Ominous figures are also found in the recently published volume of the U. S. Census Bureau (*Population, differential fertility 1940 and 1910, women by number of children ever born.* 1945). Women included in the 1940 census, aged 45 to 49 and with less than 4 years of schooling, reported an average of more than 4 children each. As the amount of education increased, this number fell until for high school and college graduates it was 1.75 and 1.23, only 77 and 55 per cent of the number of children necessary for the replacement of the parents. The Census Bureau estimates that for one son per father (or daughter per mother) to survive to the age at which his father (or her mother) was enumerated, 2.22 children must be born. With the better than average care given by college graduates, the number is somewhat less than this for that group.

To determine the extent of this loss of an important national resource, a study of the numbers of children born to the graduates of other colleges seems of value. The Population Reference Bureau, 1507 M St., N.W., Washington 5, D. C., has, therefore, planned a nationwide intercollegiate comparison of these birth rates. Questionnaires have been offered without charge to those wishing to assemble the needed information from the classes of 1921 and 1936, the twenty-fifth and tenth reunion classes. The earlier class was chosen because few children are to be expected after this date; the later class, to indicate the more recent trend.

Sixty-six colleges, with about 26,000 students in these two classes, have asked for the questionnaires. The results should give valuable information regarding the sources from which our future scientists may be expected, and the degree to which our present educated groups are replacing or failing to replace themselves.

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B-Glycoside Formation in Plants From Absorbed Chemicals

The letter by E. G. Beinhart (*Science*, 1946, 103, 207–208) with reference to the absorption of the vapors of phenols by plants is of interest in calling attention to the relative ease with which absorption and retention of non-naturally-occurring organic compounds may take place. Experiments conducted several years ago by the writer (see, for example, *Science*, 1940, 92, 42–43, and *Contr. Boyce Thompson Inst.*, 1943, 13, 185–200) showed that various chemicals containing an alcoholic or phenolin hydroxyl group were readily absorbed from nutrient solutions (and in several cases, inadvertently from vapor in the air) and combined within the plant with sugars to form β-glycosides. Such a biosynthesis of glycosides seems to take place quite generally among higher plants, and it appears likely that the phenols with which Beinhart's article is concerned were fixed within the plants as β-glycosides. This would explain the persistence of the flavor and the lack of off-flavors in the root crops (carrots, beets, and potatoes), since these glycosides do not seem to move readily from one organ of the plant to another.

In view of the stability of these β-glycosides within the plant it follows that the presence of relatively small amounts of chemical in the air over a long period of time could result in the building up of appreciable concentrations of foreign β-glycosides in the edible portions of plants. The hazard is thus much greater with chemicals that undergo this or similar reactions than with those that are not fixed by the growing plants.

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On Recognition of High School Science Training

Charles A. Gramet's letter on High School Science (*Science*, 1946, 103, 149) brings up a point on which I can report two observations, one personal and one professional, but both illustrative of the serious influence which the college attitude toward high school science has on a student's planning of his academic work and his preparation for gainful employment.

In 1916, when I was 12 years old, my father followed the rather unusual expedient of arranging for me to spend a summer term studying chemistry in company with a friend of the same age. At the conclusion of this term our instructor informed our parents and the school authorities that we had quite satisfactorily completed the equivalent of a rather stiff first term of senior high school, or first year college, chemistry.

Later, because I was interested and did not mind the duplication of the first term of work, I took a full year of chemistry in my senior year at East High School, Rochester. With no further training in chemistry I carried out some work in my father's anatomical laboratory which required careful chemical manipulation; I held a job for nine months as an assistant to a photochemist in the Eastman Kodak Research laboratory; and I later did considerable writing on subjects which required some basic knowledge of chemistry.

Obviously, I was interested in chemistry. I considered certain college courses permitting advanced work in chemistry, but in two instances I met with an absolute refusal by colleges to accept this excellent preparatory training as an equivalent of first year college chemistry. A similar experience took place in relation to biology. After a boyhood and youth spent in close contact with the various Ward family activities in anatomy and the biological sciences, and a year of an excellent senior high school biology course, my college would not give credit for senior high school biology and I took first year college biology. It differed little from the high school course and, in essence, was so much waste motion.

I have just gone back to some of my letters, written in first year college in 1922, and I find that the need to "repeat chemistry and biology" was a constant consideration which led me to make some rather drastic changes in my college plans and to swing over to journalism and sociology. This was not a student whim; it was a carefully considered reaction to the waste of time and boredom of repeating high school science courses.

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