centration, enhance or inhibit tannin production (Constabel). Also discussed were the isolation and properties of tissues from various medicinal and other commercially valuable plants (Staba).

The roles of light and temperature on the metabolism and growth of plant tissues were discussed by Duranton and by Petru. Duranton found that light has varying effects, depending upon the season, on the arginine metabolism of Jerusalem artichoke. Petru reported on the "sudden death" of tomato roots after temperature shocks, and their seasonal variations of growth rate.

An international committee was formed to plan the next meeting of plant tissue culturists. Elected to the committee were: Ball (U.S.), Constabel (Germany), Hildebrandt (U.S.), Karstens (Netherlands), Maekawa (Japan), Morel (France), Petru (Czechoslovakia), Street (United Kingdom), Vasil (India), and White (U.S.). Ball was elected secretary of this committee. The conference also decided to accept the offer of Lipetz, Stonier, and Tulecke to edit a newsletter "Explants" which would publish a list of tissues presently in culture and compile current bibliographies on plant tissue culture.

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Radiation Chemistry: Aqueous Media

Basic concepts pertaining to the chemistry of irradiated water and aqueous media were discussed at a conference on radiation chemistry at Gatlinburg, Tennessee (8–10 May). Topics discussed by the 42 invited chemists and biologists covered chemistry of pure water, of dilute solutions, and of complex molecules.

A new impetus was given to radiation chemistry with the general availability of inexpensive and reliable radioactive cobalt-60 gamma-ray sources. On an unprecedented scale, research in this field expanded from national laboratories and a few atomic energy research centers to universities and other chemical, medical, and industrial laboratories throughout the world. As a result, research on a greatly expanded front is now being carried out. No longer is it possible to cover the entire field in any

one meeting; and for this reason, the conference at Gatlinburg was restricted to aqueous solutions. Emphasis was placed on primary reactions and chemical changes induced by the primary species in simple ions, organic molecules, and the complex units present in proteins and nucleic acids.

The most impressive advances in aqueous radiation chemistry are: a more complete characterization of the primary species and reactions; measurement of the absolute reaction rate constants of these primary reactions; and determination of chemical yields. Considerable progress has also been made in understanding the mechanisms of some of the simpler reactions induced by radiation.

For many years hydrogen atoms and hydroxyl radicals have been considered the unquestioned primary species in irradiated water. Only recently has it been shown that a second reducing species, the hydrated electron, e_{aq}^-, plays a dominant role in the chemistry of neutral and alkaline solutions. For this reason its reactions are of great significance to biologists as well as to chemists. Other less well substantiated primary species discussed were the oxygen atom and the positive polaron $(H_2O)_n^+$.

Considerable discussion centered about the measurement of relative and absolute rate constants. New techniques in spectroscopy and in the pulsed electron beam are being widely used for these measurements, and reliable absolute rate constants are now emerging from these studies. The rate constants, obtained by the spectroscopic method, of the reaction of the hydrated electron with the primary radicals H, OH, e_{aq}^-, and a host of other electron scavengers and molecules were reported. The usefulness of absolute rate constants of the hydrogen atom, hydroxyl radical, and hydrated electron reactions in simple organic reactions was demonstrated; and the need for extending these studies to the complex units in proteins and nucleic acids was pointed out. It develops that the hydroxyl radical displays a high degree of reactivity with most organic molecules and the hydrogen atom a considerably lower reactivity. The hydrated electron is readily converted to a hydrogen atom by reaction with a hydrogen ion, but it is very selective in its reactions with organic molecules.

As the radiation chemistry of irradiated pure water becomes more completely understood, radiation chemists are turning their attention to the many

interesting problems arising in the reaction of the primary species with organic molecules. In this area of research the interests of the chemists and biologists overlap. Of principal interest will be the effect of structure and molecular configuration on the rate constants of the hydroxyl radical and hydrated electron. Pulsed electron beam and spectroscopic techniques are most helpful for the measurement of these rate constants and for the identification of intermediates. The methods of isotopic tracer and chromatographic analysis are also being widely exploited in the separation and analysis of fragments derived from the radiolysis of large molecules. Considerable progress can be expected in understanding the reaction mechanisms of the hydrogen atom, hydrated electron, and hydroxyl radical.

This conference was sponsored by the National Academy of Sciences-National Research Council and supported by the U.S. Atomic Energy Commission.The proceedings of this conference will be published as a supplement to *Radiation Research.*

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Forthcoming Events

August

3–7. **Contact Lens**, 2nd world congr., Chicago, Ill. (H. G. Klene, 18 S. Michigan Ave., Chicago 3)

3–10. International **Esperanto** Congr., Sofia, Bulgaria. (R. A. Lewin, Scripps Institution of Oceanography, La Jolla, Calif.)

4–7. **Heat Transfer**, 6th natl. conf., Boston, Mass. (D. Q. Kern, 7016 Euclid Ave., Cleveland 3, Ohio)

4–9. **Aerospace Support**, intern. conf. and exhibit, Washington, D.C. (I.E.E.E., Box 6635, Washington 9)

5–7. Western **Resources** Conf., 5th annual, Fort Collins, Colo. (N. Evans, Dept. of Agricultural Engineering, Colorado State Univ., Fort Collins)

5–9. **Lattice Dynamics**, intern. conf., Copenhagen, Denmark. (S. Lundqvist, Dept. of Mathematical Physics, Chalmers Univ. of Technology, Gibraltargatan 58, Göteborg S, Sweden)

5–23. Relativity in College **Physics**, Ithaca, N.Y. (T. J. Peterson, Jr., Dept. of Physics, Cornell Univ., Ithaca, N.Y.)

5–30. **Engineering Foundation** Research Conf., Andover, N.H. (H. K. Work, Engineering Foundation, 345 E. 47 St., New York 17)

6–9. **Hydraulics**, 12th natl. conf., University Park, Pa. (Continuing Education Conf. Center, Pennsylvania State Univ., University Park)

7–9. **X-Ray Analysis** Applications, 12th annual conf., Denver, Colo. (Metallurgy Div., Denver Research Inst., Univ. of Denver, Denver 10)

9–15. **Nutrition**, 6th intern. congr., Edinburgh, Scotland. (A. B. Meikeljahn, Dept. of Clinical Chemistry, Royal Infirmary, Univ. of Edinburgh, Edinburgh 3)

11–14. American Soc. of **Pharmacology** and Experimental **Therapeutics**, San Francisco, Calif. (H. G. Mandel, Dept. of Pharmacology, George Washington Univ., Washington, D.C.)

11–15. American Soc. of **Animal Science**, Corvallis, Ore. (J. E. Oldfield, Oregon State Univ., Corvallis)

11–16. **Gerontology**, 6th intern. congr., Copenhagen, Denmark. (Danmarks Internationale Studenterkomit, Congr. Service, 19 Sankt Peders Straede, Copenhagen K, Denmark)

11–17. **Industrial** Research, 14th conf., Harriman, N.Y. (R. T. Livingston, School of Engineering and Applied Science, Columbia Univ., New York 27)

12–14. **Electromagnetic Waves** (vlf), Ionospheric Propagation, symp., Boulder, Colo. (Mrs. D. Belsher, Room 3420, Natl. Bureau of Standards, Boulder)

12–15. Care of **Mentally Defective Persons**, intern. congr., Oslo, Norway. (Bestyrelsen for Ostifternes Aandsvageforsog, Fredericksgade 19, 3 sal., Copenhagen K, Denmark)

12–16. Results of **International Geo-**