tude than atomic or chemical energy, which heretofore was the basis of explosives.

The unfamiliarity of the general public with the nuclear structure of the atom should not prevent scientists from selecting a proper expression for what is now erroneously called the "atomic bomb." While this choice should be left to those who did the outstanding work, whatever expression is chosen should point up the fact that the energy released is *nuclear*. Possibly "nuclear fission bomb" might serve. A paper in Vol. VI of *Colloid chemistry, theoretical and applied,* now in press, is entitled "Potential nuclear energy and some consequences of its release." The pioneer work on diffusion by Thomas Graham, father of colloid chemistry, was useful in working out the uranium fluoride diffusion process at Oak Ridge, Tennessee, where U 235 was separated from U 238. In fact, it was in his paper on "Liquid diffusion applied to analysis" (*Philos. Trans. roy, Soc.,* 1861) that Graham proposed the word "colloid" to describe those substances which, as regards to diffusion, "are slow in the extreme."

Please consider this as a protest against the perpetuation of a *mumpsimus,* a term introduced into our language to indicate persistence in obvious error, from the fact that an old priest who had for forty or more years used this word refused to change to *sumpsimus,* even when shown the correct word in the prayerbook.

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Proposed International Association of Scientists

Would it not be appropriate for the American Association for the Advancement of Science to join with the venerable British Association for the Avancement of Science in organizing a United Nations Association for the Advancement of Science? Such an international association of scientists might serve, through the example of the American and British Associations, to promote the best interest of scientists generally, throughout the world, toward international harmony and good will.

The American Association of Scientific Workers proposes that there be full cooperation with the United Nations Educational, Scientific, and Cultural Organization (UNESCO), which was created at the Charter Conference held at London in November 1945. Representatives of forty-three nations unanimously approved the charter for UNESCO. The science division of UNESCO offers an opportunity for effective international cooperation in science.

Perhaps the AAAS could suggest that scientific societies throughout the world apply for membership in UNESCO. This would form the basis for a United Nations Association for the Advancement of Science.

Such an organization could serve many important functions. Most importantly, it could help to maintain the standards and ideals of scientists throughout the world. It might effectively promote international congresses in various scientific fields. Helpfully to all scientists, it might publish a weekly international scientific journal. Indeed, *Science* and *Nature* might join together to become such an international scientific journal, of course with an opportunity for publication and translation of articles in various languages. Such an organization might effectively promote interchange of scientific workers and scientific information throughout the world.

It appears that an admirable opportunity exists for scientists to indicate their interest in international scientific cooperation. Much may depend on the reaction which scientists may give to this opportunity.

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The Portuguese Man-of-war as a Food Source for the Sand Crab (*Emerita pacifica*)

Along the windward side of the Island of Oahu, Territory of Hawaii, there are numerous sandy beaches which are widely frequented for bathing purposes. Although extremely popular and well adapted for recreational purposes, there are at various times large numbers of the Portuguese man-of-war, *Physalia utriculus* Escholtz, present in the water. These animals drift in from the open sea, and their poisonous sting is highly obnoxious to bathers.

In an attempt to determine the number of individuals present at Lanikai Beach, the number of individuals which had been washed up along a measured distance of the beach were counted. It was noted that there were many fewer along the beach than were present in the water and that such a method would not produce an accurate quantitative measure. Although it was not possible to make any further observations on the number of Portuguese men-of-war present, the reason for the discrepancy in numbers was soon discovered.

Along the beach at the intertidal zone, and concentrated particularly in the area of wave wash, are to be found large numbers of the Pacific sand crab, *Emerita pacifica* (Dana). These animals were observed to grasp the Portuguese man-of-war as it was being washed in and draw it quickly beneath the sand. In many instances the crab was observed to have difficulty in drawing the float under, and the next wave would carry both crab and coelenterate higher onto the beach. As a Portuguese man-of-war became stranded, numerous sand crabs were observed scurrying toward it from distances up to five feet during the interval between waves. The stimulus for this behavior is evidently visual, since it was observed to be preceded by the extension of the stalked eyes above the surface of the sand and outflowing water, and the conditions would seem to exclude the use of the other senses. It is possible to collect large numbers of the sand crab by digging out the sand beneath such stranded Physalia. In two instances, 23 and 11 individuals of both sexes and of different sizes were obtained by scooping out a double handful of sand under Physalia with floats which measured 2.5 and 2.0 inches in length, respectively. Local beach fishermen collect the sand crab

for bait by digging beneath stranded men-of-war in this manner.

There can be no doubt that the sand crabs utilize the Physalia for food, inasmuch as the blue color of the tissues of Physalia could be readily observed in the mouth, stomach, and gut of crabs taken in the manner described above. Furthermore, microscopic examination of the digestive-tract contents demonstrated the presence of nematocysts. The poison appears to have no deterrent effect on the crab. The sand crab was not observed to feed on any other material which was washed ashore, although pieces of fish and meat were used in an attempt to attract them. It seems unlikely that these animals feed exclusively upon Physalia, but it is certain that this coelenterate constitutes an important item in their diet.

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High School Science

The anomalous situation of a declining registration in science courses in the high schools in an age which has been called either the "Scientific Age" or the "Atomic Age" is a concern of all who are interested in the advancement of science.

Before the outbreak of the war there had been a constant decline in the election of science courses. The war training program resulted in an artificial boom. Boys, particularly, were either programmed arbitrarily in science courses as a preparation for induction in the Army, or they were persuaded to take such courses by the lure of more favorable assignments in the Army. Now there are indications that the decline has been resumed. How may we account for this apparent lack of interest in science election in an age when science and its applications are having such tremendous influences in shaping our lives?

It may appear trite to repeat that the primary function of secondary schools is to give the pupils the most desirable educational experiences at the adolescent level. Secondarily, they should be concerned with "preparation for life beyond the high school." We have had a very extensive experiment under the auspices of the Progressive Education Society in its Eight-year Study, the results of which support the validity of these objectives in the order named. Nonetheless, we still use the criteria of college entrance requirements as the chief determinants of the high school curriculum for those who plan to continue their education beyond the secondary schools.

Here I believe is the crux of the problem. College admission boards have accepted a year of science as adequate preparation for college work as against three or more years of language, two or more years of mathematics, three or more years of social studies. The college admission boards are undoubtedly influenced by their members, which include the professors of the various subject areas. May we then place the responsibility for this inadequate science requirement upon our college professors of science? I believe we may do so with some justification.

It has been my experience, as well as that of many of my colleagues, that many college professors of science are inclined to belittle science instruction on the secondary school level. It is a very common experience to require pupils who have had secondary school science to repeat such work in the colleges. We have the testimony of great numbers of our students who have had chemistry, for example, that the work they had in our high schools was in every way comparable in quality and quantity with that of the freshman course in college. The same judgment has been made with respect to biology and physics.

In committee meetings between college professors and administrators and secondary school teachers and administrators, I have heard it asserted that the science professors would just as soon have the high school graduates come to college without any science preparation. And such statements are made in the presence of professors of other subject areas. Language men hold no such superior attitude, and accept at face value the language preparation given in secondary schools.

I cannot speak with authority of the quality of the science instruction in other secondary schools in this country, but I do know what it is in this large city, and I am quite certain it is matched in most of the high schools of the country. Certainly the science instruction in any high school is as effectively done as is that in any other subject area. Why, then, should not our college professors of science accept the work done in high school science as adequate preparation for advanced study as professors in other subject areas do?

The present one-year entrance requirement may be, and often is, satisfied by a first-year science course in "general" science. The course is general and elementary, the children are immature, the teaching procedures necessarily largely demonstrative and descriptive, and the contents pretty well forgotten by graduation time. If a boy or girl is accepted for admission to a college with only such science preparation, the college science professor may not draw any conclusions from it as to the quality of secondary school science instruction.

I am writing this note to emphasize the need and importance of a continuing science program throughout the period of education of all children. College science professors may not, and should not, remain aloof. Promoting the study of science at lower levels will not only improve the quality of instruction possible at higher levels, but will promote an interest in science in the community and in the country, and develop the knowledge, attitudes, and appreciations necessary for life in this scientific age.

Specifically, if college admission boards were to require a three- or even a two-year science sequence for admission to college, it would improve the situation immeasurably with respect to the study of science in secondary schools. The three-year sequence is the more desirable, for it will enable the secondary schools to give the pupils a more rounded science experience. We should accept a two-year sequence as a step in the right direction.

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