ships for each gene of interest. Furthermore, it usually turns out that the gene of interest is flanked by markers having designations like *zwf, gnd, cdx, sex, cdc, ubi, bdx* (or simply *ts*), making another foray into the library necessary in order to find out what these things mean. It was therefore a splendid idea to publish a handbook that would collect in one place genetic information for a variety of organisms.

The first thing one would expect in a *Handbook of Genetics* is the latest comprehensive maps together with complete tables of gene designations, their meanings, and references to the literature concerning their functions. One would further expect that such a handbook would include every organism for which a substantial linkage map has been constructed. The volumes under review (covering bacteria, bacteriophages, fungi, plants, plant viruses, and protists) unfortunately fall seriously short of the goal, but they still may help fill an important need.

Indeed, several of the articles in these volumes (those on *E. coli*; bacteriophages λ, T4, and φX174; the tryptophan operon of *E. coli*; and the histidine operon of *S. typhimurium*) contain only a map and a marker list. If all the articles had been of this type, we would have been satisfied; the handbook would have been short and universally accepted, like the *Handbook of Chemistry and Physics*. It should be noted, since accuracy is important, that a major error exists in the map of the histidine operon—genes I and E are deleted and genes A and F are duplicated.

A second set of articles includes the essential elements (map and list) and in addition contains more elaborate descriptions of relevant material (mutant isolation, media, storage methods, mapping techniques, dominance and complementation tests, life cycles, and so forth). In most of these cases the additional material is well chosen and illuminating; occasionally, however, it is voluminous, speculative, or distracting—out of place in a "handbook."

Unfortunately, a third set of articles (those on *Salmonella*, *Sordaria*, *Neurospora*, *Coprinus*, cotton, *Arabidopsis*, *Nicotiana*, *Anthirhinum*, and *Collinsia*) deals only with peripheral matters and does not even contain maps, let alone marker lists.

Worse yet, many organisms of genetic importance are omitted completely: for instance, in volume 1, the *E. coli* bacteriophages T5, T7, P1, P2; all the *Bacillus subtilis* bacteriophages; and the *Salmonella* phages P22 and ϵ^{34}. Additional fine structure maps of the *r*II genes of T4, the *arom* and *leu* systems in *Neurospora*, and the *cyc*-1 and *his*-4 genes in yeast would also have been welcome.

Finally, there is a set of miscellaneous articles containing such things as elegant and thorough reviews of years of research (Sonneborn on *Paramecium*), brief sketches of current thinking (Campbell reminds us about episomes and Sanders simplifies the lactose operon), and speculation (Margulies on evolution). These are sometimes beautiful and valuable to specialists, but they are not material for a "handbook."

These volumes may be useful, but they are far from ideal. They contain both more and less than they should, and thereby turn out to be expensive and wasteful compared to what could have been accomplished with better editing.

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Nutritional Deficiencies

Protein-Calorie Malnutrition. Papers from a symposium, Chiang Mai, Thailand, Jan. 1973. ROBERT E. OLSON, Ed. Academic Press, New York, 1975. xxvi, 468 pp., illus. $29.50. Nutrition Foundation Monograph Series.

All aspects of protein-calorie malnutrition (PCM) are considered in this book, from biochemical responses to epidemiology and prevention. Considerable attention is given to the controversy regarding the relative importance of protein and calories in the pathogenesis and treatment of this disease, but not to the exclusion of information on the specific vitamin and mineral deficiencies associated with it in certain parts of the world.

With respect to the protein-versus-calorie controversy, it is apparent from this book that the widely accepted view of the '50's and '60's that the lack of high-quality protein intake is the primary culprit in PCM has given way to the idea that insufficient caloric intake is a major cause of the syndrome, although it would appear that there are now sufficient data available to refute any assertion that inadequate protein intake plays no part. The significance of the change in perspective lies with the conclusion it leads to: that the utilization of the diets and foods already available in most communities in a more effective way is quite a feasible approach to preventing PCM.

After reading a couple of chapters in this book the reader may feel overwhelmed by the complexity of the factors involved in PCM. However, other chapters suggest that certain components of this syndrome may be specific to just one part of the world. For example, O. Thanangkul in his discussion of vitamin deficiencies in PCM indicates that deficiencies of one B vitamin may occur in PCM patients in one part of the world and not in patients in another. Also, the manifestations of protein deficiency in the mouth, skin, and gastrointestinal tract may overshadow the effects of deficiencies in B-complex vitamins. Thus, the clinical signs of PCM relative to vitamin-deficiency diseases are often deceptive. Since most studies show that children with PCM have lowered stores of water-soluble vitamins, it is suggested that these vitamins be administered during recovery from PCM. The same approach might also be taken with many minerals. H. H. Sanstead indicates that the metabolism of copper, zinc, chromium, and selenium is affected in PCM and that it is just a matter of time before some of the other trace elements are shown to be involved.

The discussions of the role of fat-soluble vitamins, endocrines, infection, and other factors in PCM make it clear that a complete understanding of this syndrome must await the elucidation of the role of many essential nutrients and the response of the child to a wide variety of nutritional deficiencies in many different environments.

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(Continued on page 308)