Letters to the Editor

Reply to Professor Reed

Many of us at the Naval Ordnance Laboratory have read with much interest the letter from Professor H. S. Reed to Senator Downey (*Science*, 1945, **102**, 524) which was unanimously approved by certain of our colleagues of the American Association for the Advancement of Science. The letter seems to portray a lack of understanding of the problems confronting some of us in the employ of the Government and, I am sorry to say, is not likely to be very helpful in our attempts at their solution.

Those of us who have had considerable experience in research in Government are well aware of the difficulties encountered, yet we have seen programs carried out effectively and economically in spite of them. We are making strenuous efforts to obviate these difficulties and to raise the prestige of governmental scientific establishments. It is unlikely that we will be successful unless we have the approval and support of other scientists in the country. Therefore, a letter such as Professor Reed's assumes to us a very considerable importance.

Unless the United States assumes a more positive, constructive, and powerful position in world affairs from a political point of view, it is unlikely that we shall be successful in maintaining world peace. Whether our attempts to maintain peace are implemented by strong and wise political action or whether we take our chances with partial isolation as we have in the past, it is likely that a strong Navy will be necessary. There are a few hundred of us working in naval laboratories who have a very direct responsibility, in view of the present state of military technology, to keep the Navy strong. The naval laboratory programs make it necessary for us to carry on basic research in certain parts of certain fields simply because no other agency is interested in, or has the facilities for, doing this work. We, of course, carry on a very great amount of development also, again because neither academic nor industrial establishments are interested in doing, or are equipped to perform, this particular type of development.

We have observed with great interest the course of the Magnuson and Kilgore bills and the testimony which has been given in the hearings on them. We have a keen appreciation for the need of Federal support of research in this country and realize that this implies new sources of support for institutions which rely on the diminishing returns from endowments to maintain their high standards of productivity. The Bureau of Ordnance plans to spend about one-fourth of its research budget in such support by means of very general research projects assigned to universities. We are glad to see these things being done and give our wholehearted support to Congressional action in this direction.

However, *unless and until the great body of American science gives concrete evidence of its willingness to mix into naval affairs, to do the work which the Navy needs in the way of basic and applied research,* and *to prove that it will take continued interest in so supporting the Navy,* these naval laboratories must carry the responsibilities which they now bear.

We have instigated machinery for bringing about the changes necessary to make naval and all governmental laboratories more attractive places for scientists to work. We have fortunately received enthusiastic support for our efforts from a substantial number of very prominent and competent scientists, and we are inclined to doubt that Professor Reed's letter really expresses the sentiment in the rank and file of scientists in the United States toward the amount of consideration which we merit or the importance of the responsibilities which we carry.

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Subaqueous Mud Cracks Formed by Settling

Mud cracks in strata have been accepted as a criterion that the sediments in which they were formed had been exposed to air. A recent observation on the part of the writers indicates, however, that this conclusion is not always a safe one.

In the process of making a ditch by means of dynamite, a pool of considerable extent was left filled with water for a period of about a month. The clay forming the bottom was originally smooth, but after three weeks developed a mud-crack pattern under water which could not be distinguished from sun-crack patterns formed subaerially. The dynamite blast served to loosen the soil to a considerable depth. In fact, the material at the very surface had been raised into the air by the explosion and had fallen back. However, in so far as direct observation could indicate, such material formed only a thin, negligible surface layer and probably had little, if anything, to do with the crack pattern which ultimately developed. The soil consisted mainly of fine clay material. That at the surface compacted, forming a relatively rigid bottom. Subsequently the deeper soil settled, the surface layer yielding to the movement by developing a typical polygonal mud-cracking pattern.

This observation suggests a need for caution in the interpretation of mud cracks in the geological record as evidence of exposure to air. Earthquakes produce a shock which tends to loosen soil. That settling following earthquakes may produce such patterns subaerially in soil has not escaped observation. Fossil mud cracks should be examined more closely in order to determine whether they are a true record of emergence or whether they may conceivably be a record of disturbances, particularly when they are found in sediments deposited at the time of some of our major orogenies. The Paleozoic mud cracks which have come to the attention of the senior author differ from those formed by settling, in that they are relatively shallow, rarely over

two inches in depth, relatively wide, and are terminated abruptly beneath by a bedding plane.

Such shallow structures represent drying of an unconsolidated top layer deposited upon a layer sufficiently older and more consolidated not to be affected similarly, and may safely be interpreted as sun cracks. The observed cracks, formed by subaqueous settling, could be traced downward to a depth of eight inches and probably extended farther. Extensive drying of unconsolidated materials, as under pleya conditions, may produce cracks of similar surface appearance and depth. No certain criterion seems available to determine whether such markings actually represent sun cracks, or whether they may represent settling cracks which may or may not have been formed subaqueously.

ROUSSEAU H. FLOWER and WILLARD G. IVES
New York State Museum

Soviet Biology

The article on Soviet Biology by Dr. Anton Zhebrak (*Science*, 1945, 102, 357–358) is of great interest. He assures us that the official policy of the Soviet Government toward Genetics is tolerant and even helpful, and always has been. If this is so, it is strange that Russian geneticists were absent from the Sixth International Congress of Genetics held in Edinburgh before the outbreak of the war and from the recent London Conference on Genetics, at which Belgium, Denmark, France, Holland, Norway, Sweden, and the United States were represented. Russian geneticists had also been invited to both conferences at the same time as the others. It would do more to dispell the "misunderstanding" imputed by Zhebrak to geneticists of the Western World if we were told why Russian geneticists do not participate in international conferences. Above all, it would remove our anxiety if we were told what happened to Dr. N. I. Vavilov and to his work after 1939, since this work is regarded as being one of the most important contributions of Soviet Russia to the science of the world.

P. C. KOLLER
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Study of Scientific Russian in American Universities

The importance of American scientists closely following the published Russian researches in their fields is gaining general recognition in this country. In this connection the American Association of Teachers of Slavonic and East European Languages, about a year ago, appointed a Committee on Teaching Scientific Russian.

A preliminary inquiry was conducted among universities where scientific Russian was known to be taught. It must be emphasized that practically everywhere in the 81 American institutions of higher learning where Russian was taught in the school year 1944–1945 (A. P. Coleman, *Amer. Slav. East Eur. Rev.*, 1945, 4, 185–208) scientists or students of science were enrolled in Russian classes. Furthermore, a number of industrial organizations in this country now have classes in Russian organized for their technical employees. The figures given below, based on replies from 25 universities, must, therefore, be considered as smaller than the actual numbers. The principal objective of publishing this note consists in calling to the attention of American scientists, language teachers, and all interested individuals the need of introducing Russian wherever scientific and engineering training is given.

Of the institutions covered by this inquiry, 21 now accept or recommend Russian in partial fulfillment of the language requirements for graduate degrees in science. In other universities, acceptance, although not decided upon, is probable. About four hundred students were studying scientific Russian during the 1944–1945 school year. The figures for the current year are too incomplete for use. Chemists studied Russian in larger numbers than did other scientists; biologists, including physicians and medical students, came next and were followed by physicists, including radio engineers.

Organization of special courses in Russian for scientists, apart from courses in general Russian, wider acceptance by American universities of Russian for graduate degrees in science, and procurement of Russian technical books and magazines are urged by this Committee.

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A Correction

Please correct a detail on page 17 of your issue of 4 January. You describe and quote from certain resolutions passed by the Metropolitan Section of the American Physical Society on 9 November; and in the course of your description, you unluckily speak of the position of the "Society" rather than that of the Section. Now, the fact is that fewer than five per cent of the members of the Society were present at that meeting, of which no one had been notified in advance except the members living in and near New York and a few others. The resolutions cannot therefore be taken as an expression of the Society, even though many—myself included—think that a majority of the Society agree with them.

KARL K. DARROW, *Secretary*
The American Physical Society

Scanning Science—

Hon. A. D. White, formerly President of Cornell University, appeared on February 10th before the Senate Committee on a National University. He argued in favor of the plan, saying that in this respect the United States government is behind the European states. He contended that instead of weakening other universities, as had been claimed, the establishment of a National institution would strengthen all other seats of learning. It is expected that the committee will report favorably.

—21 February 1896