extrapolate climatic sequences from phenomena observed in far-off Western Europe.

The senior authors draw a clear and coherent picture of cultural development in the area, from the assemblage of "pebble-tools, flake-tools, and Upper Acheulean type hand axes" which were still in vogue there "at the beginning of the Würm glaciation" or shortly before, through the following "Mousterian," "blade-tool," and microlithic industries down to the dawn of "incipient cultivation," which was heralded by the development of equipment for grinding grain and polishing stone celts and ornaments. They draw an interesting distinction between the "food gathering" procedures of "middle paleolithic" and the "food collecting" systems of "upper paleolithic" communities. They also note the presence of an apparent hiatus between the "era of incipient cultivation" and the emergence of "primary village-farming" communities; but they go on to show that this is only a gap in a demonstrable continuum, which can doubtless be filled by further excavations. What seems to me their most important conclusion is that "the transition to the food-producing" stage was not correlated with any "radical change in climate or fauna."

This is not an easy book to read, but it is invaluable for reference: no student of southwest Asian archeology can afford to pass it by. The maps are numerous and excellent, the illustrations good, and the presentation as a whole is highly satisfactory from the practical point of view.

LLOYD CABOT BRIGGS
Peabody Museum, Harvard University

On Motion and On Mechanics. Comprising *De Motu* (c. 1590) (translated with introduction and notes by I. E. Drabkin) and *De Meccaniche* (c. 1600) (translated with introduction and notes by Stillman Drake). Galileo Galilei. University of Wisconsin Press, Madison, 1960. 193 pp. $5.

The publication of these two early treatises by Galileo, well translated and helpfully annotated, and with fine introductions, is indeed welcome. Those whose knowledge of Galileo has been confined to the two major Dialogues and the papers which Stillman Drake has previously translated (in *Discoveries and Opinions of Galileo*) will find in these texts the methods and concepts later sharpened and clarified by Galileo in his more mature works. There is a sense in which Galileo's biography synopsizes the transition from the old science to the new. The *De Motu* comprises not only a series of arguments directed against various aspects of Aristotelian mechanics, but is itself Aristotelian in style. Although a scholastic impetus theory prevails and Galileo still speaks of natural and violent motions, the method of analysis of real motions, which he later employs more successfully, is there.

Galileo's tortuous arguments in these treatises are necessary for airing a number of questions ancillary to the development of "two new sciences," for the death pangs of old theories are also the birth pangs of the new. For example, to what and how will mathematics apply, and how can experiment be used to decide upon certain problems? Here we see Galileo groping toward the necessary deployment of mathematical idealizations and toward the application of what Mach calls a "principle of continuity," which are perhaps the most important prerequisites to a mathematical science of nature.

Among the more interesting chapters of the *De Motu* are those in which Galileo employs the logical analysis of time and continuity in refuting certain Aristotelian views on motion. These enable us to understand why, although Galileo held so many mistaken and confused views at this date on such matters as the behavior of bodies in free fall and on inclined planes, he was yet ultimately able to achieve so much. For the essential conceptual clarifications were to follow upon repeated applications of these early critical methods.

Of interest in the *De Meccaniche* is Galileo's use of incomplete inertial and conservation principles, prior to their articulation as principles, restricted though their application may be. On the whole, these texts reveal the thorny road which is scientific inquiry, of which we cannot be too often reminded. I recommend them to the general reader as well as to the historian and philosopher of science. We are indeed indebted to I. E. Drabkin and Stillman Drake for executing admirably a difficult and worthwhile task.

MARGULA RABINOWITZ
156 West Penn Street,
Philadelphia, Pennsylvania

Marine Biology. B. [sic] N. Nikitin, Ed. *Transactions* of the Institute of Oceanology, vol. 20, U.S.S.R. Academy of Sciences Press, Moscow, 1957. American Institute of Biological Sciences, Washington, D.C., 1960. 302 pp. Illus. Nonprofit libraries and AIBS members, $7.50; others, $10.

This is one of a series of works being translated and published by the American Institute of Biological Sciences, apparently on a trial basis. Since the *Transactions* of the Institute of Oceanology comprise the most comprehensive journal of oceanography published in the Soviet Union, it is fitting that one of the volumes should be selected for translation. Marine Biology is reproduced from clear, original, typewritten sheets, but lacks running heads. The translation is accurate, the illustrations are well reproduced, and the subject matter of this particular volume is an excellent sample of the sort of marine biological work being done in the Soviet Union. There are papers on bottom communities by such authors as Savilov, Turpaeva, and Sokolov; plankton is the subject of papers by Ponomareva and Beklemishev; there are systematic reports on mollusks by Filatova, on hyperiid amphipods by Vinogradov, and a number of papers by various authors on the age and growth of fishes.

The individual or librarian who picks up this volume 10 years from now will be somewhat puzzled. There is no indication of editorial responsibility (for the translation), and the title page implies that the volume is published directly in English in cooperation (perhaps) with the Academy of Sciences of the U.S.S.R. Nowhere is there any overt indication that this is a translation, and there is nothing to indicate who is responsible for the translation. There is no statement that this is an isolated volume, not part of an entire English series of this journal. Furthermore, it is not only translated, but it is rigorously transliterated; not a single letter of the Cyrillic alphabet has been left anywhere. As a result, there is nowhere any indication of the proper Russian spelling of the authors' names; most notably, on the title page the name of the editor should be V. N., not B. N., Nikitin. This was carried all the way through the references (which for some reason are numbered seriatim in the translation, although this was not done in the original) with the result