sensation and corresponding to it some form of yellow excitatory process (whether a single or dual event) in each monocular system (and by that phrase we understand the combined receptor-neural processes), there is no mysterious, synthetic central emergence of the quality yellow. . . . When pure red and pure green stimuli are mixed, the resulting sensation is a neutral at an appropriate mixture ratio" [*Science* **114**, 199 (1951)]. Thus, our experiment did not confirm Hecht's conclusions on the binocular synthesis of yellow.

A historical bibliography of earlier papers on binocular contrast effects of the sort reported by Geschwind and Segal can be found in Parson's text on color vision [*An Introduction to the Study of Colour Vision* (Cambridge Univ. Press, Cambridge, England, 1924), p. 142].

LEO M. HURVICH
DOROTHEA JAMESON
New York University, New York

We regret that in pointing out some aspects of the elegant work of Hurvich and Jameson we inadvertently gave the impression that they supported Hecht's theory of yellow. The point we wished to stress was, of course, that Hurvich and Jameson had confirmed that binocular fusion of colors was possible.

We are pleased that Hurvich has had the opportunity to point out that the laws of binocular fusion of single colors do not obey the theory drawn up for them by Hecht.

NORMAN GESCHWIND
JOHN R. SEGAL
Department of Neurology,
Veterans Administration Hospital,
Boston, Massachusetts

Science Reporting

I am writing with reference to the excellent article "Science reporting—today and tomorrow" [*Science* **131**, 1193 (1960)]. I thoroughly commend what has been said therein. Since the author looks into the future, let's try to improve as the future rolls around.

Why can't science reporters be trained to appreciate that there is more than one science, or better, more than one kind of science? One picks up the morning paper and reads such headings as, "A scientist discovers. . . ." or "Science finds that. . . ." There are species, genera, orders, and so forth among scientists. Is it beyond the scope of the reporters to differentiate among biologists, geologists, chemists, physicists, and so forth?

BRADFORD WILLARD
Lehigh University,
Bethlehem, Pennsylvania

Meetings

Free Radicals in Biological Systems

A symposium on free radicals in biological systems was held at Stanford University from 21 to 23 March under the joint sponsorship of the Biophysics Laboratory of Stanford University and the Biophysics and Biophysical Chemistry Study Section. Support was derived from the study section's special programing funds (grant RG-5048) from the National Institutes of Health, U.S. Public Health Service. The symposium was attended by 75 invited participants and included 30 papers summarizing much of the current research in this rapidly developing field.

Britton Chance (University of Pennsylvania) gave the opening paper, on free radicals in enzyme substrate compounds, and reviewed the prolific work of Leonor Michaelis, which has been responsible for much of the current interest in free radicals as naturally occurring biochemical intermediates.

Recent research on biological free radicals by other than magnetic resonance methods was discussed by H. Beinert (Wisconsin), who reported on studies of semiquinone formation by flavins and flavoproteins conducted by optical absorption spectroscopy, and by A. S. Brill (Cornell), who discussed the detection of free radical intermediates by use of a magnetic susceptibility balance incorporating a flow system. V. Massey (Sheffield) spoke on intermediates in the lipoyl dehydrogenase-substrate system as observed by optical spectroscopy.

George Pake (Stanford) discussed the general problem of applying electron paramagnetic resonance methods to the study of biological and biochemical systems and described specific approaches (sample-holder design, increase of modulation frequency, and so on) to the problems inherent in observing free radicals in aqueous, conducting systems. Electron paramagnetic resonance instrumentation was further discussed by B. Chance (Pennsylvania), who reported on a rapid-flow apparatus for spin resonance measurements, and by A. Müller (Radio-biology Institute, Karlsruhe, Germany), who described a double-cavity method for precision measurements of free radical concentration.

M. S. Blois (Stanford) reported on a series of precise g-value measurements of free radicals in solution and discussed the interpretation of g values in terms of free radical structure. M. W. Hanna (California Institute of Technology) described recent work done on the paramagnetic resonance of long polyene radicals. H. Beinert reported on paramagnetic resonance observations of semiquinone formation by flavins and flavoproteins—observations made with R. Sands (Michigan) as a parallel study to his optical measurements. L. Augustine (Atomic Energy Commission) discussed the thermoluminescence of irradiated biochemicals.

An attempted demonstration of free radical intermediates in reactions catalyzed by pyridinoproteins was discussed by H. Mahler (Indiana), and T. Nakamura (Pennsylvania) described the results of his paramagnetic resonance observations on free radicals in enzymatic oxidations. The free radical intermediates which appear during the autooxidation of dihydroxyphenylalanine were discussed by J. E. Wertz (Minnesota); L. H. Piette (Varian Associates, Palo Alto) and I. Yamazaki (Oregon) spoke on the identification of free radical intermediates during the course of the peroxidase-substrate reaction. T. Vänngard (Uppsala) described his research on the free radicals and metal valency changes occurring in the xanthine oxidose-substrate systems.

B. T. Allen (North Staffordshire) reported on some of the recent work in Ingram's laboratory and discussed the production of unpaired electrons in large molecules by ultraviolet irradiation. D. H. Whiffen (National Physical Laboratory, Teddington) spoke on the paramagnetic resonance spectra of the free radicals in irradiated single crystals of glycine and glycollic acid, and the spectra of several irradiated peptides were described by H. D. Box (Roswell Park Memorial Institute). M. L. Randolph (Oak Ridge National Laboratory) reported on his studies of the decay rates of radiation-induced free spins in crystalline amino acids, and Walter Gordy (Duke) discussed his paramagnetic resonance studies of cytochrome and hemoglobin. A paper by T. Henriksen (Norsk Hydro, Oslo) on the free radicals of irradiated thiols and disulfides was read by Tor Brustad, currently at Berkeley. Radicals and radiation damage in irradiated choline chloride were discussed by R. O. Lindblom (Dow Chemical Co., Pittsburg, Calif.)

Free radicals in systems of greater complexity were next considered. D. E. Smith (Argonne National Laboratory) spoke on free radicals in photodynamic systems, and P. B. Sogo described the paramagnetic resonance studies of photosynthetic materials carried out in Calvin's laboratory. Bernard Smaller (Argonne) discussed his findings on photo-induced free spin species in plant pigments. A. Müller read a paper describing the work in Zimmers' laboratory (Radiobiological Institute) on radiation-produced free radicals in biological systems, and Anders Ehrenberg (Caroline Institute) continued with