the radioactive particulate matter is not evenly distributed throughout the liver or spleen, but is concentrated in RE cells. Therefore, the dose of radiation absorbed by RE cells in these organs will be higher than in the case of uniform distribution (*5*). Furthermore, the claim of the earlier literature that there is a rapid regenerative tendency of the RE system based on qualitative histological observations appears not to be confirmed by more recent investigations in this laboratory.

The significant role of the RE system in serum globulin synthesis, antibody production, fat metabolism, infections, general resistance, etc., is fairly well established despite the fact that much more quantitative work is desirable. If one considers the RE system as being highly radiosensitive, it would appear to be a matter of great importance to point out at this time the danger of injecting intravenously radioactive colloids for diagnostic purposes in humans.

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Terminology of Atmospheric Shells

IT might be interesting, in view of the confusion now existing in the terminology of the various atmospheric shells, to indicate the system now employed by the Geophysics Research Directorate. This system considers that the atmosphere is divided into six "spheres" or shells, not necessarily either spherical or concentric. The approximate altitude ranges of these shells and the names of the dividing surfaces are shown in Table 1.

It should be noted that a "dividing surface" may have appreciable thickness and hence not be strictly a surface. In the case of the tropopause, for example, this thickness may be several kilometers and in the case of the chemopause it may, perhaps, be 10 km or more. Figure 1 diagrammatically portrays the nomenclature adopted.

TABLE 1

ATMOSPHERIC SUBDIVISIONS

Atmospheric region	Altitude (km)	Dividing surface*
Troposphere	0–11	Tropopause
Stratosphere	11–32	Stratopause
Chemosphere	32–80	Chemospause
Ionosphere	80–400	Ionopause
Mesosphere	400–1000	Mesopause
Exosphere	Above 1000	

* Between the shell concerned and the next higher shell.

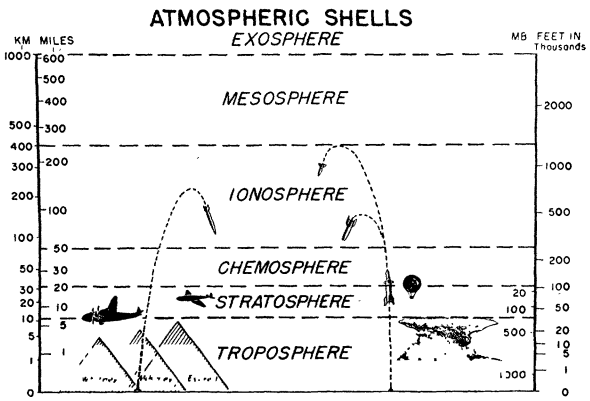

FIG. 1.

The various altitudes given represent mean conditions at middle latitudes.

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Book Reviews

Introduction to Organic Chemistry. Leland A. Underkofler. New York: D. Van Nostrand, 1953. 352 pp. $4.25.

Professor Underkofler's text is designed specifically for very short courses in organic chemistry and for students in colleges of agriculture, home economics, and nursing. As such, much of the detailed treatment considered desirable for science or chemistry majors is omitted. On the other hand, the book is not simply a descriptive exposition of well-known organic materials but includes discussions of carefully selected principles and practices of the science. The interested student will attain a working knowledge of structural chemistry, systematic nomenclature, and synthetic methods. Reaction mechanisms and the electronic concepts of valence and resonance are scarcely considered. Biochemical topics have been kept to a minimum since it is expected that they will be considered in subsequent courses.

Each chapter is concluded with an excellent set of questions and problems. There is an appendix listing organic type reactions and a satisfactory index. The type is large and easily legible and there are very few errors, technical or typographical. The book should prove very desirable for its intended uses.

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A Manual of the Chiggers. The biology, classification, distribution, and importance to man of the larvae of the family Trombiculidae (Acarina). Memoirs of the Entomological Society of Washington, No. 4. G. W. Wharton aided by H. S. Fuller. Washington, D. C.: Entomological Society, c/o U.S. National Museum, 1952. 185 pp. Illus. $6.00.

This book will be a valuable aid to the study of what is probably the least known of the important groups of arthropod pests and disease carriers. It contains sections on the public health importance of chiggers, behavior, life cycles and methods of culturing, anatomy, distribution, and ecology. There is a very extensive bibliography. The bulk of the book, however, is devoted to a catalogue of the known chiggers of the world, with keys to the level of genera and subgenera. Thus the book is not a manual in the usual sense, for no species could be identified with the aid of this work alone; however, it does provide a good general account of the chigger mites together with a most excellent guide to the literature of the world. Localities are given only to country in the catalogue. The usefulness of the work would have been vastly increased had locality data, especially type localities, been more thoroughly treated. This could have been done in only a little more space.

In a work of this scope much is necessarily the result of compilation. It should be pointed out, however, that considerable new material, mostly the result of ecological studies by Wharton and his associates, is included.

Errors are inevitable in a work of this scope. One may be mentioned. It is clearly an error that certain illustrations were credited to "Wharton *et al.,* 1951"; these were prepared and published by D. W. Jenkins and were properly credited to him in 1951. To me it seems unfortunate that, under "Collecting Methods," Lipovsky's washing technique, considered by many as the best way of obtaining chiggers from their hosts, is minimized.

Of far greater importance are criticisms having biological implications. The following comments concern not only this book but all recent American works on these mites, including those from the laboratory of the undersigned.

1. The scheme of terminology for some of the leg setae does violence to all concepts of homology and is likely to be misunderstood. Unbranched setae on the legs are given special names, such as mastitibiala and mastitarsala. The homologous setae, if branched, are not so designed. Thus if a couplet in a key should read "mastitarsala present" and "mastitarsala absent" it would really mean only that a certain seta is simple in the first instance, branched in the second, not that a certain seta is present or absent. It will be difficult to homologize all leg setae but at least we should avoid deceptive terminology. The use of expressions like "sensory setae" is also dubious, since probably all the setae have sensory functions.

2. Relationships are best indicated by considering the chiggers as one of the several subfamilies of Trombidiidae rather than singling them out for elevation to family rank merely because they happen to have received recent intensive study as parasites of vertebrates and as disease vectors. Wharton's subfamilies would then be called tribes of the subfamily Trombiculinae.

Such shortcomings as these result largely from our meager knowledge of the group and some of them could scarcely have been eliminated from a comprehensive work on chiggers at this time. The authors are to be congratulated on a very useful contribution.

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Scientific Book Register

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