

does. He has an obligation to examine both the evidence that is available and the premises that lead some people to different conclusions from his own. At times he may feel that he must cry out in moral outrage. But he must recognize that his moral outrage will not win others to his point of view unless he can demonstrate that his own premises are valid and that the evidence he has mobilized is compelling.

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## Ancient Peru

**Peru before the Incas.** EDWARD P. LANNING. Prentice-Hall, Englewood Cliffs, N.J., 1967. viii + 216 pp., illus. Cloth, \$5.95; paper, \$2.95.

Lanning's book is the fourth general work on the archeology of Peru to appear within the last decade. There has been a great deal of activity in Peruvian archeology during this time, and Lanning has been responsible for much of it. He has spent four years in the field and has contributed much new knowledge and familiarized himself with the work of others, a good deal of which has not yet been published. He is certainly one of the best informed of Peruvianists, having not only worked in traditional archeological ways but also engaged in less usual ecological studies that help to explain many of his new finds. These have been mainly, but by no means exclusively, in the preceramic periods that have been coming to light recently as a result of increasing interest in the origins of Central Andean agriculture and pottery.

*Peru before the Incas* is the most up-to-date of the general books and is the first to use John H. Rowe's classification of Peruvian culture history by time periods rather than by cultural stages, such as, for example, the late Wendell Bennett's Early Farmers, Cultists, Master Craftsmen, and so on. Rowe's periods seem to have been adopted by almost all the active, younger Peruvianists, in no small measure because a large majority of such scholars were trained by Rowe at Berkeley or by Rowe's students, including Lanning.

I think the most important and exciting new material that Lanning contributes is that derived from his work on the central coast. Here, not far north of Lima, he and his colleagues have established a long chronology of pre-

ceramic periods dating from perhaps as long ago as 10,000 B.C. or even earlier. He presents six such periods, based in part on stratigraphy but mostly on the seriation of stone tools. These periods are correlated with climatic changes and culminate with the introduction of pottery at about 1800 B.C. in some places. Agriculture appears in a small way in the penultimate Preceramic V period. This is all new, as far as general books are concerned. Lanning's chronology represents the first apparently unbroken sequence from a very early hunting and gathering stage to developed agriculture based on irrigation and Peruvian civilization.

The rest of the book deals with more familiar aspects of Peruvian life and, the title notwithstanding, includes a very good summary of Inca history and culture. I have only one bone to pick with Lanning. That is his use of the word "Empire" in connection with the spread of influences, as evidenced by art styles from Tiahuanaco and Wari. I do not think that the archeological evidence justifies this terminology, as it so amply does for the Inca Empire.

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## A National Architecture

**Canada Builds. 1867-1967.** T. RITCHIE and the staff of the Building Research Division, National Research Council of Canada. University of Toronto Press, Toronto, 1967. x + 331 pp., illus. \$12.50.

The author of this pioneer history of the building arts in Canada has succeeded remarkably well in presenting what would seem to be an unmanageably large subject. As associate research officer in the Division of Building Research at Ottawa he has a professional knowledge of structural materials and techniques, to which he has added a good grasp of both the history and the geography of Canadian building. The vast area of the country alone offers the historian formidable problems: we need to recall that the relatively narrow strip of French-English Canada extends across six time zones, from the Atlantic outpost of North America at St. John's, Newfoundland, to Prince Rupert, British Columbia, at the southern tip of Alaska. The physiographic and geological features include nearly the entire range of continental forms. Moreover, in large wilderness areas settled

mainly during the past three centuries—Canada, Australia, the United States, and the Soviet Union are virtually alone in this category—the entire development of building, from its Neolithic origins to its present-day metropolitan character, was recapitulated over and over again as the colonists moved steadily inland from the points of original settlement.

Ritchie's method is to tell his story several times, each section treating a different aspect of the complex building art and its associated industries. The first account, following an introductory section on the construction of the Parliament group at Ottawa, presents building in terms of its socioeconomic history and its spread from east to west (the directional movement and the chronological development are exactly parallel in Canada). The second is analytical, concerned with materials and their associated structural and manufacturing techniques; this is followed by two brief chapters on community development and the various stylistic phases of Canadian architecture. The text is supplemented by about 540 expertly printed plates, most of which are photographs, the balance including drawings and early maps. Ritchie's various chapters are literate, readable, and, except for a sprinkling of errors in his references to building in the United States, are thoroughly reliable.

In spite of his somewhat confusing way of splitting a unified cultural process into separate parts, the author's text and illustrations together make it possible for the reader to grasp the essential features of the totality of Canadian building. For all the geographical diversity of the land, construction and architectural style in Canada exhibit much greater homogeneity than in the United States. One is struck, as a matter of fact, by the persistence of eastern forms throughout the Prairie region and the mountain and coastal West. The French framing technique known as *pièce-sur-pièce*, for example, reappears in Manitoba and Saskatchewan as the Red River or Manitoba frame. The French tradition, as we might expect, had a far greater influence on Canadian building than on that of the United States, where the French building of the Mississippi Valley was rapidly obliterated by the westward movement of English-speaking people. In the periods preceding the establishment of the modern rail network and the new techniques of steel

and concrete framing, local availability of materials imposed great regional diversity on building forms, but this is not nearly so marked nor so extensive in Canada as in the United States.

The chief reason for these distinctions is that the northern nation did not experience the extreme geographical and cultural diversity of its southern neighbor. In the United States the colonies extended—to take the seasonal extremes—from cold and snowbound New England through the jungle marshes of the Gulf Coast to the aridity and burning heat of the Southwestern deserts. In Canada the hostile forms of the weather came in the form of a single enemy, namely, the long, relentless, killing winter. Many of the peculiarities of Canadian building, such as masonry cavity walls, seaweed insulation, stovewood construction, and wood sheathing on masonry, arose from the necessity of finding protection against the arctic cold. In the matter of cultural diversity, building in Canada developed primarily under the influence of two European traditions, the English and the French, with a minor mark left by Russian settlers in the West, who were unknown in the United States. By contrast, if one made a complete circuit through the area of the U.S. colonies one would successively discover the influences of English, Dutch, German, Swedish, Scotch-Irish, Spanish, French, and Indian traditions. They were all flourishing by the beginning of the 18th century, and they all left a lasting mark. Finally, of course, in Canada there was the unity of British rule, established in 1759, which was far more enlightened in dealing with the conditions of pioneer and gold-rush settlements than the vigilante savagery of the American West.

The regional differences have now disappeared from active building in every so-called developed nation, and Canada today stands in the front rank of world building, a fact which is overwhelmingly demonstrated by such brilliant achievements as Simon Fraser University in Vancouver, the City Hall of Toronto, and the great many-layered skyscraper core of Montreal. If I quarrel with the organization of Ritchie's book, my complaint is a minor one; he has written an admirable introductory work to an exciting and important subject.

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## Tumor Immunology

**Immunity, Cancer, and Chemotherapy.** Basic Relationships on the Cellular Level. A symposium. ENRICO MIHICH, Ed. Academic Press, New York, 1967. xxiv + 390 pp., illus. \$18.

This book deals with a "hot subject." It contains the proceedings of a symposium held in 1967 which covered topics in immunology, particularly immunosuppression and chemotherapy and their application to cancer therapy. Because of the recent escalation of knowledge and interest in problems of tumor immunology, this is a fascinating subject, and the book is interesting for many reasons. The conference was "interdisciplinary"; experts from various pertinent fields were brought together in the hope that meaningful exchanges of information and ideas would take place. Did they?

Interesting papers were given on the effects of immunosuppressive drugs on cellular changes after antigenic stimulation (Turk), on specialized cell function in the lymphoid and reticuloendothelial cell series (Ada), and on allogeneic inhibition (Hellström and Hellström). Good reviews were presented on cellular differentiation during immune responses (Clark) and tumor antigens (Prehn). Thoughtful contributions were made on immunosuppressive agents and the cellular kinetics of the immune response (Berenbaum), on the role of antigen (Uhr and Horibata), and on mammalian cell antigens (M. Schlesinger).

Many of these and other papers are compilations of information already published and no longer new. The material is well handled but already familiar, at least to workers in immunology. If we look to the discussions, do we see evidence of "cross-fertilization" taking place between the immunologists, pharmacologists, and oncologists? All too often the discussions are limited to small points of clarification and contention within the special field itself. [There are, however, interesting discussions about the significance of allogeneic inhibition and about alterations of immunity by antimetabolites (Schwartz).] One would have liked to hear far more from the experts about mechanisms of resistance and susceptibility to tumors and where our present knowledge and ignorance should lead us in the future. What are the most promising clues and the most frustrating obstacles?

In short, this report is interesting for

what it tells us about immunology, pharmacology, and oncology. It is disappointing in what it might have told us but didn't. As scientific subspecialists, we still talk too much to ourselves.

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## One Condition of Matter

**An Introduction to the Liquid State.** P. A. EGELSTAFF. Academic Press, New York, 1967. xvi + 236 pp., illus. \$10.

**The Liquid State.** J. A. PRYDE. Hillary House, New York, 1967. viii + 179 pp., illus. \$6. Hutchinson University Library.

Until about two or three years ago there were only two or three books dealing primarily with liquids from a molecular point of view. Reading the standard textbooks on statistical mechanics, students (physics students at least) must have concluded that the world is made up entirely of gases and crystals (either perfectly ideal or almost so). This situation has changed drastically in the last few years. The number of new books on the subject appears to be going up exponentially. In addition to the two books reviewed here I have also been asked (in the same week) to review two other books on this subject. It would be nice, if somewhat regrettable, if one could conclude from this that the properties of liquids are now as well understood, in principle at least, as those of gases or crystals. Actually, this is not the case. While much progress has been made in recent years, I for one feel that some key elements in the theory are still missing and that the subject is therefore still interesting to theorists.

The subject matter divides naturally into four parts obtained by forming all the pairs of words chosen one from each of the two categories Classical-Quantum and Equilibrium-Nonequilibrium. All of these are considered in the book by Egelstaff. There is of course much overlap between the parts, and in principle one ought to start with the nonequilibrium properties of a quantum fluid and obtain equilibrium and classical statistical mechanics as limiting cases. It is one of the strengths of Egelstaff's book that this point of view is brought out whenever possible, as in the discussion of neutron scattering. The other and, to me, chief virtue of the