# News and Notes

## Scintillation Counter Symposium

A SYMPOSIUM on the rapidly developing field of scintillation counters was held under the joint sponsorship of the National Bureau of Standards, the Atomic Energy Commission, the American Institute of Electrical Engineers, and the Institute of Radio Engineers January 29–30, at the Shoreham Hotel, Washington, D. C. The meeting was attended by more than 300 scientists representing universities and government and industrial laboratories.

The symposium was divided into four sessions, under the respective chairmanships of L. S. Taylor (NBS), G. A. Morton (RCA), W. H. Jordan (ORNL), and J. B. H. Kuper (BNL). During the two-day period, 35 papers were delivered, some of which are briefly summarized here. In his welcoming address, A. V. Astin, acting director of the National Bureau of Standards, expressed the interest of the bureau in the development of new techniques of measurement such as the scintillation counter.

The opening paper, delivered by M. H. Greenblatt (RCA), was devoted to a description of two new multiplier phototubes developed in the RCA laboratories by P. W. Davison, G. A. Morton, M. W. Green, and the speaker. The first of these tubes (RCA H-5037) has a 3.5″ photocathode for use with large scintillation materials. It contains an electrostatic focusing system and a conventional 931-A multiplier structure. The second of the tubes (RCA 4646) has extremely high gain ($\backsim 10^9$), eliminating in most cases the need for after-amplification. This is accomplished through use of a 16-stage dynode-anode structure. The very high gain of the tube introduces a number of space charge problems; however, output pulses of 40-v amplitude into a 200-ohm line are obtained easily with conventional phosphors. Similar tubes developed at EMI were described by J. McGee (England). The British tubes are of the Venetian blind type of structure.

Several relatively new instruments and circuits were discussed. C. H. Smith (NRL) described a cathode-ray tube capable of registering $10^{11}$ sweeps/sec, having a deflection sensitivity of 0.6 v/trace width. This instrument utilizes a traveling wave deflection system. Two very high resolution coincidence circuits were described. One developed by J. Marshall (Chicago) employs a type 6BN6 gated beam tube and has a resolution time of the order of $5 \times 10^{-10}$ sec. The other, described by Z. Bay (Washington U), makes use of germanium diodes in a differential circuit and has a resolving time of the order of $2 \times 10^{-10}$ sec.

High-speed circuits using secondary emission pentodes (EFP60) and very high transconductance pentodes (VX 5038) were reported from England by F. H. Wells (AERE). In further discussions of circuits, G. G. Kelley (ORNL) indicated the difficulties encountered in the design of pulse amplitude analyzers for scintillation counter spectrometry, and W. A. Higinbotham (BNL) analyzed new electronics required for optimum use of scintillation counters.

Serious limitations in the application of scintillation counters to high resolution spectrometry and very high resolution coincidence counting are imposed by satellite, or after-, pulses and by the finite emission time and transit time in the multiplier. Various aspects of these problems were presented by D. W. Mueller (LASL), F. B. Harrison (Princeton), D. C. Moore (RCA), P. W. Davison (RCA), R. W. Engstrom (RCA), R. R. Law (RCA), G. A. Morton (RCA), and R. F. Post (California). Small pulses occurring within a few microseconds following a single event have been observed. The amplitude of these satellite, or after-, pulses is about twice that of the multiplier noise pulses. They are probably caused by the formation of positive ions in the multiplier which produce secondary electrons in the photocathode. Effective elimination is possible by careful outgasing of the multiplier; this, however, requires the use of special dynode materials.

It was pointed out by R. R. Law that the time spread in the electrons arriving at the anode is attributable in part to finite electron emission time. This was determined experimentally through use of a secondary electron multiplier structure of extremely small dimensions (1 mm).

Work on phosphors is oriented toward the development of higher efficiency, higher speed, sensitivity to slow neutrons, and larger effective volume. It appears that for $\gamma$-ray detection NaI(Tl) is the most efficient phosphor in the low-energy region, and the organics such as anthracene and stilbene at higher energies. The shortest decay times are found in liquid scintillators such as terphenyl in toluene.

The inclusion of boron or lithium in the phosphor permits the detection of slow neutrons by the $(n, \alpha)$ reaction. J. C. Schenk (ORNL), R. K. Swank (Argonne), and A. W. Schardt (BNL) discussed the performance of various boron- and lithium-containing phosphors. The most promising of the materials is LiI (Tl), which shows a narrow pulse height distribution originating from the $\alpha$-particles produced in the $(n, \alpha)$ reaction.

R. C. Sangster (MIT) described experiments on the relationship between the fluorescence spectrum and the structure of systems of condensed ring compounds.

Investigations of the fundamental processes of energy transfer in organic fluors were reported by F. N. Hays (LASL) and S. H. Liebson (NRL). Dr. Hays' experiments involved the use of compounds containing $C^{14}$ and $H^3$. The evidence found is consistent with a theory that involves initial ionization steps, followed by energy transfer from solvent cations to solute molecules producing solute cations,

which recombine with low-energy electrons to give activated scintillator molecules, subsequently returning to their ground state with simultaneous emission of light.

Dr. Liebson's work was concerned with the behavior of anthracene-naphthalene mixtures as a function of temperature. The results indicate that the anthracene in naphthalene acts as an energy trap, the host lattice being primarily responsible for the temperature variation of the pulse size. Several different methods for the measurement of fluorescence decay time were also discussed. Differences in decay time for ultraviolet excitation as compared to $\gamma$-excitation are indicated by these measurements.

In the region of the very high energies the application of conventional scintillation counters was described by L. F. Wouters (California). Another technique that appears promising for the measurement of electrons, mesons, and protons in this region is the detection with a multiplier tube of Cerenkov radiation from various media. J. Marshall (Chicago) discussed the problems involved in the application of this method.

Cosmic ray investigations employing very large volumes of liquid scintillators viewed by several multiplier tubes were described by G. T. Reynolds (Princeton) and F. H. Wells (Harwell). A similar application of liquids to the measurement of the energy distribution of the beam from the NBS betatron was presented by Cleland and Koch (NBS).

Pulsed operation of a photomultiplier can sometimes be employed to maximize its gain, output current, and speed of response. In a paper given by R. G. Post (Stanford) a practical case using a standard 1P21 photomultiplier was described. It was found that under pulsed conditions the multiplier gains were sufficiently high ($\simeq 10^9$) to enable the direct display of noise output pulses having a width of $10^{-9}$ sec or less, on a cathode-ray tube. Experiments were carried out in the use of this technique for very fast coincidence counting, with resultant resolving times of better than $10^{-9}$ sec.

With a simple coincidence circuit having a resolution of about $10^{-9}$ sec, S. De Benedetti (Carnegie Tech) was able to measure the time of flight of $\gamma$-rays over distances of the order of a few centimeters. He applied this instrument in a study of the half-life of positrons in condensed materials and in the measurement of the $\alpha$-$\gamma$ angular correlation of $Po^{210}$.

One of the most fruitful applications of scintillation counters is in the field of $\gamma$-ray spectrometry, developed principally by P. R. Bell (ORNL). Some of the precautions that must be taken with, and the limitations of, the systems currently in use were discussed by R. K. Swank (Argonne) and W. H. Jordan (ORNL). Swank reported some observations on pulse height resolutions and photosensitivity of different multiplier tubes. He also described a spectrometer giving an energy resolution of 9%.

W. Jordan and his collaborators from the Oak Ridge National Laboratory showed scintillation spectrograms on which could be observed such details of structure as x-ray escape peaks, $\gamma$-ray back-scattering peaks, peaks due to x-rays generated in the surrounding shield, and peaks due to x-rays following internal conversion.

On Tuesday evening the guests of the symposium were invited to hear a talk given by L. Hafstad (NBS) on nuclear reactors. The entire symposium was characterized by a lively interest on the part of those attending, though it was unfortunate that the crowded program permitted little time for discussion during the sessions.

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## Scientists in the News

**Arthur F. Abt** has accepted appointment as professor of pediatrics at the Duke University School of Medicine and director of the Radioisotope Unit for the Veterans Administration Hospital at Durham, N. C. Dr. Abt has been engaged in the practice of pediatrics in association with his father, Isaac A. Abt, since 1926 and has been active in public welfare organizations in Chicago.

**Antonio Arena,** former head of the Soils Division of the Argentine Ministry of Agriculture and later director of the Soils Institute, has been appointed soils specialist of the Technical Cooperation Program of the Inter-American Institute of Agricultural Sciences and will be stationed in the Southern Zone, with headquarters at Montevideo. **Luis Carlos Cruz Riascos** has been named executive secretary of the program and will function at Institute headquarters in Turrialba, Costa Rica. Mr. Cruz has been head of the Agronomic Service of the Chilean Nitrate Corporation in Colombia.

**Alton E. Bailey,** president of the American Oil Chemists' Society, has been chosen by the American Chemical Society's Georgia Section to receive the 1952 Herty Medal. The award, sponsored by the Chemistry Club of the Georgia State College for Women, is given annually for outstanding contributions to chemistry in the Southeast. Mr. Bailey, who is director of research of the HumKo Company, Memphis, will receive the medal at the annual Herty Day celebration on the Milledgeville campus May 3. The Herty Medal is named in honor of the late Charles H. Herty, twice president of the American Chemical Society and originator of the process for manufacturing paper from southern pine.

**David Birnbaum,** who holds the Magnus-Warburg Fellowship from the Hadassah-Hebrew University Hospital in Jerusalem, is spending a year in New York City, working in the Gastroenterology Research Laboratory of the Mount Sinai Hospital under the direction of Franklin Hollander.

The vacancy on the Pacific Science Council created by the death of **Sir Peter Buck** has been filled by the Bernice P. Bishop Museum with the appointment of **Cyril E. Pemberton,** entomologist with the Experiment Station of the Hawaiian Sugar Planters' Association, Honolulu. Dr. Pemberton has been closely associated with the Pacific Science Association, having been chairman of the Standing Committee on Economic Entomology between the sixth and seventh Pacific Science congresses. He is now a member of the Standing Committee on Crop Improvement in the Pacific Area. **Louis Malleret** has been designated by the Academie des Sciences as council member from the Etats Associes de l'Indochine.

**Viscount Chaplin** has been appointed honorary secretary of the Zoological Society of London, succeeding **Sheffield A. Neave,** who is retiring after 10 years in office. Dr. Neave retired from the directorship of the Commonwealth Institute of Entomology in 1946.

**Kingsley Davis,** associate professor of sociology and director of population research at Columbia University, has been engaged by the Conservation Foundation to survey existing activities in various countries in regard to the relationship of natural resources and population pressures, under the terms of an anonymous grant of $22,500 to the foundation.

Recent visitors at the National Bureau of Standards were **Barend de Loor,** of the Department of Statistics, University of Pretoria, South Africa; **S. A. Sathar,** deputy chief engineer, Posts, Telegraphs and Telephones, Karachi, Pakistan; and **Bungo Umemiya,** director and chief of the Research Department of the Japanese Spinners' Inspecting Foundation, Osaka. Professor de Loor is on a six-month visit in the U. S., where he is studying statistical research techniques and related matters.

Gaps in the history of the Roman occupation of England are being filled in by new discoveries and excavations, the most recent of which are at Puddle Hill, north of Dunstable, Bedfordshire, and on the site of Lloyd's new building on Lime Street, London. Excavation at Puddle Hill is being directed by **Joan Evans,** of the Luton Art School, and **James F. Dyer,** of the Luton Grammar School. The work at Lloyd's is being done by the Guildhall Museum staff under **Norman Cook.**

**Ernest Carroll Faust,** William Vincent professor of tropical diseases and hygiene, and head of the Division of Parasitology, Department of Tropical Medicine and Public Health, Tulane University, attended the first National Congress on Tropical Medicine, Lisbon, in April as Official Honor Guest from the U. S. This congress commemorated the 50th anniversary of the founding of the Institute of Tropical Medicine of Lisbon. Dr. Faust was asked to address the congress on "The Control of Schistosomiasis," "Clinical and Public Health Significance of Amebiasis," and "Some Morphologic Characters of *Diphyllobothrium latum.*" Dr. Faust will also visit the Department of Parasitology, School of Medicine in Paris, and the Institut Pasteur de Paris.

**James J. Gibson,** Cornell University, was awarded the Warren Medal by the Society of Experimental Psychologists at its annual meeting. The citation for the award was as follows: "The Howard Crosby Warren Medal is awarded to James J. Gibson for his many studies, culminating in his book, 'The Perception of the Visual World,' directed upon fundamental as well as very practical problems in the field of perception. His book is one of the few important works ever done on the central, neglected question as to how man comes to know the world about him."

**Heinz E. R. Gruner** has been appointed head of Bausch & Lomb Optical Company's Photogrammetric Section. A graduate of the University of Dresden, Dr. Gruner joined the firm's Scientific Bureau in 1948. During 1932–36 he was attached to Wright Field as civilian head of the Research and Development Group of the Army Corp of Engineers.

**Carl G. Hartman,** associate director of the Ortho Research Foundation, Raritan, N. J., has accepted an invitation to the faculty of the Free University of Berlin to give a course of lectures in physiology during the summer semester. He will also participate in the Ciba Foundation's Conference on Germ Cells and the annual meeting of the British Society for the Study of Fertility in London June 18–20 and June 25–27, respectively. He will return via Sweden after attending the II International Congress of Physiology and Pathology of Animal Reproduction in Copenhagen July 7–11.

**John Jackson,** who retired last July as His Majesty's Astronomer at the Royal Observatory, Cape of Good Hope, S. A., has been awarded the gold medal of the Royal Astronomical Society for 1951, in recognition of his work on stellar parallaxes and proper motions.

**J. Elliott Janney,** who is in charge of research and development for Rohrer, Hibler & Replogle, of Cleveland, Ohio, will spend July in England interviewing a number of top British scientists in the course of an investigation of the process of creative thinking.

**Z. Kopal,** formerly of the Harvard Observatory, has recently been appointed professor of astronomy at the University of Manchester. His appointment strengthens the astrophysical trend in the university, which is already supporting the radio-astronomy program at Jodrell Bank under A. C. B. Lovell, investigations on geomagnetism, and several projects in theoretical astrophysics. An experimental astronomy program will begin shortly at Manchester, when the installation of an 18-inch reflector at Jodrell Bank is completed.

The **Earl of Limerick,** who was recently made a member of the Medical Research Council of Great Britain, has been elected chairman, succeeding the late **Viscount Addison.**

**John Lounsbury,** who has been working on the land utilization program in Puerto Rico, has recently been appointed to the staff at Antioch College, to teach geology and geography.

**Andrew McCance** has been appointed chairman of the Mechanical Engineering Research Board of the British Department of Scientific and Industrial Research, succeeding **Henry Guy,** who has just retired.

**John P. McGovern,** assistant professor of pediatrics, George Washington University, has received $8000 in grants for research in the use of new drugs in the treatment of infants and children. A grant of $3500 has been received from Charles Pfizer & Co. for studies with antibiotics, and White Laboratories has granted $4500 for an evaluation of molybdenum in compounds containing iron to determine its effectiveness in the treatment of iron deficiency anemias in infants and children. Dr. McGovern joined the university staff in 1950 as a Markle Foundation scholar in medical science.

**Frank A. Melton,** professor of geology and aerogeology in the School of Geology, University of Oklahoma, received the Talbert Abrams Award for his paper "The Geomorphology and Photo-Geological Study of the Flat-Lands," published in *Photogrammetric Engineering* in December 1950.

The Cross of Alphonso X, "El Sabio," has been awarded to **José M. Otero** for his distinguished work in physiological optics and for his achievements in the organization and administration of science in Spain. Professor Otero is the director of the Instituto de Optica Daza de Valdes in Madrid. He is also director of the Spanish Naval Research Laboratory and vice president of the Commission on Nuclear Energy.

**Oleg Polunin,** science master at Charterhouse; **W. R. Sykes,** of the Royal Horticultural Society Gardens; and **L. H. J. Williams,** of the Department of Botany, British Museum (Natural History), are in Nepal on a botanical expedition sponsored by the museum and the society, and supported by other scientific organizations. The object of the expedition is to collect specimens of the flora native to the Himalayas from the Indian to the Tibetan boundaries, and from altitudes as low as 2000 feet and as high as 26,795 feet. The region is unexplored botanically.

**R. Rivlin,** of the British Rubber Producers Research Association and the Royal Institution (London), plans to spend six months in the U. S. this year. He will be at the Naval Research Laboratory as consultant in the Mechanics Division.

**Melvin A. Schadewald** has accepted appointment as assistant professor of pharmacology and toxicology at the University of Texas Medical Branch, Galveston. Dr. Schadewald has been research scientist at the Hastings State Hospital, Hastings, Minn.

**E. W. R. Steacie,** who has been vice president (Scientific) since 1950 of the National Research Council of Canada, and director of NRC's Division of Chemistry since 1939, has been named president. He succeeds **C. J. Mackenzie,** who has been appointed president of the newly created crown company, Atomic Energy of Canada, Ltd.

The American Cancer Society has honored **Norman Treves,** founder and present director of the Nassau Tumor Clinic, with a medal and certificate. Dr. Treves is associate attending surgeon at Memorial Hospital for the Treatment of Cancer and Allied Diseases in New York City and also assistant professor of clinical surgery at Cornell University Medical School.

**A. G. Walker,** professor of mathematics at the University of Sheffield since 1947, has been appointed professor of pure mathematics at the University of Liverpool, succeeding **J. M. Whittaker,** who has been named vice chancellor of the University of Sheffield.

## Grants and Fellowships

**Allied Chemical & Dye Corporation** will award 41 graduate fellowships (10 more than in 1951–52) for study in 26 universities and other academic institutions in the U. S. and Canada, principally in chemistry and chemical engineering. Each fellow will receive tuition in addition to a stipend of $1500.

The **American Institute of Nutrition,** at its meeting in New York last April, presented the Borden Award in Nutrition ($1000 and a gold medal) to Max Kleiber, of the University of California at Davis, for his contributions to knowledge of food utilization and energy metabolism of dairy animals; the Mead Johnson Award on the Vitamin B Complex ($1000) to Howerde E. Sauberlich, of Alabama Polytechnic Institute, in recognition of his fundamental investigations of the citrovorum factor and its relation to folic acid; and the Osborne and Mendel Award of the Nutrition Foundation ($1000) to Icie Macy Hoobler, of the Children's Fund of Michigan, for her extensive fundamental studies on the nutritive requirements of children.

**National Medical Fellowships, Inc.** (formerly Provident Medical Associates), has approved new fellowship and scholarship grants to 43 individuals for the year 1952–53. All awards are to Negro physicians and medical students, and they provide for training in dermatology, internal medicine, obstetrics and gynecology, ophthalmology, orthopedics, pediatrics, psychiatry, radiology, and surgery. The affairs of the organization are administered by an interracial Board of Directors, which has recently been increased from 9 to 15 members.

The **National Science Foundation** has approved an additional 41 research grants, totaling $406,660, in the biological and physical sciences. Grants in this group range from one to five years. Largest grants went to the University of Missouri for research, under the direction of Arthur R. Laufer, on acoustic cavita-

tion ($31,700); to Purdue, for an investigation under Herbert C. Brown of the effect of structure on chemical reactivity using molecular addition compounds ($25,300); and to Chicago Natural History Museum, for a taxonomic study of the tropical plants of Colombia by José Cuatrecasas ($25,000). Funds were distributed as follows: biochemistry, 2 grants; biophysics, 4; chemistry, 11; comparative physiology, 1; developmental biology, 1; endocrinology, 1; engineering, 1; enzyme chemistry, 1; experimental plant biology, 2; genetics, 2; microbiology, 2; physics, 5; pharmacology, 2; research education in the sciences, 1; systematic biology, 5.

## Meetings and Elections

The **American Gas Association** has elected Charles E. Bennett president to succeed the late George F. Mitchell. Mr. Bennett is president of the Manufacturers Light and Heat Company, Pittsburgh. Frank C. Smith, of Houston Natural Gas Company, was elected vice president.

At its annual meeting in March in Salt Lake City, the **American Mosquito Control Association** elected C. R. Twinn president to succeed Don M. Rees. Dr. Twinn is head of the Veterinary and Medical Unit of the Canadian Department of Agriculture.

The **American Psychosomatic Society** has elected the following officers: president, Sydney G. Margolin; president-elect, George L. Engel; secretary-treasurer, Fredrick C. Redlich. David T. Graham, George C. Ham, Erich Lindemann, and Milton Rosenbaum were elected to the Council.

An **Association of Indian Science Writers** was organized during the Indian Science Congress recently held in Calcutta. D. M. Bose, one of the editors of *Science and Culture,* was appointed chairman of a committee of 19 to draft a constitution for the new society. S. N. Sen was made secretary of the committee.

The first Plansee Seminar **"De re metallica"** will be held June 22–26 in Reutte in the Tyrol, under the auspices of the U. S. High Commissioner for Austria, the Austrian minister of education, the rector of the University of Innsbruck, and representatives of the Tyrolean government. The tentative program includes lectures by these American scientists: G. J. Comstock, V. C. Frechette, H. H. Hausner, W. J. Kroll, J. T. Norton, and J. Wulff.

The **Institute of Metals** has elected the following officers: president, C. J. Smithells, of British Aluminium Company; vice presidents, G. L. Bailey and S. F. Dorey; treasurer, E. H. Jones.

A **Symposium on Electron Transfer and Isotopic Reactions** will be held at the University of Notre Dame June 11–13, under the joint auspices of the Division of Physical and Inorganic Chemistry of the American Chemical Society and the Division of Chemical Physics of the American Physical Society.

## Miscellaneous

The **American Museum of Natural History,** the **National Geographic Society,** and **Dr.** and **Mrs. Carnes Weeks,** of Medford Plantation, Mount Holly, S. C., are sponsors of an expedition to French Equatorial Africa and the French Cameroons for a study of the little-known flora and fauna of those sections. Dr. and Mrs. Weeks; Walter Weber and Volkman Wentzel, of the National Geographic; Donald Carter, of the American Museum; and Ernst A. Zwilling and Kurt Uetz, of the Haus der Natur Museum, Vienna, will be members of the expedition. Extensive sound recordings of native dialects and music will be made.

National headquarters of the **American Rose Society** will be moved from Harrisburg, Pa., to Columbus, Ohio. The city has voted to spend $205,000 to establish the Park of Roses, "the largest rose garden in the world." It will contain about 50,000 rosebushes.

The **Commission on Chronic Illness** will move to Baltimore July 1 for a special, long-term, intensive study of chronic disease among 4000 Baltimore families, a companion study to one being made on the rural population of Hunterdon County, New Jersey. Dean W. Roberts, of Johns Hopkins, deputy director of the Maryland State Department of Health, is the newly appointed head of the commission.

Chemicals wanted by the **Registry of Rare Chemicals,** 35 W. 33rd St., Chicago 16, include: calcium palmityl phosphate; methyl aluminum dichloride; ruthenium fluoride; sodium hexavanadate; triphenyl antimony; 2,5-xylyl hydrazine; piperonylic acid; purpurin sulfonate; mesoxalic acid; 1-hydroxymethylcyclobutanol-1; decamethylene diamine; divinyl sulfone; choline stearate; 0,3,3-bicyclooctane; arecaidine; arginase; coronene; cupreine; luciferin; dihydroquercetin; and *o*-tert-butyl toluene.

Soviet physicists won top honors in the annual award of **Stalin Prizes** for outstanding scientific work. Nikolai Vasilevich Belov, the late Sergei Vavilov, Elphidifier Kirilov, Vadim Levshin, and Elevter Andronikashvili were the physicists honored; other prizes went to Vladimir Nagovsky and three coworkers of the Academy of Medical Sciences and to Anatolii Tomashevich for work in the military sciences.

**Vol. I, No. 1,** of the following have been received: *Anais de Microbiologia,* University of Brazil; *The Archives of Orthodontics,* bimonthly, $12.00 per year (Lucien DeCoster, editor-in-chief); *Science of Light,* from the Institute for Optical Research, Tokyo University of Education (in Japanese with English abstracts—succeeding volumes to be in English). *Orthopedic and Prosthetic Appliance Journal,* a quarterly, succeeds the *Journal of the Orthopedic Appliance & Limb Manufacturers Association*; and the *Nagoya Journal of Medical Science,* of Nagoya University, Japan, has resumed publication, after 11 years, with Vol. 14, No. 1.