The new Western Electric 6167 cold cathode counting tube is the subject of an article in the *Bell Laboratories Record* of April 1953. The tube, operated in a simple circuit and requiring only one to three milliamperes, "counts" from one to ten, each electrode maintaining a signal until another input pulse transfers a glow discharge to the next electrode. An auxiliary anode may be used to provide an extra pulse when the tenth electrode is reached, although this reduces its normal 12,000 cycles per second frequency response to about 2000 cycles per second.

The January issue of *Reviews of Modern Physics* is devoted in its entirety to the papers and discussions presented at the Washington Conference on Magnetism held in September 1952 at the University of Maryland. Sixty-six papers on a variety of subjects in experimental and theoretical magnetism and related topics are included, covering much of the most recent work in the field.

Several special symposia were presented at the Boston meeting of the Optical Society held in October, 1952, where such topics as optics and nuclear theory, spectroscopy, physiological optics, computer applications, and unusual observations in the earth's atmosphere were discussed. Fifteen of the twenty-two symposia papers have been published in the April 1953 issue of the *Journal of the Optical Society of America* with contributions by Norbert Wiener, J. A. Hynek, Francis Bitter, and others included.

Instrumentation for Geophysical Exploration is the title of an extensive review article in the April 1953 issue of *The Review of Scientific Instruments*. Written by seven members of the Field Research Laboratories of the Magnolia Petroleum Company, the article is principally concerned with prospecting for commercial oil deposits. Seismic instruments, the gravity meter, electrical and radioactive well logging, and magnetic instruments are covered in some detail.

Liquid-metal heat exchangers and steam generators for use in nuclear power plants are discussed quantitatively in an article in the May issue of *Mechanical Engineering*. The authors, R. D. Brooks and A. L. Rosenblatt of the Knolls Atomic Power Laboratory, find that liquid sodium and NaK are suitable for such use to temperatures as high as 1500 F with proper precautions, with heat fluxes up to 150,000 Btu/hr/sq ft possible. A number of specific recommendations in the design of nuclear power plants making use of liquid-metal heat-exchange equipment are presented.

The "strong-focusing" method for increasing the energies of particle accelerators, publicly proposed in detail last year by a group of Brookhaven scientists (Courant, Livingston, and Snyder, *Phys. Rev.*, **88**, 1190, and J. P. Blewett, *Phys. Rev.*, **88**, 1197), had actually been suggested more than two years earlier by N. Christophiles in an unpublished manuscript prepared early in 1950, according to a letter by the Brookhaven group in the July 1st issue of *The Physical Review*. Noting that the Christophiles manuscript had been called to their attention after their papers were published, the Brookhaven scientists said that Christophiles had proposed an accelerator incorporating strong focusing and using a sinusoidal variation of the field gradient with azimuth rather than the stepwise variation considered at Brookhaven.

Equipment

Topsy just grew and Godiva is unclad, according to a Los Alamos description of two remote-control devices currently being used in assembling critical masses with various configurations of fissionable materials. Topsy, a vertical hydraulic ram designed to bring one piece of shielded material together with another in an overhead housing, is equipped with paraphernalia to permit operation with a just self-sustaining chain reaction and to provide for the insertion of neutron sources. Godiva, designed to measure the amount of unshielded material constituting a bare critical mass, brings three pieces of fissionable material together into a critical configuration. A TV system permits remote-control operation from a safe distance.

A new 100-kilovolt electron microscope made by the North American Philips Co. was demonstrated at the International Petroleum Exposition held at Tulsa, Oklahoma, in May. Entirely self-contained, the dimensions of the instrument are 5 x 3 x 4 feet and its weight is 1220 pounds. Screen magnification is continuously variable from 1000x to 60,000x, and a resolution of 50 angstroms or better is claimed. Information is available from the Research and Control Instruments Division, North American Philips Co., 750 South Fulton Avenue, Mt. Vernon, New York.

An interferometer that uses electron beams to produce interference fringes in much the same way as conventional optical interferometers use light beams has resulted from research on the wave properties of electrons at the National Bureau of Standards. The electron-beam interferometer, developed by L. Marton, J. Arol Simpson, and J. A. Suddeth, employes diffraction from an extremely thin crystal as a means for splitting and recombining an electron beam and uses an electron optical system for viewing the resulting interference phenomena. The instrument, which greatly extends the range of light interferometers used in the direct measurement of length, can be employed to measure gradients of magnetic and electrostatic fields (analogous to refractive indices in optical interferometry) and provides a means for obtaining additional information on the wave nature of the electron. Other suggested applications include studies of the energy levels in solids and an absolute determination of Planck's constant.

Grants and Fellowships

The National Research Council of Canada has granted 226 scholarships in science and engineering for 1953–54, twenty-four of which are for study abroad. Included are two scholarships for Canadian students at the University of North Carolina and one each at the

Kodak reports to laboratories on:

identifying solids by refractive index... a new cellulose acetate sheeting... high resolution plates... a roundup of materials for color photography

Refractive index liquids

In this day of polarography, x-ray spectrography, infrared spectrophotometry, mass spectrometry, nuclear magnetic resonance, etc., it may be considered primitive (among the excessively sophisticated) to identify a solid compound by immersing it in a liquid of matching refractive index to make it disappear without dissolving. *We* think it is not primitive at all but even elegant, in the scientific sense. On page 214 of the current catalog of Eastman Organic Chemicals there appears a list of 39 organic liquids with their refractive indices, ranging from *Methanol* at $n_D^{20} = 1.3289 \pm .0005$ to *Diiodomethane* at 1.7400. If you order them in lots of 10 or more, we can supply them in 25-cc glass-stoppered bottles. Since most of them are priced at 60¢ each in this size, you and we can, for as little as $6 plus postage, work out a deal on a set.

If you don't have a copy of "Eastman Organic Chemicals, List No. 38" from which to make your selection, write Eastman Organic Chemicals Department, Distillation Products Industries, Rochester 3, N. Y. (Division of Eastman Kodak Company).

Cellulose acetate sheeting

To the attention of those who quest for a flexible dielectric capable of maintaining its high transparency under prolonged chemical and thermal assault, we commend our new

Kodapak IV Sheet. Its substance is cast cellulose triacetate, a most durable thermoplastic. It is diaphanous stuff, of the proverbial crystal clarity, but we also make it in matte form. It is an excellent electrical insulator, has higher folding endurance and bursting strength than its predecessors (quantitative data on request). It is readily heat-embossed or drawn. It comes in thicknesses from .001″ to .010″. The thick gauges come in 20″ x 50″ and 25″ x 40″ sheets, and those below .003″ come in sheets of 25″ x 40″, 30″ x 40″, and 40″ x 40″. It is easy to seal by dielectric heating, but if you want to cement it without resorting to special cements, we suggest you first determine whether *Kodapak I Sheet* won't serve your purpose better.

Kodapak Sheet *is supplied by us only in quantities of 200 pounds and over. If you need only a little, we can refer you to a local distributor. Write Eastman Kodak Company, Cellulose Products Sales Division, Rochester 4, N. Y. (The answer, like all correspondence from Kodak, will come in an envelope with a Kodapak window.)*

High resolution

There are photographic materials in which high resolution is sacrificed for high sensitivity and others in which the capacity for reproducing microscopic detail is exaggerated at the expense of sensitivity. Blithely someone comes along and asks: why not both?

Kodak Spectroscopic Plates, Type 548-GH, compromise the conflict far in the direction of high resolution. With suitable optics they can resolve more than 1,000 lines per millimeter, and yet they are only about twenty times slower than the Kodak Lantern Slide Plate.

Now, what with manufacturers getting ideas for these wondrous plates, while reticle makers, microradiographers, and sundry other enthusiasts continue to cry for them, we remove these plates from the "Kodak Spectroscopic" classification and turn the job of manufacturing them over from the laboratory to the factory. We highly resolve that under their new name of *Kodak High Resolution Plates*, they will continue to provide high resolution.

Kodak High Resolution Plates *are sold by Kodak Industrial Dealers, but we suggest you write us first and we'll help you determine their suitability to the application you have in mind. Correspond directly with Eastman Kodak Company, Industrial Photographic Division, Rochester 4, N. Y.*

Color

A color photograph speaks more eloquently than one in black-and-white. Here, then, is a rundown of the products we offer for imparting this eloquence and the additional informational capacity it adds to photography.

Kodachrome Film everybody knows about. Comes in 16mm and 8mm for movie cameras and 35mm for still cameras. "You press the button, we do the rest"—our old slogan.

Kodacolor Film is for roll film cameras. We process to a negative without additional charge, and then from your Kodak dealer you order prints or enlargements. No projection, no holding up against the light.

Beyond these two that are familiar to millions of amateurs there is *Kodak Ektachrome Film.* It comes in roll and sheet film form, and you (or a local lab) convert it to a transparency. If you'd rather have a print to look *at*, we can make you a *Kodachrome Enlargement*, provided your original is 4″ x 5″ or less. If it's larger, we suggest a print by the *Kodak Dye Transfer Process.* This you can undertake yourself or leave to a commercial laboratory for a creation of smashing visual impact.

(If smashing visual impact is more important to you than strict objectivity, you can work the *Kodak Flexichrome Process.* This starts from any good black-and-white negative and allows you to assign the colors by hand.)

Finally, if you'll be wanting several duplicates at minimum cost, particularly of exhibition size and with the color brilliance so easily achieved in a transparency, make your original negative on *Kodak Ektacolor Film* and your duplicates on *Kodak Ektacolor Print Film.*

Your Kodak dealer sells all these items and also the Kodak Color Handbook *($4) that delves deeply into the details. Write Eastman Kodak Company, Rochester 4, N. Y. if you have any difficulty finding out what you want to know.*

Prices quoted are subject to change without notice.

This is one of a series of reports on the many products and services with which the Eastman Kodak Company and its *laboratories everywhere*

Kodak

Universities of Chicago, Delaware, Pennsylvania, and Wisconsin, and at the Massachusetts Institute of Technology.

Eastman Kodak Company has provided for fellowships for advanced study at seventeen colleges and universities throughout the country. To be awarded to students in their last year of study for the doctorate, ten of the fellowships are in chemistry, four in physics, and three in chemical engineering.

A Frederick Gardner Cottrell grant of $4962 has been awarded the University of Connecticut by the Research Corporation for research in low-temperature physics under the direction of C. A. Reynolds. Research Corporation was founded in 1912 by Cottrell, scientist and inventor of the electrical precipitator. Since that time, the corporation has distributed nearly $7 million in the form of grants in aid of basic scientific research. Its sources of funds are the manufacture of precipitation installations and, in recent years, the management of patents for institutions and individual inventors.

A million dollar grant has been made by the Ford Foundation to the University of Michigan to aid in the construction of a nuclear reactor for research. This will be the second privately-owned reactor in the country, the first being the one under construction at the University of North Carolina.

Research contracts granted since the first of the year by the Air Research and Development Command include projects at the following colleges and universities: McMaster University (H. E. Duckworth), atomic mass measurements; the University of Pennsylvania (B. R. Russell), effects of lattice defects upon the lattice constants of alkali halide crystals; California Institute of Technology (Fritz Zwicky), theoretical coordination of investigation of plasticity in crystals, and (D. S. Clark), experimental investigation of plasticity in crystals; Illinois Institute of Technology (Paul L. Copeland), surface changes caused by sliding and rolling friction; and Alfred University (R. C. Turnbull), study of basic mechanism of diffusion of metals into ceramic materials.

Industry

Burroughs Adding Machine Company has announced the establishment of an electronic instruments division in Philadelphia to produce a line of electronic laboratory apparatus and other special devices. The new division will also offer a scientific computation service, employing the Burroughs electronic digital computer and other computing equipment.

Nuclear-Chicago is the name that will be used by the Nuclear Instrument and Chemical Corporation of Chicago to identify itself in the future. Possible confusion with other companies having names similar to the full title of Nuclear-Chicago is the reason for this change, according to James A. Schoke, president of the firm.

A new AEC laboratory for the study of uranium recovery from ores has been established in Winchester, Massachusetts, and is to be operated by the American Cyanamid Company. The work of the laboratory was begun in 1945 at the Watertown Arsenal under a contract with MIT, and the increasing scale of the work and its essentially commercial nature led to the transfer of responsibility for its operation to American Cyanamid.

A European subsidiary of G. M. Giannini and Company, Inc., manufacturers of components for servomechanisms and computers, has been established in Milan, Italy, to provide for the distribution and servicing of the Company's products as well as to maintain a research laboratory and experimental shop for developing new instruments of European origin.

Vivian Leroy Chrisler, sixty-eight, died on March 10th at his home in Virginia. Mr. Chrisler had been head physicist at the David Taylor Model Basin in Maryland since 1948. He came to the Model Basin in 1943 after having served for ten years with the National Bureau of Standards as assistant and as associate physicist. An acoustical expert, Mr. Chrisler had been an acoustical consultant to the architect of the U. S. Capitol. A Fellow of both the Acoustical Society of America (vice-president from 1936 to 1938) and the American Physical Society, he was awarded the Distinguished Civilian Service Award in 1946.

Ernest J. Jones died on June 16th at the age of fifty-five. Dr. Jones, a research physicist in government laboratories for twenty-three years, did research in the field of negative and positive ion behavior at the National Bureau of Standards where he served from 1946 until his retirement in 1951. Born in Clement, North Dakota, Dr. Jones attended the Universities of Minnesota and California, receiving his PhD degree from the former school. He was a Fellow of the American Physical Society and an associate member of the Optical Society of America.

Milton S. Van Dusen, for 35 years a member of the staff of the National Bureau of Standards, died on May 20th after a brief illness. Dr. Van Dusen joined the NBS heat and power division after his graduation from Syracuse University in 1913. He received his PhD in physics at Johns Hopkins University in 1921, was chief of the heat transfer section from 1925 to 1941, and from 1942 to 1946 served as chief of the pyrometry section. He retired from active service in 1948. Among his scientific contributions were original developments in the measurement of temperature, and especially in the measurement of the thermal conductivity of insulators and of metals. Dr. Van Dusen was a member of the American Physical Society, the Washington Philosophical Society, and the Washington Academy of Sciences.