matics achievement; in the other 13-year-old population, the drop is from fourth to 11th place. Apparently, the entire text was written without knowledge of this error.

That these errors in Finland's data have markedly distorted many of the between-country correlations can be seen if one recomputes some of the coefficients, using the data in Table 2.2 and the corrected achievement mean for Finland. For example, in calculating by hand just a few trial coefficients, I found striking changes in magnitude and even reversals in sign. The Spearman rank-difference correlation between total mathematics achievement and "number of subjects taken in grade 12" changed from +.32 to −.10. Conversely, the correlation between total mathematics achievement and "student opportunity to learn all items" jumped from a modest .62 to a highly suggestive .95. As another consequence of the change in Finland's relative position, the tentative conclusion (vol. 2, p. 68) that late entry into school (age 7) may have a detrimental effect on mathematics achievement at age 13 is greatly strengthened. The 13-year-olds of the only two countries uniformly employing this later age of school entry (Finland and Sweden) show the lowest mean mathematics achievement.

In the interests of correcting any false impressions that might be created by the discussions based on these erroneous between-country correlations, the authors might want to consider recomputing the coefficients and distributing a revised presentation and interpretation of these findings.

The magnitude of the observed differences in performance between students in different countries is not trivial: for instance, the average 13-year-old student in Japan answered correctly nearly twice as many items (about 31) in the 70-item test as did the average 13-year-old in either the United States or Sweden (about 16 items each). If one assumes that the within-school sampling was random in each country and that these mean scores are therefore truly representative of national achievement levels in mathematics, what evidence does the study provide concerning the possible reasons for these differences? The simplest and perhaps most plausible explanation would seem to be that the countries varied considerably in the extent to which their curricula provided opportunities to learn the types of material covered in the test. We have already noted that the students' opportunity to learn the test material (as judged by their teachers) correlated very highly (.95) with between-country differences in mean achievement. The *within*-country correlations between these variables were consistently positive (median $r = .19$), although the range among countries was from nonsignificance to more than .50. It seems likely that the nonsignificant correlations in certain countries can be explained by the relative homogeneity of the mathematics curriculum within these countries. If the causal relations implied here can be accepted, an important task for curriculum experts in this and other low-scoring countries is to determine whether this apparent lack of fit between the test questions and the student's opportunity to learn this type of material is a fault of the curriculum or of the test. If the test questions can be accepted as an appropriate and reasonably representative sample of tasks in modern mathematics, then this may be one situation where "teaching for the test" makes good sense.

Considering that more than 130,000 students, 13,000 teachers, and 5000 schools from the 12 countries participated, this project stands as a major technical and, perhaps, diplomatic achievement. The educational and scientific value of the findings is much less clear, however, because the method used was not entirely adequate to the job. It can only be hoped that the planners of the next large-scale international study, which is scheduled to begin in 1968, will most seriously consider the advantages of using a longitudinal design.

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Social Change in a Philippine People

Mountain Arbiters. The Changing Life of a Philippine Hill People. EDWARD P. DOZIER. University of Arizona Press, Tucson, 1966. 319 pp., illus. $10.

Dozier's book is a significant and timely statement concerning an ethnographic area and a set of theoretical problems that have become important in anthropology since the early 1950's. Kalinga society of northern Luzon was last described in a major publication by Roy Barton, whose posthumous work *The Kalinga: Their Institutions and Custom Law* (University of Chicago Press, 1949) is now a classic. Dozier's book places Barton's treatment in broader ethnological perspective by comparing the social organization of the Kalinga with those of other well-known Mountain Province groups and of lowland societies that have been studied only in the two decades since World War II. The author presents an outline of social change using historical and economic controls within the period the Kalinga have been known as an entity to outside observers. Although some Philippinists may cavil at such a comprehensive treatment as this based on a relatively brief period of field research, the problems Dozier attacks and the framework within which he attacks them should provide grounds for much worthwhile research and discussion.

Qualified, first-rate anthropologists have been slow to publish books (although not articles) on their findings about Philippine societies. Almost since the beginning of the American period, at the start of the century, a small group of anthropologists—headed by H. Otley Beyer and Fay-Cooper Cole (who died in 1966 and 1961 respectively) in the early days, by Fred Eggan and the late Felix Keesing from the '30's on, and by Robert Fox and Harold Conklin since World War II—has been working away in relative obscurity on Philippine materials. Until recently, the area has been overshadowed by the more "interesting" regions of Africa, the rest of Asia and Oceania, and Amerindia. Dozier's book marks a new period in this respect. Its publication comes at a time when much work has been accomplished and is about to be put into print (not only on so-called "pagans" like the Kalinga, but on the other 80 to 90 percent of the population as well), and when general interest in the Philippines has been rekindled by the events of 1966. Even though Dozier is a brash newcomer to the field of Philippine studies (he is an outstanding figure in the field of Amerind studies) and will suffer the displeasure of the old-timers, his attractive volume is doubly important because he has beaten the others to the draw and with his outsider's point of view has been able to see things and ask questions sure to jolt the more deeply involved. Moreover, he treats the Kalinga not as "primitives" but as a

society that is becoming actively enmeshed in the modern world.

The book will be difficult for the nonspecialist, but reading it will be extremely worthwhile nevertheless. If possible, it should be read along with Barton's monograph, which presents a different approach, detailing many aspects of Kalinga social organization which Dozier refers to superficially or treats as background material which the reader is assumed to know.

Dozier summarizes basic economic, demographic, and ethnographic details of contemporary Kalinga society and poses as the general purpose of the study an understanding of the "nature of social and cultural differences between those Kalinga who subsist primarily on wet rice and those who are predominantly dry rice cultivators." He gives us considerable detail on kinship, religious system, and the "peace pact" institution (important in what was formerly an area of headhunters). Throughout, he contrasts the social patterns of the Northern Kalinga, who at the time of his study in 1958 were still subsisting "largely on rice grown on hill and mountain sides by slash and burn techniques," with the Southern Kalinga, who have recently become predominantly wet-rice cultivators with a complicated system of irrigated terracing. His original hypothesis "postulated that important social and cultural differences would be correlated with differences in the basic economy. . . . Field work has demonstrated the validity of this hypothesis, but with certain reservations . . . differences between the two groups were also profoundly affected by historical circumstances"—the northerners by Spanish penetration, with its civil and religious administrative attributes, the southern group by close contact with the irrigated-rice cultivators of Bontoc and Ifugao.

The description and analysis Dozier presents of the functional differences between the two groups are worth serious consideration both by theorists in the various social sciences and by those actively committed to working with the peoples of Southeast Asia. They are based not on historical reconstructions of an isolated, homogeneous "folk" society, but on ethnographic realities observed by him in a fully contemporary society in dynamic interaction with mid-20th-century forces.

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Hormone Action

Endocrine Genetics. Proceedings of a symposium held in Cambridge, England, March 1966. S. G. SPICKETT and J. G. M. SHIRE, Eds. Cambridge University Press, New York, 1967. 341 pp., illus. $13.50. Memoirs of the Society for Endocrinology, No. 15.

This volume appears to represent an effort of the Society for Endocrinology (Great Britain) to place current research in endocrinology in the context of molecular biology. The conference began auspiciously with a discussion by Sidney Brenner, unfortunately presented in the volume only in abstract form. This is followed by a section of seven articles on the mechanism of action of hormones. Several points emerge from these presentations. First, the actual mechanism by which hormones produce their effects is a long way from being understood in even the most general way, and second, different hormones may act by very different mechanisms. Korner quite lucidly reviews the effect of insulin and growth hormone and concludes, "The messenger hypothesis set out to explain the mechanism of control of the kinds of enzymes produced in bacteria, not the amount of enzyme produced. It is true that the power of the messenger hypothesis hypnotized many into believing that all control including that of rate of protein synthesis, might be exercised at the genetic level, but soon evidence was produced to show that this was by no means always or even sometimes, the case."

If this view is not satisfactory, a few pages further on Karlson concludes that "hormones appear as general inducers and may be in higher organisms of far greater importance than substrates which are of primary importance to bacteria." Or as Kroeger wishes to phrase it, "At any rate it does not seem impossible that the unitary concept 'hormones act by regulating gene activities' may be in the near future expanded to encompass a second unitary concept 'they do so by changing intracellular ion concentrations.'" Perhaps considering all hormones together is misleading, for those that affect metamorphic changes (Karlson has studied ecdysone) may be very different indeed from those that are constantly present during the life of an animal (such as growth hormone or insulin).

The remaining two-thirds of the volume is concerned with hormones and the genetic process in a somewhat different way—namely, genetic control of hormone production. *Inter alia*, the interesting history of the congenital hormone deficiencies found in dwarf mice is presented by U. J. Lewis and A. Bartke. One of the most informative discussions (to me at least) was a summing up by J. M. Thoday of the use of genetics in physiologic studies. Thoday is distressed by the lack of specificity that is inherent in present models of hormone action. He also makes the very germane point that whereas bacterial molecular biology is a very sophisticated mixture of genetic and chemical arguments, investigation of hormone action seems rarely to employ any genetic methods.

As a review of the action of hormones, this volume is seriously incomplete. As a review (though somewhat incomplete) of the mechanisms by which hormones may affect genetic control of protein synthesis, and for some stimulating ideas of how genetic analysis may aid in the investigation of hormone action, it is worth reading.

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Fieldwork in Micronesia

The Archaeology of the Palau Islands. An Intensive Survey. DOUGLAS OSBORNE. Bernice P. Bishop Museum Bulletin 230. Bishop Museum Press, Honolulu, 1966. 509 pp., illus. Paper, $14.

This is essentially a compendium of archeological site descriptions in which an attempt has been made to order the sites historically on the basis of seriated sherd collections. As such, it stands as an exceedingly valuable contribution, especially for those future archeologists who wish to conduct problem-oriented excavations in the Palau Islands. Descriptions of archeological localities are adequate—at times even verbose. The fact that over 150 sites in this scattered island world were surveyed is remarkable, for the author was largely dependent upon unscheduled water transport.

Considering the general excellence of fieldwork, reportage, and pottery analysis, the range in quality of line illustrations is regrettable. The maps of islands are generally good, but site maps and drawings of architectural features are inexcusably crude and amateurish. Some have no scale at all, while others are cluttered with measure-