words describing the health of a plant, so that such terms as "vigorous," "thrifty," "normal," "suppressed," etc., would have known relative values.

Table 1 is presented as an illustration of how relative terms on these subjects may be arranged. There is no contention that all the terms in the table are somewhat similar conditions. Furthermore, it would be known that the terms "sickly," "low vitality," "failing" and "weak" indicate a condition less favorable than that indicated by the above terms.

The writer will appreciate various opinions on this plan as well as suggestions on how it might be worked

TABLE 1

Abundant	Frequent many	Prevalent	Common normal average	Light scattered	Scarce few	Trace rare
luxuriant abundant	vigorous robust	strong thrifty good condition	normal healthy ordinary	declining suppressed impaired poor condition	sickly low vitality failing weak	dying deteriorating

appropriate to the subject or are properly placed. Such definite selection and placement must be based on a consensus of opinions.

If such relative values were established and used by all reporters on plant growth, for example, the readers would know that the terms "declining," "suppressed," "impaired" and "poor condition" indicate out. He is especially interested in learning how other writers would place the words used in the table. Examples of how descriptive words on other subjects might be arranged will be appreciated. If sufficient opinions are offered, the possibilities of arriving at a fair consensus of opinions may be indicated.

O. N. LIMING

SCIENTIFIC BOOKS

NUTRITION

The Science of Nutrition. By HENRY C. SHERMAN. xi + 253 pp. Columbia University Press. 1943. $2.75.

THIS book, written by a master in the field, is quite unique in its content. Not only does it attempt to present in a non-technical manner the general principles of nutrition, but the second half of the book is largely concerned with such chapters as "Are We Well Fed?," "The Nutritional Improvement of Life," "Nutrition for Realization of the Potentialities of Youth and of Maturity," "Nutritional Guidance for 'The Backward Art of Spending Money'" and "Nutrition Policy." It is concluded with a chapter dealing with "Scientific Critique of the 'Offer' of Higher Health and Longer Life." It is suggested in the preface that certain of the chapters which are heavy reading may be omitted without loss of understanding of the balance of the book; this may account for some amount of repetition.

The choice of title is unfortunate, for it is likely to be confused with the comprehensive text of the late Professor Graham Lusk of the same title. The treatise is logically written and well outlined; its manner of presentation should make it equally interesting to the trained nutritionist as well as to the uninitiated layman. The style and content are not sufficiently simple, however, to appeal to the uneducated man.

In discussing "Food as a fuel and body as a machine" (Chapter II), the author postulates that the excess of calories measured by direct calorimetry (0.25 per cent.) over those calculated by indirect calorimetry may be accounted for from the energy derived from light in causing an impulse in the optic nerve or resulting from the activation of vitamin D. However, from the reviewer's experience in this field, it would seem that the differences compiled by Armsby for experiments with dogs and herbivora (1,445,398 calories by direct; 1,441,691 calories by indirect) can best be explained as in the range of experimental error. As a criterion for overweight, Sherman cites the interesting case of Joe Louis, who, when in condition, would have been judged by ordinary standards too heavy for the Army or Navy. Specific gravity rather than absolute weight is a better measure and

> So by weighing him in water as well as in air, it was duly determined that Mr. Joe Louis was physically fit for service in the armed forces of the United States.

The historical discussion of the vitamins is especially well done. The author suggests that the layman should recognize "vitamine" as well as the present accepted spelling without the "e" and then proceeds to be inconsistent by spelling it both ways in later pages.

There is an interesting anecdote of the country doctor in the Virginia of the nineties who ordinarily made his rounds on horseback and who, like most people, was more or less troubled with rheumatism in the winter and spring. He ignored this until his joints became so sore that they troubled him in getting on his horse; "then he sucked lemons until the soreness of his joints went away." Later the author cites the work of Crandon and coworkers at the Har-

vard Medical School, where it was shown that a young adult may endure complete deprivation of vitamin C for long periods; it required two months before the ascorbic acid of the blood was reduced to zero, 134 days until clinical signs of scurvy were apparent, and more than five months (161 days) before distinct petechiae with retarded healing of an experimental wound were found. In the light of this information the recommendation on page 56 that,

> because of its labile nature . . ., we now believe it a good investment to include some significant source of this vitamin (C) in every meal, and to provide fruit or fruit juice instead of sweets if snacks are to be eaten between meals or before bedtime,

would seem to be very inconsistent and easily misunderstood by the laity.

One gets the impression that fortified oleomargarine is to be considered as an inferior fat to butter since the amount of vitamin A added approaches what may be considered "their share," which is "perhaps half as much as in good butter." The author neglects to explain that the level of 9,000 I.U. of vitamin A declared on the labels of various fortified margarines was set on the basis that this was the average vitamin A content of butters (good and poor). Unfortunately, the buyer has no way of knowing whether he is purchasing superior butter with 18,000 I.U. per pound or poor butter with 2,500 I.U. per pound.

In Chapter VIII on "How the Body Manages its Nutritional Resources" it is considered that one should not speak of bodily processes as mechanisms. Such *"isms"* are likely to become *"wasms,"* as W. M. Clarke earlier suggested was rapidly occurring with some scientific theories.

In Chapter IX on "The Nutritional Characteristics of the Chief Groups of Foods" the author has an interesting historical discussion on the milling of flour and emphasizes the importance of breadstuffs (especially from enriched flour) in our diets whereby as much as 38 per cent. of the calories, 37 per cent. of the protein and 30 per cent. of the phosphorus may be obtained by the expenditure of only 18 per cent. of the average budget for foods.

On the one hand, we are advised that nutritional deficiencies are much higher than is apparent from actuarial statistics due to non-recognition or mislabeling of the cause of death. "Our greatest nutritional handicap in the United States," it is stated, "is not that part of the population which is starving in the historic sense, nor that part which is *recognized* as suffering from specific nutritional deficiency diseases, but the part (probably much larger than those other parts put together) which 'is getting along on poor diets.'" On the other hand, we are later advised that the 1943 freshman class at Yale, although the youngest on record, is the tallest class in the history of that institution.

The last chapter is concerned largely with experimental evidence of the effect of diet on the rate of growth, on reproduction and on longevity. The author's experiments in this field are described in an interesting manner at some length. There is a selected bibliography of approximately 250 titles at the end.

When one has completed the book, there is a feeling that the information gained carries considerable authority.

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AERIAL PHOTOGRAPHS

Aerial Photographs: Their Use and Interpretation. By A. J. EARDLEY. New York and London: Harper and Brothers. 203 + xxiv pp. Fully illustrated. $2.75.

THE aerial photograph is one of the most important implements of the war. It facilitates the construction of new maps and the revision of old ones. It provides the surest means of finding out about the enemy's defenses, the details of his communication systems, his industrial plants, his harbor installations and air fields, his troop, armor, matériel and ship movements. It provides the aerial bombardier with details of his targets and permits him to assess the damage caused by his bombing raids. In addition, the aerial photograph is an important implement of peace. Combined with some control from the ground, aerial photography permits the accurate survey of terrain which may range from a small parcel of real estate to large expanses of territory difficult of access on the ground. Its economic importance is already recognized and will grow rapidly. Vast studies have already been made of silting and soil erosion, of crop distribution and farm acreage, of timber growths, of geological features. Aerial photographs are used in surveys for laying oil pipe lines and power transmission lines, in water control and in many other important fields. In the days of untrammelled automobile traffic, they were even used for studying parking problems.

At the present time many people, both in the services and out, are learning to make or to interpret aerial photographs. A limited number of good texts are available to them for study. The present volume is a very good simple introduction to the subject in general, and an excellent treatise on the special study of geology by aerial photography. It has withstood the test of the classroom and laboratory.

The first third of the book treats of the taking of aerial photographs and their characteristics; there is a good introduction to the use of the stereoscope and plotting contours; and an introduction to making mosaics, including the radial line method of plotting.