the present atomic furore, that the great majority are men of good will, striving earnestly that their labors shall end, not in the acceleration of a disastrous social entropy but in the construction of a decent world for all of us.

HAROLD WARD

129 East 10th Street, New York City

The Prevention of Atomic Warfare

With reference to recent communications from William N. Woodward (*Science*, 1945, 102, 608) and Gordon F. Hull (*Science*, 1945, 102, 672), it is evident that there is a considerable desire for the formulation of plans to prevent the development of atomic weapons. No sane person would question the advisability of doing everything possible to bring this about. However, the methods suggested by these men are open to criticism, and their success is very doubtful. Although it was not mentioned by Mr. Woodward, the apparent *raison d'être* of the Association of Los Alamos Scientists is essentially that of attempting to limit the applications of atomic energy by collective action of the scientists, engineers, and technicians comprising it. They propose also to attempt the forcing of legislation on an international or "supernational" scale containing pledges against such military applications. Prof. Hull's plan for a World Association of Physicists is similar, but of his six points, only one is pertinent to the discussion, viz., "a pledge not to give advice concerning, nor assist in making, atomic bombs." Even if 99 per cent of the physicists of the world did so pledge, one could hardly presume that they could thus prevent misapplications of this science. The essential discovery of nuclear fission lies in the borderline field between chemistry and physics, but the deprivation of the project of physicists would not necessarily have prevented the development of a weapon, and in the future this will be much more true. Hence, this solution is as presumptuous as the one which supposes that the men who have had some connection with the manufacture of these weapons in the past have a corner on all the information needed for their production.

What we need, then, is not a Federation of Atomic Scientists, or of Bomb Builders, or even a World Federation of Physicists, but simply a World Federation. Most of the principles suggested as bases for the proposed associations are too obvious to bear elaboration, and the one which the ALAS has used as a smoke screen is virtually one of the purposes of the AAAS, *i.e.* ". . . to promote attainment and use of scientific and technological advances in the best interests of humanity."

It is strikingly clear to most of us that this is no time for forcing the hand of the State Department by demanding action on an international scale. This will require mutual respect, trust, and understanding of a high order—virtues which are not displayed by all of the present powers but which must precede any intimate discussion of the most potent force available to man.

JAMES H. PANNELL

Los Alamos, New Mexico

Veterans' Retraining Program in Geology

During the past five years it is estimated that the armed forces absorbed some fifteen hundred young American geologists of graduate, near-graduate, or postgraduate status, only a small number of whom had gained any experience in professional application of their learning.

During their terms in the armed services few of these young men have had the opportunity of using their geological training or of acquiring additional geologic knowledge. It may therefore be assumed that they have suffered considerable loss of geologic skill and knowledge and are thus not prepared to resume their studies or professional activities in competition with those geologists whose careers have not been interrupted by the war.

Because of this situation and the current demand for trained geologists, the U. S. Geological Survey proposes to undertake a program of training in the form of supervised field, laboratory, and office work that will enable discharged veterans to adjust themselves more quickly and with more confidence in resuming their careers. The Survey proposes to undertake only this applied phase of the retraining. It recognizes that many of the expected trainees will require preliminary academic courses in college or university geology departments that are equipped to give concentrated courses of graduate calibre.

The proposed dual program has been discussed with heads of the geology departments of the Universities of Chicago, Columbia, Harvard, Johns Hopkins, Princeton, and Yale; and they have indicated their approval of the plan in principle. Heads of geology departments in other schools interested in participating in this phase of the program may obtain pertinent information from the heads of the geology departments of those universities. Further information concerning the Geological Survey's phase of the program may be obtained by writing to W. H. Bradley, Chief Geologist, Geological Survey, Washington 25, D. C.

The instruction of qualified veterans in participating schools will, insofar as is feasible, be adjusted to the specific needs and interests of the individual to better equip him to undertake and benefit by Survey or other professional experience in field, laboratory, and office work during the 1946 field season.

Candidates for these temporary appointments to the Geological Survey will be selected on a competitive basis through the channels of the Civil Service Commission, and in accord with veterans' preference policies. It is hoped, however, that veterans who apply will have had the benefit of the preparatory college or university retraining before they seek appointment.

The number of veterans which the Survey will be able to absorb will depend upon the amount of funds appropriated to the Survey for geologic investigations. An estimate of the size of the field program should be available by spring after the House reports out the appropriation bill. As many as possible of the most competent temporary appointees will be given the opportunity of accepting more permanent appointments on the Geological Survey staff, or will be given aid in obtaining

appointments in other governmental agencies or in industry.

This dual program will operate on a very flexible basis, to take care of all individual cases, involving individuals whose academic training and professional experience to date lie within a rather wide range. It will be fitted also to individual desires, to allow for academic training only, for Survey experience only, or for both, depending on the qualifications and wishes of the individual.

W. H. BRADLEY, *Chief Geologist*
Washington, D. C.

Plea for Change in Regular Time of Meeting of the AAAS

Now that the regular meetings of the AAAS are to be resumed, it seems appropriate to consider anew the best time for holding them. There would seem to be three leading possibilities which have been, or are about to be utilized, *i.e.* the traditional Christmas holiday period; the early spring, to be tried this year; and the early fall, shortly following Labor Day, which was tried at Cleveland.

First, as to the traditional Christmas holiday period, the following considerations seem to be pertinent: To reach the meeting at this time it is often necessary to leave home on Christmas night or, at the latest, the day following. This frequently disrupts family gatherings and makes what should be an event to be looked forward to a disagreeable task. It is quite commonly made more disagreeable by extremely inclement weather, late trains, stuffy sleeping cars, and the seasonal presence of the virus of the common cold, not to mention more serious respiratory ailments.

Second, as to the early spring, this may be said: The general conditions at this season, it is true, are no doubt better than those at Christmas, *i.e.* if the time chosen is sufficiently late or "spring" is sufficiently early. Granting, however, that weather conditions are entirely propitious, irregularities in the dates of the spring recesses in the various colleges and universities are bound to make attendance impossible for many, no matter what particular time is set. Incidentally, also, even if the meeting should happen to coincide with one's own recess period, it would consume virtually all of this brief time of respite in the long winter-spring term, a respite often sorely needed to catch up with various odds and ends of work.

Third, in favor of a period shortly following Labor Day the writer would like to urge the following arguments: At this time of year summer vacations for almost everyone have ended, while the fall terms of most institutions on peacetime schedules have not yet started, thus leaving a convenient interim. Also, contrary to the condition at the Christmas season, no holiday celebrations are interrupted, the trains, if one wishes to use them, are reasonably on time, and the weather is such as to make trips by car possible and often pleasurable. It is the writer's belief that all who attended the recent Cleveland meeting held at this time of year will agree that the conditions indicated were fulfilled. Unfortunately, however, wartime exigencies prevented as large an attendance at this meeting as is customary. Why, therefore, not try this time of meeting again under more normal conditions?

It is hoped that this note may stimulate others who favor the view herein expressed to urge favorable consideration of this change upon those concerned in the scheduling of this important event. Indeed it seems as though the matter is of enough significance so that in case of doubt as to the extent of opinion in favor of such a change, a mail ballot of the membership might well be undertaken.

ROBERT S. MCEWEN
Oberlin College, Oberlin, Ohio

The Law of Precharged Luminescence

According to the excitation processes which occur in a light-emitting system, the resulting luminescence may originate in one of several mechanisms: (a) direct excitation, (b) indirect or sensitized excitation, (c) translocated excitation, and (d) precharged excitation (J. De Ment. *Fluorochemistry.* New York: Chemical Publishing Co., 1945). The present communication relates to (d), the precharged luminescence, in which the luminescent system retains the effect of a history of radiation for considerable periods of time (e.g. months or years) and at a later time emits light when subjected to low-temperature heat, friction, and similar agents. The best-known examples of precharged luminescence include the family of thermoluminescences, certain of the triboluminescences, and a number of sundry phenomena.

In a recent study and compilation of the known types of luminescence, in which some two hundred varieties were listed, the present writer (*Fluorescent chemicals,* Vol. 3: *Dictionary of luminescent substances.* New York: Chemical Publishing Co., in press) noticed a rather obvious characteristic common to all of the precharged luminescences, to which attention does not seem to have been directed before this time. This common feature can be formulated into a law covering the known types, since no violation has been discovered by the writer in the many examples he has studied. Consequently, the *law of precharged luminescence* is as follows:

"In a system exhibiting precharged luminescence, the energy responsible for the radiation history in that system is always greater than that energy required for the release of the luminescence."

While it is not possible to list here every known case of precharged luminescence to corroborate the foregoing statement, certain well-known examples suffice to clarify what it means. Thus, in the family of thermoluminescences, the agents which provide the radiation history or precharging include radioelement radiations, cathode rays, X-rays, ultraviolet light, visible light, and a number of miscellaneous corpuscular radiations like neutrons. The thermoluminescence takes place when the previously irradiated system is then subjected to such low-energy agents as infrared rays (heat), pressure disturbances (e.g. scratching and grinding), as well as radiations like visible light which are of less energy than that employed for the irradiation.

JACK DE MENT
Fluorescence Laboratories, Portland, Oregon