Miscellany

Letters to the Editor

As a photometrist I have read with much interest Dr. Stevens' article "Decibels of Light and Sound" in the October issue of *Physics Today*.

I believe that Dr. Stevens' ideas have much merit, but I feel that there is a very important difference in emphasis between the photometrists and the specialists in acoustics. In acoustics, it appears to be sound pressure which is usually measured. This is a physical quantity and has no necessary reference to the ear. In photometry, however, we are in the habit of considering light as something which is received and interpreted by the eye and, therefore, we cannot describe light purely in terms of energy as is suggested near the top of the second column of page 16 in Dr. Stevens' article. I do not know whether Dr. Stevens was intending a pun in describing this as "a sound notion". If so, one might reply that this is a notion which should not be taken lightly. The writer has had to take issue with many people, particularly psychologists and optical physicists who have made photometric measurements at low levels of luminance as if the Purkinje effect did not exist. This can sometimes lead to very serious errors. It is always inadvisable to try to solve any problem by ignoring its existence and the solution suggested by Dr. Stevens seems to ignore the very real problems of heterochromatic photometry.

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National Research Council, Canada

As a member of the as yet unorganized but obviously rapidly growing Society for the Propagation of the Decibel, I applaud the views of Dr. Stevens in his paper, "Decibels of Light and Sound". I should like to add a comment on the problem of notation, and to suggest a means for resolving it.

The fact that two types of decibels are in use deserves more general recognition. The present decibel is used to measure both relative and absolute magnitudes. These two applications are illustrated respectively by such statements as "Speaker response rose 8 db at resonance", and "The 30-foot axial free space sound pressure level from the speaker was 75 db above a reference pressure of 0.0002 dyne/sq cm." Electrical communications technology has made its peace with this dichotomy by a device which I believe deserves more widespread use. In expressing absolute power levels above a one milliwatt reference, this art uses the abbreviation dbm for the decibel unit of measure. The added letter first

indicates that an absolute measure is given, and secondly identifies the quantity concerned and its reference value. For a number of years, I have been using (as an extension of this scheme) the abbreviation dbp for the unit of sound pressure level re 0.0002 dyne/sq cm. It has proved quite convenient and understandable. In addition, I have used double suffixes to indicate sensitivity, such as dbmp for microphone gain rating by the RETMA method.

Extension of these schemes to the absolute logarithmic measurement of other physical quantities is simple in concept and can be used immediately. However, there should be some agreement on the suffixes chosen, and this is the function of various standardizing groups. Although it is too early to consider final standardization, a modicum of consultation and guidance at this time may aid in forestalling painful decisions at a later date. I hope that Dr. Stevens and the other prominent members of the SPD will continue their efforts toward increasing the acceptance of both the relative and absolute decibel as a respected and versatile unit.

Vincent Salmon
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Nobel Physics Prize

Two American physicists, Polykarp Kusch, professor of physics at Columbia University, and Willis E. Lamb, professor of physics at Stanford University, have been named to receive jointly the 1955 Nobel physics prize. Dr. Kusch was cited "for his precision determination of the magnetic moment of the electron" and Dr. Lamb "for his discoveries regarding the hyperfine structure of the hydrogen spectrum". The two, working independently at Columbia some eight years ago, developed experimental evidence of small deviations from expected energy-level values as predicted by the Dirac quantum theory of the electron. Kusch, who began measuring the electron's magnetic moment in 1947, found a discrepancy of 0.125 percent between the predicted value and his experimental results. Lamb, in collaboration with Robert Retherford, observed a small displacement (the "Lamb shift") of the $2s_{\frac{1}{2}}$ energy level from its theoretical position in the course of spectral measurements of the fine structure of hydrogen in the microwave region. The deviation from theory has since been explained as resulting from an interaction of the electron with the radiation field. The joint award (worth $36 720) was announced on November 2nd by the Royal Swedish Academy of Science. Presentation ceremonies take place December 10th in Stockholm.

Societies

Newly elected officers of the Optical Society of America were installed at the close of the annual meeting of the Society held in Pittsburgh on October 6–8, 1955. They include the following: (for two-year terms), President, Ralph A. Sawyer, dean of the Graduate School of the University of Michigan; Executive Vice President, I. C. Gardner, chief of the Optics and Metrology Division of the National Bureau of Standards; (for four-year terms), Vice President for Meetings and Local Sections, Stanley S. Ballard, research physicist at the Scripps Institution of Oceanography, University of California; Directors-at-large, Walter S. Baird, president of Baird Associates, Inc., and Robert E. Hopkins, director of the Institute of Optics of the University of Rochester. Incumbent officers now in the middle of their four-year terms are the Secretary, Arthur C. Hardy of the Massachusetts Institute of Technology; the Treasurer, E. D. McAlister of the Eastman Kodak Company; the Editor of Publications, Wallace R. Brode of the National Bureau of Standards; and two Directors-at-large, James G. Baker of the Harvard College Observatory and Richard Tousey of the Optics Division, Naval Research Laboratory. Deane B. Judd of the National Bureau of Standards, as the most recent Past President, will continue as a member of the Board of Directors for two years.

The 1955 E. C. Bingham Medal, sponsored by the Society of Rheology, was awarded to Herbert Leaderman of the National Bureau of Standards on November 3rd at a banquet held during the annual meeting of the Society at the Henry Hudson Hotel in New York City. The Bingham Medal is awarded annually to "an individual who has made outstanding contributions to the science of rheology or to the Society of Rheology within the ten years preceding the date of the award".

Dr. Leaderman was one of the first to investigate and discuss the behavior of viscoelastic materials in terms of present-day concepts. His book, *Elastic and Creep Properties of Filamentous Materials and Other High Polymers*, was based largely on his own experimental observations and contains the first modern, systematic discussion of the analysis of viscoelastic behavior of linear systems based on the superposition principle. His more recent work, continuing his experimental observations of creep and recovery, has included a pioneering study of the effect of molecular weight distribution on the viscoelastic properties of rubberlike polymers, and of the behavior of such materials in the nonlinear range. Dr. Leaderman joined the National Bureau of Standards in 1948 and is now a member of the Rubber Section. He was a wartime member of the staff of the MIT Radiation Laboratory, and during 1946–48 was a physicist at Firestone Tire and Rubber Co., Akron, Ohio.

Society of Rheology officers elected on November 3rd for a 2-year term are: President, F. D. Dexter, Bakelite Co.; 1st Vice President, J. H. Dillon, Textile Research Institute; 2nd Vice President, J. H. Elliot, Hercules Experiment Station; Secretary Treasurer, W. R. Willets, Titanium Pigment Corp.; and Editor, Bryce Maxwell, Princeton University.

One of the most outstanding events in the history of the American Physical Society was the session honoring Enrico Fermi, held at the 1955 Washington meeting of the Society. This consisted of addresses by