The annual conference has been inaugurated to present the latest theoretical ideas and experimental facts involved in developments of photography, including photomechanics, photo-optics, and photochemistry.

Of greatest interest to the physicist was an invited paper by E. Wainer of Horizons, Inc., Cleveland, Ohio, who spoke of his work on phosphor type photoconductive coatings for continuous tone electrostatic electrophotography.

Since 1940, when C. F. Carlson announced his invention relating to electron photography, considerable work has been done to improve techniques and results obtainable. Carlson's process, somewhat modified, consists of sensitizing by placing an electrostatic charge on an "electrophotographic plate" (comprised of a photoconductive layer, such as selenium upon a base plate of considerably lesser specific resistivity), then obtaining a latent image by exposing in the usual manner, and then dusting the plate with a micronized resinous powder rendering the image visible.

A few years later, H. Kallmann (now at New York University) suggested to his co-workers at the Signal Corps Laboratories a manner of utilizing phosphors whose dark resistance is of the same order as that of selenium. His method was to irradiate the phosphor layer with infrared in order to empty the electron traps, then to expose the phosphor in the normal manner to form a conductivity latent image, following which the layer is charged and developed. This is a complete reversal of Carlson's method; however, the successful application of the "Kallmann effect", as his method has been named, has led to Wainer's work which began in July 1950 under sponsorship of the Signal Corps Engineering Laboratories.

From a theoretical examination of the electrophotographic process using photoconductive phosphors indications are that only low photographic speeds may be expected, so that the greater portion of Wainer's work is in making basic changes in the sensitive materials. According to Wainer, the photoconductivity of zinc sulphide—cadmium sulphide phosphors appears to be greater with increased CdS content, and indications are that properly prepared CdS will be more effective than commercially available phosphors for photographic purposes by factors which may be of one order of magnitude. Experimental evidence which he has compiled indicates that a phosphor which has been made luminescent by use of a substitutional impurity is not photoconductive; whereas, a sulphide phosphor made luminescent by an interstitial impurity, such as copper, is photoconductive. Further investigations were presented wherein indications are that the increase in dielectric constant exhibited by phosphors is an adverse phenomenon as far as photographic work is concerned and that only photoconductive and electrometric changes are important for evaluating the photographic process. In those cases where large dielectric changes are accompanied by large photoconductive changes, the overall speed of the phosphor is high, and it appears that the magnitudes of the photoconductive changes are sufficiently large in such cases to mask the dielectric changes which are evident.

Several descriptions of new methods of rapid processing were presented by members of industrial and government research laboratories. A paper by H. D. Russell of the Kodak Research Laboratories, Rochester, New York, described the elimination of the normal processing operations of fixing and washing by treating film in a stabilizer after development, whereby images of reasonable permanence to heat, light, and moisture are obtained in a minimum of time. Russell was followed by S. Levinos, who described a stabilization process developed at the Signal Corps Engineering Laboratories wherein the conversion of the unexposed silver halide to a light transparent, light insensitive form is accomplished by a thiourea solution.

The contribution of L. Katz, Raytheon Manufacturing Company, Boston, Massachusetts, on controlled processing of film using turbulent flow phenomena is worthy of note. Katz indicated that recent investigations into the phenomena of turbulent flow have shown that its use can greatly increase the speed of photographic processing. Accurate control of the developing process can be obtained by the application of turbulent flow by variations in Reynold's number, which can be obtained by changing the pressure with which the fluids are introduced.

The diversity of papers presented may be seen from the following: "Application of Ion Exchange Resins in Photographic Processing" given by H. P. Gregor, Polytechnic Institute of Brooklyn, in which the chemistry of ion exchange processes and the general characteristics of cation and anion exchange resins were discussed in detail; and "An Application of the Polaroid-Land Process to Radiography" given by A. Bachelder, Polaroid Corporation.

The 15 papers given at the two-day session provided a lively program which proved of keen interest to the 178 in attendance. It is not amiss to recall the remarks of H. Hoerlin (*Physics Today*, June 1950, page 29) with regard to the fact that in Europe photographic science enjoys considerable stimulation from contact with academic institutions and at this time to note the increased attention given to photographic science by academic institutions in this country as was indicated at this conference.

The success of the symposium and the enthusiasm expressed for it by scientists in industry, universities, and government engaged in pursuits relating to photography have impressed the sponsors and justified their plans to continue the Photographic Research and Development Conference as an annual affair.

Bernard Marcus
Signal Corps Engineering Laboratories

MEETINGS TO BE HELD

MATHEMATICAL CONFERENCE

The fifty-sixth summer meeting and thirty-second colloquium of the American Mathematical Society will

be held at the University of Minnesota, Minneapolis, Tuesday to Friday, September 4–7, in conjunction with the summer meetings of the Econometric Society (September 4–7), the Institute of Mathematical Statistics (September 4–7), and the Mathematical Association of America (September 3–4). Featured speakers will be Deane Montgomery of the Institute for Advanced Study, Princeton, who will present the thirty-second colloquium entitled "Topological Transformation Groups", and George W. Whitehead of the Massachusetts Institute of Technology, who will address the Society.

NUCLEAR PHYSICS IN EUROPE

A special symposium on "Nuclear Physics in Europe" will be conducted by six European physicists at Oak Ridge, Tennessee from September 13 to 14. Open to all physicists and other interested scientists, the symposium is sponsored jointly by the Oak Ridge National Laboratory and the Oak Ridge Institute of Nuclear Studies, and will be offered without charge, although those attending will be expected to pay their own living and travelling expenses. Symposium leaders and their subjects are: E. Amaldi of the University of Rome—"Contribution to the Investigation of Extensive Showers"; S. Devons of the Imperial College of Science and Technology, London—"Projected Experiments on Gamma Emission"; P. Huber of the University of Basel—"Elastic Scattering of Fast Neutrons from Various Light Elements"; J. Mattauch of the University of Bern—"Problems of Modern Mass Spectrometry"; R. E. Peierls of the University of Birmingham—"Problems of Nuclear Forces and Nuclear Structure"; and J. Rotblatt of the University of London—"Studies of Nuclear Processes Involving 8 Mev Deuterons by the Photographic Method". Additional information on the symposium is available from the University Relations Division, Oak Ridge Institute of Nuclear Studies, P. O. Box 117, Oak Ridge, Tennessee. All of the visitors except Professor Mattauch are part of a larger group of European physicists who are coming to this country in September to participate in the International Conference on Nuclear Physics and Fundamental Particles to be held at the University of Chicago from September 17 to 22. Professor Mattauch will participate in a Symposium on Mass Spectroscopy in Physics Research, September 6–8, to be held at the National Bureau of Standards.

GASEOUS ELECTRONICS CONFERENCE

The fourth Conference on Gaseous Electronics, sponsored by the Division of Electron Physics of the American Physical Society, will meet October 4–6 in Schenectady, New York. Sessions will be held at the General Electric Research Laboratory, in the new buildings at the Knolls which were formally dedicated last autumn. The program will include invited and contributed papers pertaining to the fundamental physics of gas discharges. Full information may be obtained from the secretary of the conference, Dr. James D. Cobine, G-E Research Laboratory, P. O. Box 1088, Schenectady, New York.

Calendar of events

August

9–1	Scientific Apparatus Makers Association, Laboratory Equipment Section, Northernaire Hotel, Three Lakes, Wisconsin
13–15	Joint Commission on Radiometeorology, Brussels, Belgium
13–7	Canadian Mathematical Congress (Third Summer Seminar), Dalhousie University, Halifax, Nova Scotia
20–23	American Institute of Electrical Engineers (Pacific General Meeting), Multnomah Hotel, Portland, Oregon
20–25	New England Association of Chemistry Teachers (Thirteenth Summer Conference), Rhode Island State College, Kingston, Rhode Island
21–1	International Union of Geodesy and Geophysics, Brussels, Belgium
22–24	Institute of Radio Engineers, Western Convention and 7th Annual Pacific Electronic Exhibit, San Francisco, California
22–5	Low Temperature Physics Conference. Unesco Commission for Very Low Temperatures, Oxford, England, August 22–28; Institute International du Froid, London, England, August 29–September 5
23–25	Symposium on the Solution of Simultaneous Equations and the Determination of Eigenvalues. Institute for Numerical Analysis, Los Angeles, California
27–30	Illuminating Engineering Society (National Technical Conference), Hotel Shoreham, Washington, D. C.
27	Nuclear Engineering Symposium (Sponsored by Oak Ridge National Laboratory and Oak Ridge Institute of Nuclear Studies), Oak Ridge, Tennessee; until September 7

September

3–4	Mathematical Association of America, University of Minnesota, Minneapolis, Minnesota
3–7	American Chemical Society (Diamond Jubilee Celebration), New York City
3–7	Institute of the Aeronautical Sciences, Third International Aeronautical Conference, Brighton, Sussex, England
3–12	International Chemical Conclave. American Chemical Society, 3–7; International Union of Pure and Applied Chemistry, 8–9; International Congress of Pure and Applied Chemistry, 10–13. New York City
4–6	British Association of Radio Engineers (1951 Radio Convention), Session 6 on Audio Frequency Engineering, The Richmond Hall, Earls Court, England
4–7	American Mathematical Society, and Institute of Mathematical Statistics, University of Minnesota, Minneapolis, Minnesota
6–8	Symposium on Mass Spectroscopy in Physics Research, National Bureau of Standards, Washington, D. C.
11–13	Institution of Mechanical Engineers and American Society of Mechanical Engineers, General Discussion on Heat Transmission, London, England
10–14	Instrument Society of America, Houston, Texas
11–20	Building Research Conference, Institution of Civil Engineers, London, England
12–14	Biological Photographic Association, Inc. (Annual Meeting), Kenmore Hotel, Boston, Massachusetts
13–14	Symposium on Nuclear Physics in Europe (Sponsored by Oak Ridge National Laboratory and Oak Ridge Institute of Nuclear Studies), Oak Ridge, Tennessee
14–15	International Union of Pure and Applied Chemistry, Washington, D. C.
16–21	British Institute of Metals (Autumn Meeting), by invitation of the Associazione Italiana di Metallurgia. Venice, September 16–20; Milan, September 21
17–22	International Conference on Nuclear Physics and the Physics of Fundamental Particles, University of Chicago Institute for Nuclear Studies, Chicago, Illinois
24–26	Conference on Administration of Research, University of Michigan, Ann Arbor, Michigan
24–29	Colloquium on Sensitive Emulsions and their Physical and Physical-Chemical Properties (Sponsored by University of Paris, Faculté des Sciences de Paris, and the Centre National de la Recherche Scientifique), Paris, France
25–28	American Roentgen Ray Society, Washington, D. C.