Anthropology

Les Hommes Fossiles de la Pierre Tail-
lée (Paléolithique et Mésolithique).
Robert Jullien. Collection "L'Homme
et ses Origines." Boubée, Paris, 1965.
363 pp. Illus. F. 60.

This is a useful book although it
probably does not contain a great deal
that professional anthropologists will
find very novel or thought-provoking.
It is a sober and fact-filled work by a
Parisian anatomist, intended for a seri-
ous lay audience and for students; it
is lacking in dramatic pictorial "recon-
structions" of primeval man's bestial
features or his social life but has an
abundance of line drawings and photo-
graphs of fossils and a reasonably good
number of illustrations of the tools and
art of Paleolithic and Mesolithic man.
Topics such as prehistoric religion,
psychology, and art are discussed cau-
tiously, with the possibility of alternate
explanations of the scanty evidence
constantly underlined.

Several early chapters deal with the
Tertiary primates, the processes of
hominization, and the Quaternary back-
ground. Jullien sensibly does not put
all his protohominid evolutionary eggs
in one African basket, and he recom-
mends that southern Asia, particularly
the Siwalik region of India, should not
be underestimated. The fossil hominids
of the Pleistocene are classed in four
groups: the Australopithecines; the
Archanthropines (Pithecanthropus, Sin-
anthropus, Atlanthropus, and Mauer);
the Paleoanthropines (including the
Würm Neanderthals, and the pre-Würm
men such as Swanscombe, Fontéche-
vade, and others); and finally the Ne-
anthropines or *Homo sapiens fossilis*
of the Old and New Worlds. The speci-
mens within each group are described
in generous detail, along with discus-
sions of what is known of their cul-
tural activities.

Some criticisms of fact and of de-
sign might be made. The "Negroid"
features of the Grimaldi skeletons,
judging by Legoux's recent study, are
probably due simply to Verneau's
faulty reconstruction. One can legiti-
mately have doubts about the "Early
Perigordian" cultural associations of
the Combe-Capelle skeleton, consider-
ing the way it was excavated. A chap-
ter on the growth of the idea of pre-
history and the antiquity of man
would have been useful. There is a
complete lack of chronological tables

for the Pleistocene geological and cul-
tural stages discussed, and not enough
maps are provided.

Nevertheless, Jullien has done a
creditable job of presenting the basic
facts of hominid physical and cultural
evolution to a nonspecialist audience.
The volume might also be satisfactory
as an academic handbook, since finds
made as recently as 1964 are described.
The typically spare, rather formal style
of presentation may not be what Eng-
lish-speaking readers on this side of
the Atlantic are accustomed to in "pop-
ular" books on anthropology, but the
French can hardly be criticized for
preferring a more austere treatment.
The book is well bound and attractively
printed, as it should be for the price.

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Mathematical Analysis

Non-Linear Differential Equations. G.
Sansone and R. Contri. Translated
from the Italian by Ainsley H.
Diamond. Pergamon, London; Mac-
millan, New York, ed. 2, 1964. xiv
+ 536 pp. Illus. $15.

This book is concerned with the
mathematical analysis of certain ordi-
nary nonlinear differential equations.
The treatment throughout is rigorous
and remarkably clear, and it provides
for a systematic study of some im-
portant problems. It is not so much a
book on the theory of nonlinear equa-
tions as it is a detailed working out
of the theory in special circumstances.

An introductory chapter that in-
cludes a few traditional results on the
existence, uniqueness, extension, and
differentiability of solutions for arbi-
trary systems precedes five chapters
(400 pages) devoted solely to two-
dimensional systems. This is the most
complete treatment of these systems
published in any single volume and
includes many results heretofore avail-
able only in research journals. Singular
points of plane autonomous systems
are systematically investigated, begin-
ning with homogeneous equations of
arbitrary degree. These are followed
by detailed studies of analytic perturba-
tions, the problem of the center, the
singularities of Briot-Bouquet, geomet-
rical-topological qualitative theory of
limit sets, and limit cycles including

the Poincare-Bendixson theory and in-
dex theory, and finally nonanalytic per-
turbations.

Two chapters cover second-order
equations which represent either free
or forced oscillations of one-degree-of-
freedom systems. The main question
considered is that of the existence of
periodic solutions. Some consideration
is given to stability, particularly in
the forced oscillation case. Twenty-five
pages are devoted to the analysis of
the pendulum equation and somewhat
less space is devoted to van der Pol's
and Lienard's equation. Results of
Yoshizawa, Lefschetz, Levinson, Cart-
wright, Littlewood, Reuter, Antosie-
wicz, and Langenhop are presented in
detail. However, boundary value prob-
lems and methods of approximation,
per se, are not considered.

The book concludes with a chapter
on linear systems of arbitrary order
and a brief chapter on stability using
the direct (Liapunov second) method.

The volume is attractive, well writ-
ten, and carefully translated. Each
chapter is followed by an extensive
bibliography, which substantiates, ex-
tends, and in general relates to many
of the topics covered. This makes the
book valuable as a reference source
as well as appropriate for use as a
textbook for a graduate course in dif-
ferential equations.

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Point Set Topology and Analysis

Topological Spaces. H. J. Kowalsky.
Translated from the German edi-
tion (Stuttgart, 1961) by Jay E.
Strum. Academic Press, New York,
1964. viii + 288 pp. $9.75.

This is an interesting and well-orga-
nized introduction to that part of point
set topology which is most closely re-
lated to analysis. The dominant fea-
ture of the book is the use of filters
and the lattice of filters on a given set
to introduce topology and the elemen-
tary topological concepts. This use of
filters and the inclusion of such theo-
rems as those of Ascoli, Dini, and
Stone-Weierstrass indicate the leaning
that the book has toward analysis.

The book begins with some brief
statements concerning set theory and
lattices and a rather careful discussion

of filters and filter lattices. The definition of a topology is then presented as a natural product of a notion of convergence for filters. This is followed by a development in terms of filters of the separation axioms, certain elementary topological properties, and continuous transformations. A few selected topics are then developed rather thoroughly. There are embedding and compaction theorems, the theorems of R. L. Moore and Hahn-Mazurkiewicz on arc-wise connectivity and continuous curves, theorems concerning paracompactness and the metrization theorems of Bing and Nagata-Smirnov, and a quite general development of uniform spaces. The final chapter gives a limited introduction to topological algebra as an illustration of use of the previous topics.

A statement from the introduction characterizes one aspect of the book.

"They [filters] lend themselves to short, clear statements, and their use often allows us to write out proofs in formal symbolism." This brevity requires a short period of adaptation on the part of the reader.

As a text, *Topological Spaces* could best be used by students that have had some experience with analysis. There is a reasonable supply of exercises.

It must be pointed out that some errors occur in the English edition of the book, most of which are minor, but some are not (for example, the statement purported to be the Tietze Extension Theorem is false). Some people will view this as an asset from a pedagogical viewpoint, but for use as a reference, this is a definite detraction.

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Lectures on Immunology: A Teaching Aid

Immunology. An outline of basic principles, problems, and theories concerning the immunological behaviour of man and animals. David F. Gray. Elsevier, New York, 1965. xii + 154 pp. Illus. Paper, $2.95.

One who instructs in immunology faces a considerable pedagogical challenge. Even the good, highly interested student is likely to have unusual difficulty in coping with the material. He finds it complex, ambiguous, and obcure. This is the case not only because immunology is intrinsically so but also because it carries with it such a heavy freight of semantic confusion.

In this volume Gray has given us the series of tightly organized lectures that constitute his response to the challenge. On the whole, it is an excellent one.

The orientation is strongly epidemiologic, and as a consequence the origins of immunology are constantly on the reader's mind, perhaps at the expense of more recently developed facets. For example, only four pages are devoted to the mechanics of the precipitin reaction, and its value as a tool in solving biological problems is ignored.

On the other hand, the condensed and succinct treatment of host resistance, natural and acquired, is admirable

and immune responses detrimental to the host are well related to those that are beneficial, although the significance of reactions of the Arthus type is surely underestimated. Gray's discussion of the several theories of antibody production, including his own, is rewarding because the issues are clearly drawn and the process itself is treated as a specific instance of metabolic activity with many homologues throughout living systems.

At the end of each chapter there is a good itemized summary of its contents. In several instances, phenomena are interpreted by excellent word diagrams.

Immunology must be considered in terms of the lecture room where the student is presumably given the opportunity to clear up points of confusion by appropriate questions. It is not a textbook but rather a contribution of an adjunct lecturer which should prove particularly valuable to the instructor emphasizing the nonclinical areas of the discipline. The book is not in itself a complete account.

Gray has successfully minimized the number of terms to be mastered by retaining only those essential to basic understanding.

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The Atom and Its Nucleus

Classical Scientific Papers: Physics. Facsimile reproductions of famous scientific papers. With an introduction by Stephen Wright. Elsevier, New York, 1965. xx + 393 pp. Illus. $7.50.

As the title tells one *Classical Scientific Papers: Physics* is a collection of papers (21) each of which marked an important advance in our understanding of the nature of the atom and its nucleus. The papers are arranged in four groups—group 1, Radioactivity; group 2, The Atom; group 3, Further Developments; and group 4, Some Tools of the Trade. The editor has written a short introduction to each group, as well as an introduction to the book as a whole, to provide something of the setting in which the papers were written. The main criticism is that although each paper is itself interesting and important there is considerable overlap—for example, two papers by Geiger and Marsden and two by Chadwick. Rutherford is author or coauthor of seven. It would seem to me that a broader representation would have been desirable. One of Bohr's papers might better have been included. One might also feel that one of the original papers on x-ray diffraction is of more interest than Compton and Doan's "X-ray spectra from a ruled grating." But these are questions of taste. The facsimile reproduction may not be entirely successful in working the "excitement" and "magic" that is felt by the student who thumbs through the original journal to read the writings of the masters. But it is certainly more efficient to have this convenient collection.

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Note

In **The Worm Re-Turns: The Best from the Worm Runner's Digest** (Prentice-Hall, Englewood Cliffs, N.J., 1965. 182 pp., $3.95), edited by James V. McConnell, one can browse among such thoughtfully selected essays as Horace Miner's study of the well-known but little-understood North American Nacirema, Garrett Hardin's "The Last Canute," and James V. McConnell's "Learning Theory."