Letters

Ages of Experimental Animals

I was agreeably impressed by Calloway's suggestion (31 Dec., p. 1771) that experimental animals should be of known ages and of different ages. Inspired to follow further his ideal of exponentially related ages, I have been planning experiments. Starting with an animal of unit age 1 year, A, I added animals, as specified by Calloway, of ages "A^2, A^3, A^4, and so on," but to my distress all seemed to be of the same ages. So I tried an animal of unit age 1/2 year, and found that my other animals were aged 1/4 year, 1/8 year, 1/16 year, and so on. This did not seem quite right, so I decided to specify my ½-year-old as aged 182½ days. Then I found that my second animal would be aged over 90 years, which seemed to limit the choice of species. It turned out that my fourth animal should be something over 3 million years old, and this is too much to cope with even for a paleontologist.

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Education: The European System

I take exception to James Brian Quinn's statement ("National planning of science and technology in France," 19 Nov., p. 993) about what he refers to as "anachronistic rigidities" in the French educational system. [Quinn wrote, "Once started on an educational 'track' in childhood, a person finds it almost impossible to change to another. . . . Thus many 'late bloomers' and people who want to change careers are lost to science, engineering, and other professions."]

Having been educated in the primary, secondary, and university system of Western Europe, I believe that there are a number of advantages to the so-called track system that begins during early schooling. To understand why it is possible to make a choice between a humanistic and a science track before entering high school, one must know what the curriculum consists of before this decision is made. In the European system that I am familiar with, each student has seven or eight 45-minute periods a day. These include native language and literature, mathematics, biology, chemistry, physics, history, in short, the entire spectrum, which all students are required to take. Every year or second year a foreign language is added. Thus a student has all through grade school at least four hours each week of each subject. Before entering high school a decision is made by the student, in consultation with his parents and teachers, whether to enter a humanistically oriented (gymnasium) or a science-oriented high school. The decision is not difficult. Since he has already had nine years of history, languages, mathematics, and the natural and physical sciences, it has become quite evident where his talent lies and where his interests are strongest. Once he enters the type of high school he prefers, he still continues with some subjects of the alternate curriculum, but the stress is on his chosen general area.

Thus when one enters the university at 18 years of age to study medicine, for example, one has had the following training: 11 years of biology, mathematics (including calculus and differential equations), physics, chemistry (organic, inorganic, and analytical), geography, and study of one's native language; 9 or 10 years each of three other modern languages; 3 years each of Latin and Greek; approximately 5 years each of philosophy, history, art, industrial arts or home economics; and so forth. In the university one immediately embarks on a comprehensive preclinical curriculum of five semesters followed by six semesters of clinical studies. The advantage is that one graduates from the university at 24 and earns a medical degree, which includes a lengthy thesis and oral examination, at 25 years of age. One is ready then to hang out one's shingle as a general practitioner. To become a specialist in a chosen area requires four more years of research and clinical activities.

I doubt that the free choice of subjects during the early years of schooling has given students in the United States a greater knowledge of languages or the sciences in a shorter period of time or, as a matter of fact, in any amount of time. There is some doubt in my mind that a student who has shown little or no inclination for or ability in the sciences in 9 years will suddenly feel a "calling" for a scientific career. A more intensive curriculum, which includes various subjects for long periods of time (instead of 2 years of French or mathematics, for example), will prepare the student better for an earlier decision as to his direction and will give him a more solid basis of knowledge for whatever he may choose as his life career. It is my belief that the number of years and the cost of higher education in the United States could be cut considerably if the lower schools put less emphasis on options and more on a solid academic education.

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Scientific Manpower Commission and the Draft

Elinor Langer's article "Viet-Nam: Growing War and Campus Protests Threaten Student Deferments" (News and Comment, 17 Dec., p. 1567) presents a misleading picture of the policy of the Scientific Manpower Commission in helping to obtain student deferments, and implies erroneously that the SMC, in implementing that policy, has much in common with activist student groups.

The Selective Service defers full-time students in good standing in the belief that education is a process necessary to the development of personnel for the many demands of our complex society. This procedure is an attempt to utilize the most important resource of the nation in the most effective way possible. The Scientific Manpower Commission subscribes to this belief; makes every effort to see that the regulations for student deferment and the reasons behind those regulations are known to students and universities; and attempts to help individual students or their universities in seeking review of classifica-