduate level. The position carries the possibility of tenure. Salary negotiable, based upon qualifications of applicants. Beginning date: 1 January 1978. Applications, including three letters of recommendation, a résumé, and transcripts should be submitted no later than 15 October 1977 to: **Dr. Robert Baker, Department of Biological Sciences, Texas Tech University, Lubbock, Texas 79409.** *Texas Tech University is an Equal Opportunity/Affirmative Action Employer.*

McMaster University, Department of Biology, anticipates appointing an **ASSISTANT PROFESSOR**, commencing 1 July 1978. The position is for a **QUANTITATIVE ANIMAL ECOLOGIST** preferably with experience in invertebrate ecology; Ph.D. is required. The preferred candidate should have a basic understanding of population biology and ecological genetics. Responsibilities include an introductory zoology course, senior undergraduate and graduate instruction and research. Present salary minimum: \$16,500. Applications with the names of at least two referees should be sent as soon as possible to: **Dr. D. M. Davies, Department of Biology, McMaster University, 1280 Main Street West, Hamilton, Ontario, Canada L8S 4K1.**

University of California, Irvine, Department of Pathology, recruiting for faculty position at **ASSOCIATE PROFESSOR** level. Required: M.D., Ph.D. biochemistry/biophysics, clinical board qualified, service experience in clinical chemistry, demonstrated interest in independent research. Duties: teach medical students and house staff, limited administrative responsibility in area of clinical chemistry. *All qualified candidates welcome: minorities and women encouraged to apply.* Send curriculum vitae and references to: **Edward R. Arquilla, M.D., University of California, Irvine, Calif. 92717,** by 15 September 1977.

ONCOLOGY RESEARCH CENTER BOWMAN GRAY SCHOOL OF MEDICINE WAKE FOREST UNIVERSITY

Applications are invited for two positions in tumor immunology (**ASSOCIATE AND ASSISTANT PROFESSOR**). Candidates should be established investigators and capable of developing their own program. There will be opportunities for basic science and clinical interdisciplinary research activities.

Dr. Charles L. Spurr, Director ORC; Dr. Quentin Myrvik, Professor and Chairman, Department of Microbiology, 300 South Hawthorne Road, Winston-Salem, N.C. 27103. *An AA and EOE.*