

they are heavily concentrated in teaching, nursing, and social work and extremely underrepresented in some fields, for example, medicine and law.

This slim volume by a black professor of psychiatry at the Medical College of Cornell University is concerned primarily with how to increase the number and quality of blacks in the nation's medical schools. A brief but informative introductory chapter on the history of Negroes in medicine and an equally brief final chapter expressing hope that black medical graduates will serve more than the black community reflect the author's strong commitment to a totally desegregated, integrated system of both medical education and health care. The several intervening chapters examine the current upsurge in black medical enrollments (they tripled between 1968 and 1970) and ways of producing more qualified black applicants and successful black medical students. The author draws on his work with black high school students in New York City and with the Cornell medical center's program to admit additional blacks. There are, of course, dozens of serious new efforts by colleges and medical schools across the nation to help more blacks prepare for and complete medical school.

Part of Curtis's favored prescription for producing more black medical graduates is "to identify those [elementary, secondary] students who are high achievers as early as possible, to arrange for their orderly transfer into the strongest possible schools in whatever neighborhoods those schools are located." He is hard on compensatory education and on concern for "high risk" students. He can also be stuffy, as when he is critical of a California college whose minority group admissions included school dropouts with police records, C averages, and no previously professed interest in college. "It should not require extended comment for me to point out," he says, "that such students would be unsuitable candidates for the medical profession."

Curtis will attract most attention, and I suspect sharp disagreement from many blacks, with his views about the role in medical education of what he still regards as the "segregated" black colleges and black medical schools at Meharry and Howard. Since Meharry and Howard do not have resources for expansion, he sees no prospects of their gaining parity with leading medical

schools; his solution for them is vague but appears to rest in their further integration. He also thinks that blacks interested in medicine are best advised to avoid the black undergraduate college. "Rather than attempting to upgrade the black schools and their programs, it would be more effective to open wider the doors of the predominantly white colleges at undergraduate and medical school levels."

Certainly substantially more integration in higher education is imperative and will serve, for one thing, to increase the numbers of blacks in many important fields. But Curtis underestimates the role the historically black institution can play. One is also disappointed that he shows no more insight into the crucial importance at this time of the black college in a society that must be increasingly viewed as multicultural.

DeCosta and Bowles, in their skillful analysis of black colleges and education for the professions (*Between Two Worlds: A Profile of Negro Higher Education*, McGraw-Hill, 1971), note that preparation for prestigious professions is a new charge for the traditionally black colleges. The fact that they have not opened such professions to a large proportion of their graduates means that they have not had time to do so, not that they are incapable of doing so, given adequate resources. Indeed, some of them are beginning to send more graduates to medical school.

Nonetheless, in the long run the entry of truly representative numbers of blacks into medicine and all fields requiring advanced education and skills depends on substantially greater enrollments of blacks in postsecondary education. Equality of higher educational opportunity for blacks is a new commitment that requires full utilization of all kinds of institutions—junior colleges, senior colleges, and graduate and professional institutions, the traditionally black as well as the white. The yield from that commitment is already beginning and can become a steady flow of blacks into all phases of American life. But it will depend in part on the capacity of organized professions and higher education to adapt traditional educational forms and programs to the actual needs of students, many bearing the lingering scars of long years of deprivation.

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Peruvian Culture

Dumbarton Oaks Conference on Chavín. Washington, D.C., Oct. 1968. ELIZABETH P. BENSON, Ed. Dumbarton Oaks Research Library and Collection, Washington, 1971. x, 124 pp., illus. \$6.

Like its Dumbarton Oaks conference predecessor on the Olmec, this little volume makes a very definite contribution. Chavín is the name given to the earliest great art style and civilization in Peru, and its place within the culture history of that area prompts many analogies with Olmec in Mesoamerica. Both Chavín and Olmec date from the beginning of the first millennium B.C., and it is even possible that they are in some way remotely related; however, the developments of each are separate area concerns.

There are five papers, by five authors, in the volume. Those by Lumbreras and Izumi are factual in importance. Lumbreras has found magnificent Chavín style pottery in the deep galleries of the temple complex of Chavín de Huantar. Previously, it has been something of a mystery why the finest Chavín pottery came from the Peruvian north coast rather than the highland type site. Lumbreras offers a four-subphase seriation of the pottery which is convincing in general outline, but more refinement is obviously needed. Izumi recapitulates much that has been offered in earlier monographic presentations on Kotosh; however, this article brings us up to date on the pre-ceramic Mito phase at that site.

Patterson and Lathrap are concerned with the context of Chavín culture or influence. Patterson goes about this by examining a series of pre-Chavín-to-Chavín events at several sites in central Peru. Here the reader must pay close attention, for the author uses the Rowe chronology in the strictest sense so that some Chavín influences are seen to trickle into certain central coastal sites in the latter part of the Initial Period; only with the full force of Chavín diffusion do we reach the Early Horizon. Patterson draws a most interesting analogy here with the spread of early Christianity in the Old World. Its archeological evidences in the first three centuries of its propagation were slight. These tended to be found in urban locations. Only later was the new religion memorialized in art and architecture.

Lathrap argues for the close relationship of Initial Period Waira-jirca, the

earliest pottery at the Kotosh site, to that of Upper Amazonian Tutishcainyo; and he sees both Tutishcainyo and Waira-jirca as linked to Ecuadorian coastal Valdivia, although all with ultimate origins in the Amazonian Basin. He also sees Andean and Chavinoid elements in his later Amazonian Shashimu culture. It would be his interpretation that the general currents of influence were first running from the Upper Amazonian cultures to the Andes and then, after the rise of Chavín, from the Andes down to the jungle regions. Whether one accepts all of Lathrap's directions of influence and points of origin, he has established his central thesis, which is that between 2000 and 500 B.C. the Peruvian Andes and the Upper Amazon were in the same "interaction sphere."

John Rowe's paper is in the combined art-historical-anthropological tradition which he has followed so well. He discusses the two kinds of artistic continuities which he conceives of for Peru: archaisms and persistent conventions. The first includes those Moche vessels which in shape and color are obviously a part of Moche culture but which bear unmistakable Chavín designs. It is hard to quarrel with Rowe's reasoning that the makers of these particular pieces had much earlier Chavín specimens at hand as models. He also makes the same case for some Middle Horizon vessels and for a Chimú piece. Persistent convention, on the other hand, is another kind of process. It is seen in the Huari-Tiahuanaco retention of certain Chavín conventionalizations in art, such as the "staff-god pose." Here, the probabilities favor some kind of cultural continuity, as yet untraced but perhaps via chronologically intermediate Paracas and Pucara styles.

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Astronomical Activities

The Harvard College Observatory. The First Four Directorships, 1839-1919. Bessie Zaban Jones and Lyle Gifford Boyd. Belknap (Harvard University Press), Cambridge, Mass., 1971. xvi, 496 pp., illus. \$15.

Unlike older-style institutional histories which solemnly report statutes, donations, and formal justifications, this fascinating book is about people. A

coherent history spiced with well-chosen and marvelously told anecdotes, gleaned from the archives of the Harvard College Observatory, it illustrates the daily, very human activities behind the scientific observations and discoveries.

What was involved in the establishment of an astronomical facility in early 19th-century America? When appointed Astronomical Observer to the University in 1839 William Cranch Bond was given a house in Cambridge—but no salary, no observatory, precious few instruments, no assistants, and no students. (Flamsteed, the first Astronomer Royal, was provided with an observatory at Greenwich and a small salary, but no instruments.)

Although Alvan Clark in Cambridgeport ground beautiful lenses, precision instruments still had to be ordered from abroad. In January 1869, the London instrument maker William Simms wrote to Joseph Winlock at Harvard that his new meridian circle was "completed"; the following June he reported it "nearly finished"; the instrument arrived in Cambridge in the summer of 1870. Winlock's great spectroscope ordered from John Browning in London never arrived.

Astronomers exhibited surprising ingenuity in their search for support for their researches. Edward C. Pickering, the highly talented fund raiser who in 25 years increased the Observatory's endowment from less than \$200,000 to over \$900,000, found it worthwhile to sell the grass cut from the Observatory grounds for \$30 a year.

Harvard astronomers had their share of scholarly squabbles. Pickering's method of measuring magnitudes differed from that used by Pritchard at Oxford. When the Royal Astronomical Society awarded its gold medal jointly to the two men, Pickering hesitated to accept, lest his action be construed as an endorsement of Pritchard's method.

What was the relation of a research institute to its parent university? Although the Observatory was part of Harvard, and the astronomers were known as professors, not until 1887 was university credit given for observatory work.

To what extent did donors understand the work they supported? Unlike Charles Yerkes and James Lick, for whom the purpose of large telescopes was to ensure social acceptance now and immortality later, Mary Anna Palmer Draper and Catherine Wolfe Bruce tried to support work rather than mon-

uments. Pickering wrote frequently to Mrs. Draper, detailing the progress of the Henry Draper catalog of star spectra. Guided by Pickering, Miss Bruce provided funds for small but worthwhile projects—Charles A. Young at Princeton wrote that with \$500 he could pay an assistant's salary and restore to usefulness \$100,000 worth of idle equipment—in addition to money for expensive, experimental telescopes.

The hazards involved in directing research from afar were many. Edward Pickering's extensive plans for collecting photographic spectra of the southern stars were delayed for months when, alone in Arequipa with various large telescopes, his brother William chose to observe Mars instead.

With ambitious plans and limited funds the Harvard astronomers were eager to get the most work for their money. Realizing that much of the routine work of an observatory usually done by trained astronomers could just as well be done by bright assistants, Pickering hired women at 25¢ an hour to reduce observations, measure photographic plates, and classify stellar spectra. Most of these women, with little or no previous training, proved immensely valuable. Antonia C. Maury, one of the few college-educated women at the observatory, found the work stultifying.

Through details like these the authors of this book build up a picture of the complexities and diversity of scientific life. Rather than leaping from observation to insight to public recognition they explore the problems of establishing, directing, and using a great research facility.

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A History of Oceanography

Scientists and the Sea, 1650-1900. A Study of Marine Science. MARGARET DEACON. Academic Press, New York, 1971. xvi, 446 pp., illus. \$16.

Oceanography has long needed a comprehensive history by someone who understood the significance of findings in the diverse disciplines utilized by questioning men who have sought to understand the sea and its processes. Perhaps such a comprehensive treatment is too much to hope for; this work (by the daughter of Britain's present grand old man of oceanogra-