T. MIGRA

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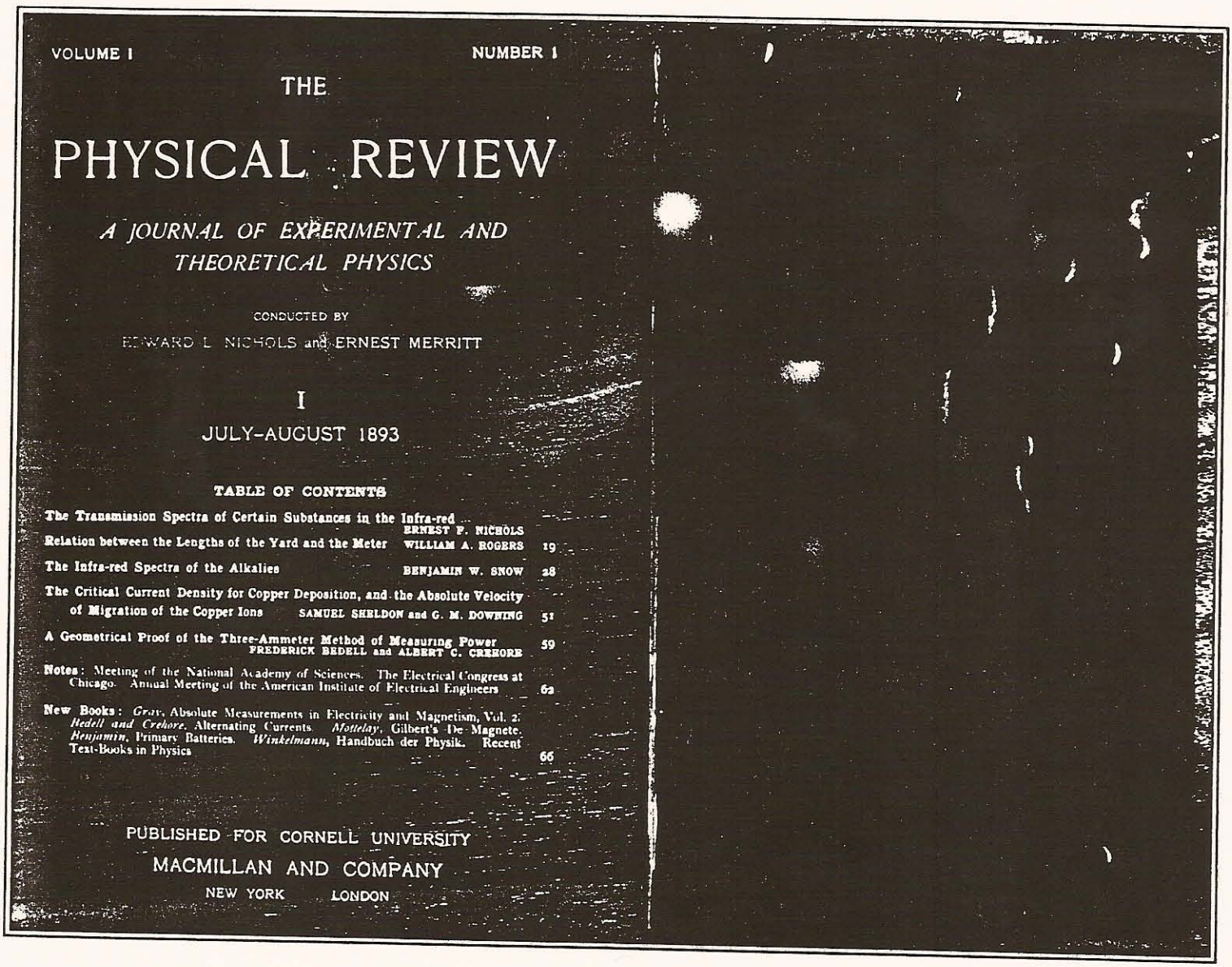

VOLUME I NUMBER 1

THE

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CONDUCTED BY

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I

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and excited state vibrational frequencies as well as molecular parameters characterizing the upper and lower states involved in the vibronic and rotational transitions.

*Supported by CSTEA grant NASA NAGW-2950, Wright-Patterson AFB grant F33615-90-C-2038, and the Howard Univ. CCU program of the Graduate School of Arts & Sciences.

9:24

E11 8 Frequency chirping of nanosecond laser pulses in dye amplifiers and second-harmonic generation.* S. Gangopadhyay, N. Melikechi, and E.E. Eyler, Univ. of Delaware.--- Frequency chirps of pulse-amplified single-mode cw lasers have been investigated for both transversely pumped and capillary-type dye amplifier cells. Optical heterodyning is used to extract the frequency evolution of the amplified pulses.[1] For transversely pumped dye cells, the instantaneous frequency varies with alignment, by as much as 40 MHz at some times during the pulse. However, capillary-type cells show remarkable repeatability. The frequency evolution ranges over tens of MHz during the pulse, but is stable with alignment to within about 2 MHz. The time dependence of the frequency of pulsed second-harmonic radiation generated in KDP was also investigated. For pulses obtained using transversely pumped dye cells, significant deviations from the predicted pulse shape and frequency evolution are observed as the second-harmonic conversion efficiency approaches saturation. We are currently investigating the frequency evolution of pulsed second-harmonic radiation generated from the output of capillary-dye amplifiers.

*Supported by the National Science Foundation and NIST.

[1]M.S. Fee, K. Danzmann, and S. Chu, Phys. Rev. A 45, 4911 (1992).

9:36

E11 9 Depth Profiling with photoacoustic spectroscopy using the methods of maximum entropy R.J.W. Hodgson Physics Department, Univ. of Ottawa.--- Application of the maximum entropy methods to the quantitative depth profiling using photoacoustic spectroscopy (PAS) is described. The advantages of this procedure over that of approximating the inverse Laplace transform are demonstrated. The procedure enables one to obtain the depth-dependent optical-absorption coefficient from measurements of the photoacoustic frequency responses. The procedure is evaluated using simulated data with noise. This method could be useful not only for the depth profile with PAS but also for the general depth profile calculations based on the Laplace transform.

Supplementary Paper

✳E11 10 Multiphoton Cycling in Controlled Laser-Induced Release of Organic Dyes from Liposomes. P. MISRA, Howard Univ., S. MISRA, Virginia Commonwealth Univ., D.L. VANDERMEULEN, Chicago Inst. for NeuroSurgery & NeuroResearch, and K.G. SPEARS, Northwestern Univ. --- Organic dyes that have strong absorption characteristics and fast relaxation rates, e.g. sulforhodamine, when encapsulated within liposomes provide a means for localized heating and controlled release of liposome contents following excitation with a single 8 ns or 25 ps laser pulse at 532 nm. Excitation at 532 nm is within the absorption band of the dye dimer, which is rapidly self-quenched (~ 1 ps or faster), whereby multiphoton cycling per dimer is feasible. For example, for a 25 ps pulse, assuming a 1 ps dimer relaxation rate, one can cycle 25 photons, and thereby explain the high efficiency of liposomes disruption obtained with single laser pulses.

*Supported by CSTEA grant NASA NAGW-2950 and the Howard University Faculty Research Support Grant Program.

SESSION E'4: UNITY OF PHYSICS DAY: ON THE DEVELOPMENT OF PHYSICS
Tuesday morning, 13 April 1993; West Salon at 10:30; D. Langenberg, presiding

10:30

E'4 1 Development of Physics Since the Inception of *The Physical Review*.
Organized by The American Physical Society and the American Association of Physics Teachers.
VICTOR H. WEISSKOPF, Massachusetts Institute of Technology.

SESSION F4: UNITY OF PHYSICS DAY: PHYSICISTS AND THEIR *PHYSICAL REVIEW*.
Tuesday morning, 13 April 1993; West Salon at 11:15; G. Holton, presiding

11:15

F4 1 *The Physical Review*—Then and Now.
ABRAHAM PAIS, Rockefeller University.

What I learned from the Physical Review after 40 years of active physics research and ten years of trying my hand at the history of our subject.

11:35

F4 2 Brief Comments.
HENRY BARSCHALL, University of Wisconsin.

11:40

F4 3 Samuel Goudsmit at *The Physical Review*.
JONOTHAN LOGAN, EPG Laboratories.

Far-ranging curiosity, uncommon shrewdness, and a pleasure in clarity revealed themselves in Goudsmit's gift for solving puzzles -- atomic, statistical, hieroglyphic -- and practical problems, too. American physicists' own journal served them remarkably well, yet the