Book Reviews

Portraiture and Excavations

The Face Finder. M. M. GERASIMOV. Translated from the German edition (Guterslöh, 1968) by Alan Houghton Brodrick. Lippincott, Philadelphia, 1971. xxiv, 255 pp. + plates. $10.

The average man interested in the subject assumes that experts in forensic anthropology can get a scientifically accurate portrait from unidentified bones (*1*). The scientist, including the experts mentioned, remains skeptical. This book might lessen prejudice in each direction.

Gerasimov, prehistorian and dean of such experts, gives in chapter 3 elaborate but not precise directions for true flesh reconstruction. But in his descriptions and photographs of finding faces for many skulls, ranging from Broom's Sterkfontein australopithecine (Gerasimov calls her by her first name, *Plesianthropus*) and other prehistoric hominids to such historic figures as Timur, Ivan the Terrible, and the Tajik poet Rudagi, as well as victims of crimes, Gerasimov shows his sensitive artistic ability. Correspondences with portraits and photographs are convincing: his method works. It is the art of using standard thicknesses of flesh (*2*) plus judgments on things like nasal spine form, size, and direction and on muscle origin areas, plus artistic synthesizing—the same kind of repeatable judgment on morphological detail with which a radiologist reads a plate or a physical anthropologist recognizes from standardized criteria the sex, likely genetic background, biological age, body build, pathology, nutrition, and other biographical accidents of any skeleton. But though even a nonexpert can determine sex, for example, with 95 percent accuracy from a discriminant function of a half dozen measurements, Gerasimov offers his readers no such formulas. He assumes that they are either really expert or only casually interested.

It would have been most valuable to have Gerasimov's original additions to science, but he adds nothing of precision to the 1898 data of Kollmann and Büchly (*2*). He omits the word of Todd, of Krogman, and of Suzuki. Though he does mention understandingly Old World anthropologists and anatomists up into the 1940's he gives no bibliography. This is an indefensible omission understandable in terms of Russian isolation and the autobiographical approach. Likewise Gerasimov's extensive and interesting summaries of prehistory and paleoanthropology are dated. Brodrick, the prehistorian-translator, remedies this bit in his introduction. The double translations (Russian to German to English) are sometimes incorrect on crucial technical details: the anterior nasal spine, for example, is sometimes the tip (p. 55) or the point (pp. 54, 147), or spine and nasal bones even are reversed (p. 137), as the photograph of Timur shows. Other errors are Masquet for Mascré (p. xviii), muscle for fossa (p. 55), and arm instead of forearm (several times) in relation to Upper Paleolithic body proportions.

Gerasimov is a romantic and squeezes his science between two romantic slices: his childhood in Irkutsk, Siberia, and his excavating, ranging from Upper Paleolithic Mal'ta near Irkutsk to the 15th-century mausoleum of the Timurids in Samarkand. These delightful descriptions of how it felt to become an anthropologist operating between the Baltic, Black Sea, and Lake Baikal are art and not science, but they might turn a casual interest in anthropology into critical enthusiasm.

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References and Notes

1. In modern America I know of successful efforts only by W. M. Krogman, *The Human Skeleton in Forensic Medicine* (Thomas, Springfield, Ill., 1962), chapter 9; by Clyde C. Snow *et al.*, *Am. J. Phys. Anthrop.* n.s. **33**, 221–27 (1970); and by police artists (usually from flesh remnants also); none of these dozen or so restorations perfectly match photographs taken at younger ages, yet these and many examples of matching skull drawings against portraits do succeed.
2. J. Kollmann and W. Büchly, *Arch. Anthrop.* **25**, 329–59 (1898); also 39 other references cited by Krogman (*1*), who misspells Kollmann's name with one *n*.

Lunar Maps

The Times Atlas of the Moon. H. A. G. LEWIS, Ed. Times Newspapers, London, 1969 (U.S. distributor, Quadrangle, Chicago). xxxvii, 111 pp. $25.

That an atlas of the moon is appropriate for these times can hardly be denied. To quote from the jacket of the *Times Atlas*, "The early explorers venturing into unknown regions of the Earth knew nothing of the details of the territory they were to penetrate. Landings on the Moon could not be allowed to take place in so ill-prepared a fashion and no effort has been spared in the United States to provide the Apollo crews with the most detailed information on the terrain which Man's industry and ingenuity could devise."

The *Times Atlas* is a curious assortment of the materials prepared for the lunar exploration venture. The cover photograph was taken by the Apollo 8 astronauts, and pictures are included that record the Apollo 11—the first—lunar landing mission. In view of the inclusion of these much more recent materials, the reader may wonder why the maps of the far side and of the polar regions of the moon were compiled from the incomplete coverage provided by Lunar Orbiter missions 1 through 4. Use of only slightly later versions of the ACIC (Aeronautical Chart and Information Center, U.S. Air Force) charts, which were compiled with the aid of Orbiter 5 pictures, would have almost covered the polar and far-side regions and would have shown better topographic detail in many areas.

Basically, the book is an atlas of the 44 ACIC Lunar Aeronautical Charts covering the near side of the moon at a scale of 1:1,000,000 and prepared largely from earth-based telescopic photographs and observations. The charts are beautifully reproduced, as are the other maps and pictures in the atlas. However, the planning and conduct of the Apollo landing missions were based on a series of much more detailed maps at larger scales prepared from Lunar Orbiter data, and this fascinating group of maps is not represented except for a photomosaic of the Apollo 11 site on page xxxiii. Problems do arise from the trimming and rejoining of the original quadrangle charts to fit the page size of the atlas. Geographic names or parts of names are missing on some maps and duplicated on others. Nevertheless, it is very convenient to

have all the charts gathered together into one bound volume.

The introductory section is profusely illustrated and generally well done. It includes informative discussions of lunar physics, the history of lunar cartography, mapping techniques, the lunar landscape, and techniques of lunar flight. The origin of many geologic surface features is discussed, and part of a geologic map is shown, but the description is confused by the inclusion of some rarely used Russian stratigraphic names.

The atlas is a fine reproduction of the earth-based lunar map series and is therefore very useful. It would have been even more useful if Apollo landing site maps had been included. The introductory background information is most interesting and well illustrated, although the section on geological interpretation could have benefited from a heavier editorial hand.

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Environment and Evolution

Annual Review of Ecology and Systematics. Vol. 1. RICHARD F. JOHNSTON, PETER W. FRANK, and CHARLES D. MICHENER, Eds. Annual Reviews, Palo Alto, Calif., 1970. x, 406 pp., illus. $10.

It is a cliché that a systematist should also be an ecologist, or, conversely, that an ecologist should be also well versed in systematics. So it seems that the editors and the members of the editorial committee hardly need to justify their decision to publish this new series, the choice of its title, or the range of topics included in it.

In evaluating this first volume, one must remember two *raisons d'être* of review articles. The first is to enable researchers (and teachers) to absorb easily a vast amount of information that has not previously been organized in a logical fashion, or, if it has, that needs to be brought up to date. This sort of review is useful primarily in fast advancing fields, where, though the specialist is usually capable of glimpsing the forest, the generalist sees only the trees. Typically also this sort of review resembles a miniature textbook; in other words, it is rather dull but it ought to guide the uninitiated into an unfamiliar terrain by giving him numerous and unbiased bibliographical references. The second type of review is that which attempts to arrange a body of facts and ideas—be they few or many—around a novel theme in such a way as to open up vistas to specialists as well as to other workers. Typically this kind of review is less informative but more speculative, perhaps even boldly so, and makes good reading even if some of the hypotheses it contains may be only as lasting as sand castles.

Of the 15 papers in the book 7 fall in the first category and 5 in the second. Five of the "type 1" reviews should prove useful to their intended readers: Hull's impartial analysis of the dispute between the evolutionary, the phenetic, and the phylogenetic taxonomists; Crovello's guidelines to the study of character variation; Bourlière and Hadley's summary of the descriptive work being done on productivity of African savannas; Brown and Orians's methodical survey of the ways in which mobile animals space themselves out in relation to the availability of resources; and Clemens's overview of the mammalian lineages that appeared and diversified during the Mesozoic.

I found all five of the "type 2" essays thought-provoking, although they are uneven in freshness of outlook. Lewontin examines the levels at which natural selection acts (molecules, organelles, cells, gametes, individuals, and higher levels such as kin and population). He makes the point that selection may be at work in opposed ways at two or more levels, and emphasizes the correlation between purely ecological and genetical aspects of selection: little new here for the seasoned ecologist or systematist. Writing on pollination mechanisms in angiosperms, Stebbins is dogmatic in approach and sweeping in his conclusions, but he remains stimulating. He suggests several avenues for further studies, among them the significance of pollination of primitive angiosperms by beetles. To me, the most interesting papers of the book were those of Brock, of Enright, and of Harper, Lovell, and Moore. Brock's descriptions of high-temperature habitats cover some of the most intriguing aspects of these environments, including their origins, their evolutionary effects on living things, and the possibility that hot springs may be comparable to islands. In an original essay Enright tackles the problem of endogenous rhythms from an evolutionary angle in an effort to uncover the selective advantages of certain rhythms (circadian, tidal, lunar, annual) in ecological terms. Harper, Lovell, and Moore explore the variability in seed size and shape, then review the genetic basis for the observed patterns, before speculating on the possible adaptive properties of various seed sizes and shapes.

I wonder seriously whether the five papers not mentioned above ought to have been published at all (either they are not review papers, or they cover topics that needed no review, or they fail in their intended goals). Moreover, I believe that some of the other articles could more appropriately have been published in already existing, more general, journals and books that accept reviews, such as *Biological Reviews*, the *Quarterly Review of Biology*, *Advances in Ecological Research*, or *Evolutionary Biology*.

At this stage in the ecological and systematic game we possibly do need a medium for comprehensive reviews intended specifically for this joint audience. But for such a book to be really useful, the topics to be reviewed should be selected with utmost care to avoid duplication with material covered in other series, the manner of reviewing a given topic should be assessed before the author starts writing, and the articles retained for publication should meet a truly high standard. If future issues of *Annual Review of Ecology and Systematics* have fewer pages but a proportionately greater amount of worthwhile material than the first, then researchers in ecology and systematics might have at their disposal a valuable *instrument de travail.*

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Evaporites

Salt Deposits. Their Origin and Composition. O. BRAITSCH. Translated from the German edition (1962) by P. J. Burek and A. E. M. Nairn, in consultation with A. G. Herrmann and R. Evans. Springer-Verlag, New York, 1971. xiv, 300 pp., illus. $19.80. Minerals, Rocks and Inorganic Materials, vol. 4.

When Braitsch published his monograph in Germany in 1962, I was delighted to find it to be a lively, personal, and surprisingly open-minded treatment of marine evaporites. Since