In the period since 1934, when I have been working as a vocational counselor for out-of-school youth and adults and have been teaching other counselors engaged in this work, I have time and time again encountered young men and women who have been quite needlessly forced to undergo the drudgery of repeating their high school chemistry and/or biology in the first year of college, or have been influenced to make very drastic changes in their education-vocational plans by this regulation.

I do not think that I need to stress, in this enlightened age, that the motivation of interest is probably the most potent force we can arouse in the classroom. I also think that many thoughtful educators will not lightly dismiss youthful disinclination to repeat science courses—it smacks of the Middle Ages to talk of "discipline" as an excuse for enforcing monotonous repetition.

It might also be suggested that in many senior high schools the size of classes and the quality of teaching is superior to the overcrowded classrooms and laboratories and the routine type of instruction found in many first year college science courses.

It is granted that some standards are needed. High school science instruction, in chemistry, physics, and biology, varies a great deal in various states. However, if the college science faculties and committees on admissions can bring themselves to evaluate the quality of science teaching in various states and even in various municipalities within states, they can eliminate a practice which experienced vocational counselors can testify is either driving students to abandon plans for scientific work or exposing them to an educational ordeal which is inclined to cause youthful doubt as to whether education really lives up to the enlightened claims in which it is so prone to indulge.

I am not prepared to agree that college admissions authorities should "require" a two- or three-year high school science sequence as a prerequisite to college admission. College admission requirements are inflexible enough as it is, but it is reasonable to suggest that college science faculties give the same recognition to high school science work, in well-conducted courses in chemistry, physics, and biology, as is given by language and mathematics faculties to high school work in those fields.

This encouragement of high-quality work in chemistry, physics, and biology in high school, rather than the science survey courses, will also assure that high school students who do not go to college will have some adequate knowledge of scientific progress and problems, useful either in their future orientation in business or in the skilled trades.

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Recent Additions to the Dudley Herbarium

By the terms of the will of the late Dr. L. Herman Knoche, of San Jose, California, Stanford University has received his entire herbarium and botanical library. The herbarium specimens and the famous collection of botanical reprints assembled by Adolph Engler have been moved into the quarters of the Dudley Herbarium and are already available for use by qualified graduate students enrolled at Stanford, by the staff, and by other investigators interested in taxonomy, ecology, and geographical distribution of plants.

The bulk of Dr. Knoche's herbarium (totaling over 125,000 sheets of dried specimens) was accumulated by Gaston Gautier and consists, for the most part, of specimens collected in southern Europe and other areas adjacent to the Mediterranean Sea. This collection contains a large number of specimens cited by various European authors and is very valuable to botanists of the Western Hemisphere who wish to study authentic material from southern Europe and northern Africa. A few scattered specimens from other parts of the world are also included, but these are decidedly in the minority. None of these specimens is mounted, all of them being laid between sheets of thin paper, the labels being tucked under the stems or leaves of specimens to which they apply. In most cases only one collection is represented on a sheet, but in a few cases two separate accessions have been placed in the same double sheet. Those that have thus far been examined are quite distinct in appearance when two are on the same sheet, so no serious difficulty is anticipated in separating them and getting them segregated onto individual herbarium sheets. The bundles are arranged systematically, and any desired family or genus can be extracted readily for study.

Engler's collection of reprints covers several broad fields in botany in addition to strictly taxonomic treatments of vascular plants. Sections of it deal with geographical distribution, ecology, plant physiology, morphology, floristic studies of various regions, and small sections on algae, fungi, mosses, liverworts, and ferns. The taxonomic parts were arranged according to families, following the Engler and Prantl system, and have been kept in the same order in which they were classified by Engler himself. Many of the folders in which loose reprints are tied still bear the labels written in Engler's hand. The collection contains over 25,000 separates.

The library of bound botanical books is rich in floras from many parts of the world and contains a number of comparatively rare works not generally available in the libraries of the western United States. This portion of Dr. Knoche's library has not yet been catalogued and placed at the command of the botanists working on the Stanford campus, but it is hoped that this task will go forward steadily and that the entire library will be available for use within a few months.

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New Use for DDT

"Scab mites" (*Psoroptes cuniculi*) often cause extensive scab formation in the ears of laboratory rabbits. These mites do not burrow beneath the skin, but remain

on the surface, where they may cause sufficient irritation to produce a many-layered scab in which they may be present in large numbers.

We have found that the application of a 5-per cent solution of DDT by an ordinary nebulizer to the inner surface of the ear of the rabbit affords a simple, nontoxic method of curing this condition. When the scabs are many layered, it may be necessary to make several applications of DDT at three-day intervals in order to reach the more deeply situated parasites. The destruction of the parasites is followed rapidly by the healing of the affected surface. A single application is useful in the prophylaxis of exposed animals.

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Book Reviews

Photosynthesis and related processes. Vol. I: ***Chemistry of photosynthesis, chemosynthesis and related processes in vitro and in vivo.*** Eugene I. Rabinowitch. New York: Interscience Publishers, 1945. Pp. xiv + 599. (Illustrated.) $8.50.

In the last 25 years our knowledge about photosynthesis has undergone a luxuriant growth. At the beginning of this period Stiles and Spoehr each summed up the available data in monographic form. Since then information has merely accumulated; and while there have been efforts to weed and cultivate small sections, the field as a whole has not had the intensive examination and harvesting it has needed and deserved.

The task is formidable; its extent is indicated by the fact that the present book is only the first of a pair planned to cover the subject. This volume deals with the chemical phases of photosynthesis, while its promised successor is to treat the physical aspects.

The book contains 20 chapters. The first two are introductory and place the subject in its scientific and historical setting. The next eleven chapters take up the photosynthesis reaction as a whole, its products, related reactions outside the cell, chemosynthesis by bacteria, the photochemical reactions, the nonphotochemical reactions, and the effects of outside chemical agents. The seven chapters that follow describe the pigments involved in photosynthesis, their structure, chemistry, and photochemistry. A final chapter covers the relations between photosynthesis and respiration.

There is a large number of original diagrams, tables, and figures. Also, there are excellent author and subject indexes. Each chapter ends with a bibliography arranged historically. A rough count adds up to about 2,000 titles.

The treatment of this extensive material is fresh and tough-minded. Every contribution to photosynthesis and the related subjects has been read and evaluated, and is given a presentation which is just and rigorous.

The book, however, is no pedestrian account of work accomplished. The first chapter is beautifully written; it has a magnificence of conception that carries one along breathlessly. Similarly, Chapter II, which describes the discovery of the basic phenomena of photosynthesis, maintains a fine balance between large issues and detailed data and gives one a sense of participating in the high adventure of scientific discovery. Even Chapter III, which has no historical structure, is fascinating reading because of the sheer intellectual power of its analytical procedure.

Naturally, such an exciting level of writing cannot be maintained, and the price which has to be paid for the patient, inclusive, and critical presentation of so large a collection of material is an absence of the dramatic power of an historical narrative. Since one does not ordinarily find this in a scientific monograph, we may gratefully accept these first three chapters as the *hors d'oeuvre* of a nourishing meal furnished by the rest of the book. The chapters which follow are not just to be read; they need to be studied. And for this too we are grateful. We need the careful and detailed discussion of all this wealth of data for the edification of scholars in this field and for the instruction of those just entering it. Dr. Rabinowitch is to be congratulated on the high level which he has maintained in working over this staggering mass of information.

With so much excellence already received, it may seem ungracious to ask for something else. Yet one wishes that Rabinowitch had not divided the subject into the obvious chemical and physical volumes. Photosynthesis is all of a piece; its division into physics and chemistry is artificial and produces difficulties which are apparent even to the author. Perhaps the situation will be improved when the physical companion volume appears, so that one can easily refer from one volume to the other.

Also, one misses a chapter or two in which the larger outlines of the subject are delineated. The same boldness, which in Chapter II omitted details in order to bring out the essential features of photosynthesis as recognized in the early days, could have been used to paint a broadly conceived picture of the essentials of today. One would like to see in sharp relief such concepts as the light and dark reactions, quantum efficiency, limiting factors, the effect of light intensity and of intermittent illumination, so that the reader might have clearly before him the large masses of the composition before he stops to examine the details which enrich and enliven the separate parts.

Nevertheless, even the elaborate and detailed presen-