SOIL science, like plant science, has expanded notably in both scope and content during the last 40 years. This expansion is the resultant of an ever-increasing demand for factual information about crop plants and the soil as a medium in which these plants may be produced economically. In response to this demand for information, soil science, again like plant science, has developed specialized fields of research. Plant science has become specialized in the fields of botany, agronomy, physiology, genetics, pathology, and in others as well. Soil science has likewise become specialized in the fields of chemistry, physics, bacteriology, and the technics employed in soil classification, as well as in the use of fertilizers, lime, cropping, and cultural practices as they bear upon origin, development, modification, maintenance, and preservation of the soil.

Such specialization is necessary and desirable. Rapidly expanding research on numerous problems, conducted by many individuals of diverse interests and abilities, and requiring the application of scientific principles from several fields, leads to specialization as a matter of course. Such specialization is in fact a necessity in order to insure the greatest possible advance toward the ultimate solution of complex problems. It is obvious, however, that specialization in itself is not adequate for a complete understanding of the soil as an entity or as the medium for economical crop production. Specialized viewpoints and findings must be reconciled with general requirements, and the facts about soils, about plants, and about soil-plant relationships must be integrated for use in meeting the broad problems encountered in farm practice.

In early observations by plant husbandmen and scientists on plant-soil relations, out of which grew the science of soils and of certain phases of botany, the plant quite naturally was used as the only measure of the productive capacity of the soil. It was some little time before plant investigators came to realize that something more than soil and water was essential to plant growth, and that the plant structure and functions, became a center of interest and occupied the energies of many investigators. Out of this research, plant physiologists discovered the role of the nutrient elements; they also discovered that the study of nutrients in water solutions and sand cultures, though valuable, left much to be desired in the knowledge as to how nutrients exist in and are acquired from the soil. Parallel to this, there developed a store of information on the chemical and physical phases of the soil side of the problem. Thus, through specialization there were accumulated valuable bodies of very significant data, which still need adaptation and integration for greatest service to those who would grow soils.

Students of plant nutrition and of soils have merged their interests and knowledge. The importance of the organic composition and genetic constitution of the plant in relation to the capacity of soils for supplying nutrients, moisture, and the like, has become more widely recognized. So, too, in many instances individual environmental factors, such as temperature and photoperiodism, whether their immediate effects or as conditioners of the capacity of plants to respond to a given set of environmental factors subsequently imposed, must be given full consideration. There are examples: Celery plants or certain varieties of beets, if subjected to a low temperature in the spring, even though still in the seedling stage, almost at once start to produce flowers and seeds instead of the leafy bunches or thickened roots of commercial value, irrespective of the soil conditions. This is a fact which has general significance in any study of soil and fertilizers as they are concerned with the growth of plants in general. Again, certain species and varieties of plants are precisely controlled in their developmental behavior, whether flowering or vegetative, by exposure to some definitely critical photoperiod for a time as one or two days. This fact may have