It is of interest to note that, although all the FAD enzymes studied appear to be sulfhydryl enzymes, as demonstrated by *p*CMB inhibition of reactions involving the reduction of dye and cytochrome *c*, they all were not inhibited by *p*CMB in catalyzing the transfer reaction. The transfer reactions from TPNH to APTPN catalyzed by nitrate reductase and from DPNH to APDPN catalyzed by the DPNH oxidase from *Cl. kluyveri*, respectively, were not inhibited by *p*CMB. Milk xanthine oxidase catalysis of hypoxanthine oxidation by oxygen and dye is inhibited by *p*CMB (*11*). When hypoxanthine and APDPN are used as electron donor and acceptor, respectively, inhibition of the reduction of APDPN is accomplished with *p*CMB and reversed with GSH. If, however, DPNH is used as electron donor, dye reduction and the transfer reaction are not inhibited by a concentration of *p*CMB, which would inhibit when hypoxanthine was used as electron donor. This is interesting in view of the belief of Mackler *et al.* (*12*) that all reactions catalyzed by their xanthine oxidase preparations are attributable to one protein.

The involvement of a reduced protein in flavoprotein reactions is now under investigation.

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References and Notes

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2. The following abbreviations are used: DPN and DPNH, oxidized and reduced diphosphopyridine nucleotide, respectively; TPN and TPNH, oxidized and reduced triphosphopyridine nucleotide, respectively; 3-AP, 3-acetyl pyridine; APDPN and APDPNH, oxidized and reduced 3-acetyl pyridine analog of DPN, respectively; APTPN and APTPNH, oxidized and reduced 3-acetyl pyridine analog of TPN, respectively; FMN and FAD, flavin mononucleotide and flavin adenine dinucleotide, respectively; *p*CMB, *p*-chloromercuribenzoate; GSH, glutathione.
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27 February 1956

International Cooperation in Radiobiology through an Agency Sponsored by the United Nations

The following reasons for international cooperation in radiobiology may be considered.

1) The running of numerous power reactors in many countries is going to increase the radioactivity of the atmosphere, the soil, and the waters. It is difficult to establish which level of constant radioactivity is dangerous for man and animals; concentrations of 1/500,000 of phosphorus-32 in fishes (as compared with water) were reported at the Geneva Conference on the Peaceful Uses of Atomic Energy. Possible damages are not limited to the country where the reactor is located; this fact may be the origin of bitter international discussions if measures are not taken beforehand.

The carcinogenic and genetic effects of ionizing radiations on nonhomogeneous populations are unknown and theoretically unpredictable. Different types of research are already contemplated to solve this question; these projects should be discussed on an international basis because they are extremely costly and time consuming.

On the genetic problem of irradiated human populations, T. C. Carter said (A/Conf. 8/P/449), "We now need a research program with three main parts: fundamental studies of mutation; studies of animal populations; and studies of human populations. Such a program would have to be on a very lavish scale and parts of it would almost certainly require international cooperation."

2) Biologists have a great responsibility in the development of peaceful uses of atomic energy. Physicists and industrialists must not disregard the warnings of the biologists despite the fact that these warnings may tend to put limits to their activity.

Some people have interest in emphasizing the biological dangers of radioactivity; others have interest in neglecting them. Margins of safety must be established and constantly revised not only by scientists meeting around a table once a year, but also by their actually working together.

3) Basic discoveries in radiobiology may have important consequences for the generalized use of atomic energy. For instance, the possibility exists of increasing, by chemical substances, the resistance of man to ionizing radiations. The phenomenon of chemical protection against these radiations has been repeatedly demonstrated in animals. Efficient treatment (actually lacking) of accidentally irradiated human beings depends entirely on active pursuit of promising researches in animals. International agreement should be reached before the use of a protector or a treatment is widely advocated. Controls of the experiments and of the substances themselves should be put on an international basis.

4) Countries that do not like to depend on big atomic powers would find in an International Laboratory of Radiobiology a suitable place for obtaining information and training for their scientists.

5) The spirit of collaboration that was prevalent during the Geneva Conference on the Peaceful Uses of Atomic Energy should be perpetuated by the presence, in the same International Laboratory, of biologists from many countries. One may hope that international cooperation would speed up biological research, thus enabling us to keep up with the industrial development of atomic energy and prevent irreparable damage to the human race.

As shown by the Geneva Conference, the whole human race is involved in the widespread use of atomic energy. Many basic biological data are not yet available that would enable us to appreciate the dangers and the possibilities of overcoming them either by protection or by therapeutics. It seems to be the duty of an International Atomic Agency to have at its disposal a body of biologists who are organized in some kind of international institution where facilities for laboratory work would be available.

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25 October 1955

Since the foregoing note was received, the United Nations has established a Scientific Committee on the Effects of Atomic Radiation, which met in New York 14–23 March 1956. The recommendations of the committee, which include many of the suggestions made by Z. M. Bacq, were released 9 April 1956 and will be summarized in the 25 May issue of Science.

Myo-Inositol as an Essential Growth Factor for Normal and Malignant Human Cells in Tissue Culture

It has been shown (*1*) that two mammalian cells, a human carcinoma of the cervix (strain HeLa) and a mouse fibroblast (strain L) can be propagated in a medium embodying 13 amino acids, seven vitamins, five salts, glucose, and a varying amount of serum protein, the latter supplied either as whole or dialyzed serum. Each of these components was demonstrably essential for survival and growth. It was subsequently found that a number of other human cell lines, both normal and malignant, could be