LETTERS
Two Disciplines: C. Grobstein; G. M. Edelman; Ice-Age Vegetation:
R. W. Fairbridge; A. McIntyre and G. Kukla; Climatology Conference:
W. F. Libby; Hepatitis B Vaccine: Disclaimer: A. Nowostawski 841

EDITORIAL
Atomic Bomb Radiation Studies in Japan: S. C. Finch and H. B. Hamilton 845

ARTICLES
Anticipation, Adaptation, and the Concept of Culture in Anthropology:
J. W. Bennett 847
Three Dimensional Structure of a Transfer RNA in Two Crystal Forms:
J. L. Sussman and S.-H. Kim 853
An Evaluation of Three Biome Programs: R. Mitchell, R. A. Mauer, J. Downhower 859

NEWS AND COMMENT
Uranium: Will There Be a Shortage or an Embarrassment of Enrichment? 866
Copyright Revision: Compromise in Photocopying Seems Likelier. 868
Swine Flu Campaign: Should We Vaccinate the Pigs? 870
Freedom of Information: NSF Accused of Infringing Act. 872

RESEARCH NEWS
Plant Biochemistry: Two New Ways to Fight Pests. 874
The Moon: Not So Different from Earth After All 875
Endangered Bird Species: Habitat Manipulation Methods 876

BOOK REVIEWS
Abnormalities in Parents of Schizophrenics, book review by B. Maher; Catastrophic Diseases, R. G. Simmons; Halonium Ions, P. E. Peterson; The Excited State in Chemical Physics, J. C. Tully; Marine Ecology and Fisheries, J. A. McGowan; Books Received 879

REPORTS
Neoglyphea inopinata: A Crustacean “Living Fossil” from the Philippines: J. Forest, M. de Saint Laurent, F. A. Chace, Jr. 884
Surface/Volume Ratio: Implications for Phytoplankton Morphology:  
W. M. Lewis, Jr. ........................................... 885

Controls on the Preservation of Biogenic Opal in Sediments of the Eastern Tropical  
Pacific: T. C. Johnson .................................. 887

Gametogenesis in Planktonic Foraminifera: A. W. H. Bé and O. R. Anderson ...... 890

Hepatocellular Transplantation for Metabolic Deficiencies: Decrease of Plasma  
Bilirubin in Gunn Rats: A. J. Matas et al. .................................. 892

*Gnathotrichus sulcatus*: Synergistic Response to Enantiomers of the Aggregation  
Pheromone Sulcatol; J. H. Borden et al. .................................. 894

Western Pine Beetle: Specificity Among Enantiomers of Male and Female  
Components of an Attractant Pheromone: D. L. Wood et al. ........................... 896

Characterization of the Androgen Receptor from a Syrian Hamster Ductus Deferens  
Tumor Cell Line (DDT1): J. S. Norris and P. O. Kohler .............................. 898

Blue-Green Algae: Their Excretion of Iron-Selective Chelators Enables Them to  
Dominate Other Algae: T. P. Murphy, D. R. S. Lean, C. Nalewajko ............. 900

Neural Properties of Cultured Human Endocrine Tumor Cells of Proposed Neural  
Crest Origin: A. S. Tischler et al. ........................................ 902

Nuclear Magnetic Resonance Patterns of Intracellular Water as a Function of HeLa  
Cell Cycle: P. T. Beall, C. F. Hazlewood, P. N. Rao .............................. 904

Vasoactive Intestinal Polypeptide: Abundant Immunoreactivity in Neural Cell Lines  
and Normal Nervous Tissue: S. I. Said and R. N. Rosenberg .................. 907

Human Handedness: A Partial Cross-Fostering Study: R. E. Hicks and  
M. Kinsbourne ............................................. 908

Catecholamine Enzymes in the Degenerative Neurological Disease Idiopathic  
Orthostatic Hypotension: I. B. Black and C. K. Périto ............................. 910

Tournaments and Slavery in a Desert Ant: B. Hölldobler ........................... 912

**Technical Comments**  
Hippocampal Activity and Scopolamine: C. H. Vanderwolf;  
H. Teitelbaum; Immunosurveillance of Naturally Occurring Feline Leukemia:  
R. T. Prehn ............................................. 914

Oceanographic Floats; Serum Separation Tube; Spectrum Analyzer: Replication and  
Translation Inhibitor; Ultraviolet-Visible Spectrophotometer; Glassware, Cart,  
and Cage Washing Equipment; Protein-Peptide Sequencer; Secondary Ion  
Mass Spectrometry; Top-Loading Balances; Polarimeter; "Transport"  
Electron Microscope Grids; Implantable Pump; Gas Chromatograph/Mass  
Spectrometer; Water Filtration; Literature .................................... 916

**Cover**

*Hastigerina pelagica* (d’Orbigny), a planktonic foraminifer with spines 7  
millimeters in length and a bubble with a diameter of 2 millimeters, which serves  
as a flotation device and housing for numerous dinoflagellate symbionts.  
Several species of planktonic Foraminifera are hand-collected by scuba  
diving in the Sargasso Sea and cultured at the Bermuda Biological Station.  
Gametogenesis was recently observed for the first time in these marine  
protozoans. See page 890. [Allan W. H. Bé, Lamont-Doherty Geological Observatory,  
Palisades, New York]
Atomic Bomb Radiation Studies in Japan

The Atomic Bomb Casualty Commission (ABCC) in Japan was organized in 1947 under the supervision of the U.S. National Academy of Sciences (NAS) for the purpose of detecting late radiation effects in the people of Hiroshima and Nagasaki who were exposed to the atomic bombs in 1945. The ABCC was funded almost entirely by the U.S. Atomic Energy Commission, although major research projects were under the joint sponsorship of the Japanese National Institute of Health and the NAS.

In 1975, 30 years after the war and after 28 years of continuous operation, ABCC was reorganized as the Radiation Effects Research Foundation (RERF), a private nonprofit foundation funded equally by Japan and the United States. American support is through the NAS under contracts with the Energy Research and Development Administration (ERDA), the National Cancer Institute, and the National Heart and Lung Institute; the responsibility for American staffing and supervision rests with the NAS. Japanese support and direction are provided by the Ministry of Health and Welfare.

The RERF offices, laboratories, and examination facilities are maintained in both Hiroshima and Nagasaki, where adult health examinations, autopsies, clinical research, and epidemiologic studies are conducted. Of the 576 RERF employees, most of the 46 professional members of the staff are Japanese. At present five physicians and three statisticians are Americans.

A number of important radiation-related clinical disorders and abnormalities have been detected in the atomic bomb survivors. The most notable of these have been increased occurrences of lenticular opacities, thyroid tumors, leukemia, chromosome aberrations in the peripheral blood lymphocytes, and a slight impairment of growth and development of those exposed early in life. Microcephaly and mental retardation have been noted in some of those exposed in utero, especially if significant exposure occurred during the early period of gestation. Recent findings indicate an increased incidence of solid tumors among the more heavily irradiated survivors. This increase has been most apparent for breast and lung cancers, but it may extend to cancer of the stomach and several other specific sites.

Extensive clinical observation of newborn children in both cities during the early years of ABCC did not demonstrate any evidence of hereditary abnormalities attributable to parental exposure. Other major studies have shown no evidence of diminution of fertility, acceleration of aging, or progression of the minimal lenticular lesions. No new or unusual clinical disorders have been observed that could be characterized as specifically and solely due to atomic bomb exposure.

The RERF plans to continue its health examination and autopsy surveillance. Particular attention now is being focused on the immunologic competence of the exposed survivors through studies of lymphocyte function. In addition, the first-generation offspring are being reexamined for evidence of possible genetic effects by using cytogenetic techniques and through a comprehensive biochemical search for serum and erythrocyte protein variants. The development of active Tumor and Tissue Registry programs in Hiroshima and Nagasaki has greatly increased the epidemiologic capabilities for detecting radiation-induced cancers in the exposed populations.

The failure to detect genetic effects thus far has been reassuring to the exposed survivors and their children, although early studies dealt only with gross structural defects. The current search for mutations at the molecular level represents a more definitive approach to the identification of radiation-induced genetic effects in the survivors' children. The persistence of an increased risk of cancer 30 years after exposure clearly indicates that the Foundation must continue its study of delayed radiation effects among the atomic bomb survivors.—STUART C. FINCH and HOWARD B. HAMILTON, Radiation Effects Research Foundation, 5-2 Hijiyama Park, Hiroshima 730, Japan