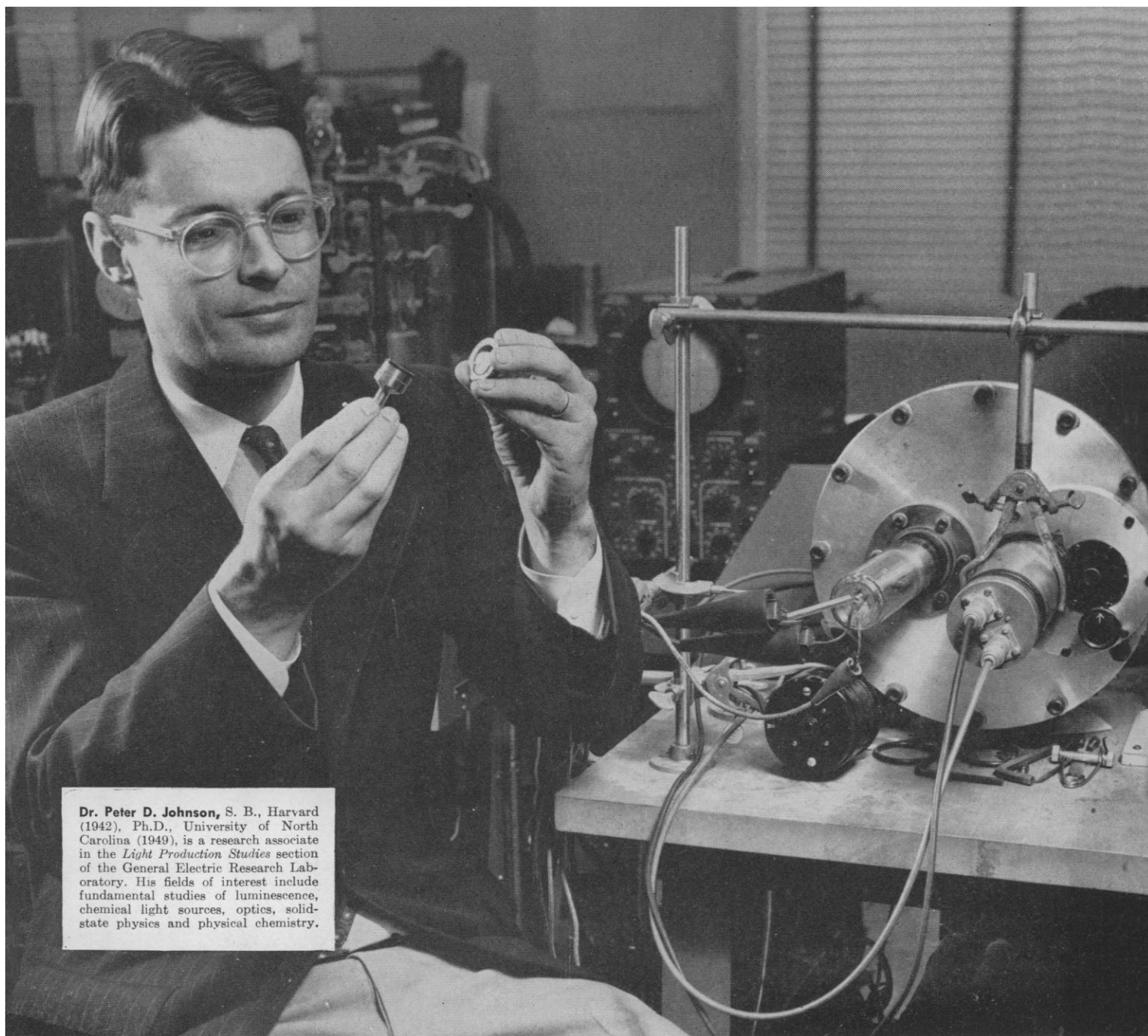


SCIENCE

7 September 1956

Volume 124, Number 3219

Editorial	Research and Freedom	427
Articles	Fact and Artifact in the Biology of Schizophrenia: <i>M. K. Horwitt</i>	429
	Physical Mechanism of Bacteriophage Injection: <i>A. Ore</i> and <i>E. Pollard</i>	430
	Science and Freedom: <i>F. Dyson</i>	432
	L. Reiner, Chemist and Medical Scientist: <i>M. Green</i>	434
News of Science	Urine of Anthropoid Apes; Trailmarkers for Arctic; Tarnishing of Silver Mirrors; New Adenovirus Vaccine; Child Care Council; NSF Appropriation; Mist Control Made Easy; Stratosphere Laboratory; News Briefs; Scientists in the News; Recent Deaths; Education; Grants, Fellowships, and Awards; In the Laboratories; Miscellaneous	435
Reports	Congenital Malformations Produced by Amniotic-Sac Puncture: <i>D. G. Trasler, B. E. Walker, F. C. Fraser</i>	439
	Production of Increased Circulating Hemoglobin in Mice: <i>G. Keighley, H. Borsook, A. Graybiel</i>	439
	Effect of Tranquilizing Drugs on Fighting Response of Siamese Fighting Fish: <i>E. J. Walaszek</i> and <i>L. G. Abood</i>	440
	Extracellular Deoxyribonucleic Acid of Bacteria and a Deoxyribonuclease Inhibitor: <i>B. W. Catlin</i>	441
	Second Pain: Fact or Artifact?: <i>M. H. Jones</i>	442
	Marine Borer Attack on Lead Cable Sheath: <i>L. R. Snoke</i> and <i>A. P. Richards</i>	443
Book Reviews	<i>Grasslands of the Great Plains; Psychoanalysis and Psychotherapy; Bacterial Anatomy; Ultrasonic Engineering with Particular Reference to High Power Applications; The Myology of the Whooping Crane, Grus americana; The Biology of Senescence; Miscellaneous Publications</i>	444
Meetings and Societies	Malaria; Physics Teachers; Meeting Notes; Society Elections; Forthcoming Events	447
	Equipment News	455



Dr. Peter D. Johnson, S. B., Harvard (1942), Ph.D., University of North Carolina (1949), is a research associate in the *Light Production Studies* section of the General Electric Research Laboratory. His fields of interest include fundamental studies of luminescence, chemical light sources, optics, solid-state physics and physical chemistry.

Seeking new facts about phosphors

Dr. Peter D. Johnson of General Electric explores activators in phosphors to improve tomorrow's lighting and television

Efficient light output—in fluorescent lamps, television screens, and electroluminescent panels—is an obvious goal of phosphor research. Achieving “more lumens per watt,” however, is only part of the problem. Scientists also seek phosphors with rapid response, proper color characteristics, and other properties—and they know that these properties are controlled by intentionally introduced impurities called *activators*.

At the General Electric Research Laboratory, Dr. Peter D. Johnson has devised a variety of decisive experiments for evaluating the theories of how activators work. Dr. Johnson and his associates have achieved new understanding of the factors controlling efficiency in

electroluminescence, have obtained basic facts about the phosphors used in present-day commercial lamps, and have been able to design phosphors for such special applications as color television.

As we see it, providing scientists with freedom and incentive to extend the frontiers of knowledge is fundamental to the creation of better products, better jobs, and more opportunities for human satisfactions.

Progress Is Our Most Important Product

GENERAL  ELECTRIC

Kodak reports to laboratories on:

how come we tout another manufacturer's camera . . . solvency and open windows from 2 to 16 μ . . . coloring a mental image

Out on the ghostly curve

If called upon to explain how come the world's best known camera manufacturer spends money in this space to tout another manufacturer's camera, we would argue thus:

The new "Graphic 70" is a military combat camera now available to whoever can spend \$1850. Doubtless \$1850 hand-held still cameras are harder to sell to civilians than \$1850 automobiles. On the other hand, Graflex, Inc., has built quite a camera there and has done so on a basis more solid than to satisfy an occasional whim for conspicuous consumption. The principle is that when a man is trying to get some useful pictures at grave risk to his life, a thousand dollars one way or the other is a small price to pay for mechanical and optical refinements that may boost his chance of success a percent or two. In non-military affairs, where calculations happily involve only money instead of lives, situations are also encountered where good sense dictates a position very far out along the ghostly curve connecting quality of equipment with probability of success.

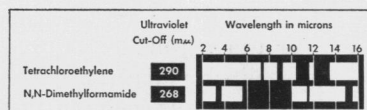
So Graflex builds a 5-pound camera to use our new faster, finer-grained films in the 70mm width that requires little enlargement. The most elaborate precautions are taken in controlling the geometrical relationship between the film and the lens. This is worth doing because of the lenses used on the "Graphic 70." They are the result of taking a generation to build up a strong organization in optical research, design, and manufacturing, then handing it the assignment to produce a 4-inch, an 8-inch, and a 2½-inch lens that will do the best job of putting down a 56mm by 72mm image that the current state of knowledge in optics permits.

And what does it say on the lenses? It says *Kodak Ektar*.

Those interested in the "Graphic 70" camera can learn more by writing Graflex, Inc., Consumer Correspondence Department, Rochester 8, N. Y. Those who wish they had an optical organization like ours to whom to hand design or manufacturing problems can write to Eastman Kodak Company, Apparatus & Optical Division, Rochester 4, N. Y.

Responsibility of the house

What (we hope) makes a liter of *Tetrachloroethylene* (Eastman S2418) or *N,N-Dimethylformamide* (Eastman S5870) worth \$15.10 or \$5.15 respectively is our word as a reputable house that these two new Spectro Solvents have the following open infrared windows and ultraviolet cut-offs:



The only reason why a person capable of doing infrared or ultraviolet spectrophotometric analysis shouldn't check and if necessary purify his own solvents is an economic one. If he cannot employ his time and talents at a higher level, perhaps his setup should be checked for something wrong.

Tetrachloroethylene (stabilized with *Thymol*) is added to our list of 15 Eastman Spectro Solvents because it closes three gaps—6.5-6.8 μ , 7.9-8.3 μ , and 13.4-14.2 μ —in the infrared spectrum that is available to the worker who needs the solvency of chlorinated hydrocarbons. From 12.0 to 13.4 μ , chlorinated-hydrocarbon darkness still prevails (but *Bromoform* (Eastman S45) suffers from little of this blackout).

N,N-Dimethylformamide is added because some organic chemists have regarded it from the days of youth as something of a universal solvent and would fain continue so even after involving themselves in the newer-fangled optical chemistry. This amide is even a good solvent for nylon and any other amide-type plastics you may have around. It is definitely more polar than benzene or acetone and may not be a bad bet for dissolving amides from protein hydrolysates. The low molecular weight helps build up the solute concentration percentage.

Free for the asking from Distillation Products Industries, Eastman Organic Chemicals Department, Rochester 3, N. Y., is a chart showing the overlapping infrared windows of all the Eastman Spectro Solvents. (From 2 to 16 μ not a sliver has evaded overlapping.)

"I have a photo here"

You will find within the next couple of years that the mental image created by the word "photograph" will have altered. To think of a photograph as a piece of paper bearing a representation in tones of black, white, and grey will be like calling a man who flies an airplane an aviator or picturing a professor as bearded—perfectly proper but no longer general. The photographs that you file as records of work and observations and the photographs you pull out of your billfold at post-prandial bull sessions will, in general, be in full color.

Here is what has been happening:

1) This year a new *Kodacolor Film* came out. It is as sensitive as the popular variety of black-and-white snapshotting film used to be not so long ago. It works equally well for daylight and clear flash without filters. It gives negatives from which can be made color prints and enlargements that you look at, not through.

2) There is now a *Kodak Color Print Material, Type C*. Prints made on it from Kodacolor negatives have the same color quality as used to be obtained only through vastly more involved techniques.

3) Processing chemicals for both the film and the print material are available in kits from all Kodak dealers. Quality of results tends to run commensurate with the degrees of care, zeal, and skill generated by the worker's needs or the hobbyist's self-fulfillment urge.

4) The fellow who, during the Great Depression, had some "Films Developed, Printed, and Enlarged" signs printed and placed in drug stores around town no longer operates from his kitchen. For the convenience of those who would just as soon not do it themselves, he has gone into color. To compete on both quality and price he finds it wise to own *Kodak Color Densitometers* and the like. His plant manager comes to Rochester for brush-up courses. He has met and mastered a complex technology, and he is determined to convince you that its product has it all over the monochromatic view of things.

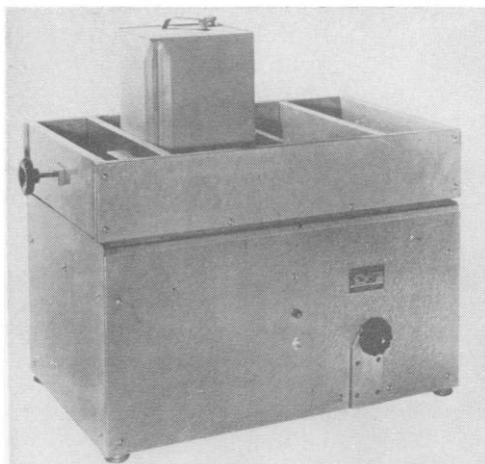
Prices quoted are subject to change without notice.

Kodak
TRADE MARK

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

New

The RECIPRO-GLIDE MULTI-PURPOSE SHAKER



**Heavy Duty MODEL R-7
Extra Heavy Duty MODEL R-8**

An entirely new design featuring:

Reciprocating Motion • Continuously variable speed
Interchangeable box carrier and flask platforms
Clamps for Erlenmeyer Flasks 50 ml. to 2 liters
Large capacity • Quiet Action • Rugged construction

Write for bulletin R-7



NEW BRUNSWICK SCIENTIFIC CO.

PRECISION LABORATORY APPARATUS

P. O. BOX 606 • NEW BRUNSWICK, N. J.

It's **WINTHROP** *for* **Biochemicals**

- Acetylcholinesterase
- Amino Acids
- Arterenol
- Dihydrocholesterol
- Epinephrine
- Gastric Mucin
- Indole-3-Acetic Acid
- Pepsin

Winthrop
LABORATORIES

Special Chemicals Department
1450 Broadway, New York 18, N.Y.

for chromatography . . .

NEW RINCO

2-Way

FRACTION COLLECTOR

**Automatically Collects by Either
"Timed-Flow" or "Volumetric" Method**

This precision apparatus is a valuable aid to accurate fraction measurement and collection in chromatographic analysis. Operated by a heavy-duty capacitor motor, the RINCO Fraction Collector provides completely automatic operation for any desired period. NO MERCURY, CHEMICALS, OR ELECTRIC CURRENT COME IN CONTACT WITH YOUR SAMPLE. When utmost accuracy is required, fractions are measured with manometer assembly, as in diagram.

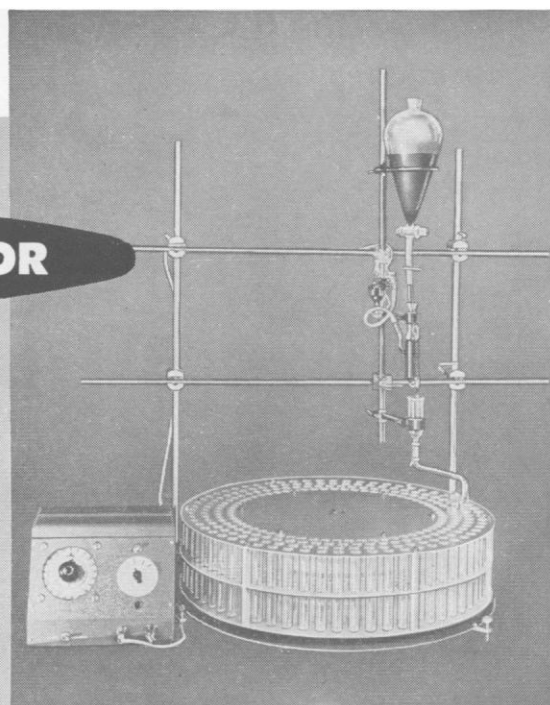
**3 Receiver Tables Available —
Interchangeable with One Indexer**

24" Diameter—holds 237 tubes (18 mm. x 150 mm.)

18" Diameter—holds 60 tubes (25 and 29 mm.)

14" Diameter—holds 120 tubes (1 to 5 ml, 10 ml, 20 ml, and 50 ml.)

Complete Units, with a variety of attachments and supplementary equipment,
from \$265.50 to \$433.50



**For Routine Work or
Critical Determinations**

For complete details, write for Bulletin No. 755 today!

SCHAAR

AND COMPANY

Complete Laboratory Equipment

754 West Lexington Street • Chicago 7, Illinois.

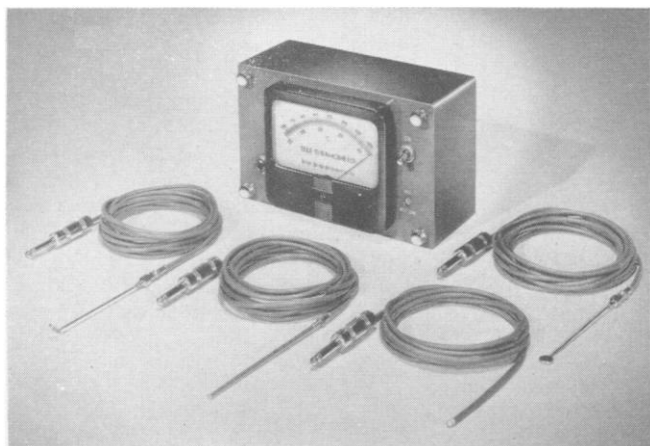
PHOTOVOLT Line-Operated Multiplier FLUORESCENCE METER Mod. 540



- High-sensitivity for measurement of low concentrations (full-scale setting for 0.001 microgram quinine sulphate)
- Micro-fluorimetry with liquid volumes as low as 1 ml
- Low blank readings, strict linearity of instrument response
- Universally applicable due to great variety of available filters, sample holders, adapters and other accessories
- Interference filters for high specificity of results and for determining spectral distribution of the fluorescent light
- High-sensitivity nephelometry for low degrees of turbidities
- Fluorescence evaluation of powders, pastes, slurries, and solids, also for spot-tests on filter paper without elution

Write for Bulletin #392 to

PHOTOVOLT CORP.
95 Madison Ave. New York 16, N. Y.



FOR THERMISTOR THERMOMETRY, a new technique offering extremely high sensitivity at low cost, great versatility, remote and multi-point indications:

TELE-THERMOMETER

with fully interchangeable thermistor probes

- Many direct-reading temperature ranges from -70 to $+100^{\circ}\text{C}$
- Variety of general and special purpose probes
- Custom instruments to solve special problems

PHOTO ABOVE: Single channel unit with several interchangeable probes

WRITE FOR COMPLETE DATA AND PRICES ON ALL OUR INSTRUMENTS: thermistor thermometers and temperature controllers . . . cardiostimulators . . . dermohmmeters . . . oxygen polarographs . . . custom instrumentation



THE YELLOW SPRINGS INSTRUMENT COMPANY, INC.

POST OFFICE BOX 106-S
YELLOW SPRINGS OHIO

7 SEPTEMBER 1956



New Nitralyzer

- **High Accuracy — Within 0.2%**
- **Extremely Rapid Response**
- **Completely Portable**

This compact unit offers continuous, rapid, accurate analyses of gaseous nitrogen without the use of absorbent chemicals, sample containers or complex glass systems. The sampling head is separately contained to permit use as a remote probe. This feature makes the Nitralyzer especially well-adapted for use in pulmonary function studies.

Designed to allow complete portability, this entire unit, complete with vacuum pump, vacuum gauge and photocell in a remote unit, fits easily on the smallest laboratory cart. Gaseous nitrogen analyses may therefore be made at any point at which 110 volt A.C. power is available. This instrument has six built-in ranges: 0-100%, 0-20%, 20-60%, 60-100%, 10-30% and 30-50% and special concentration ranges are available. Once the instrument has been zeroed and the gain set for a standard gas, any of the other ranges may be used at any time by simply changing the range selector switch. This feature allows the accurate and rapid monitoring of even the most radical fluctuations in concentration.

For those desiring a documentary record of analyses, the Nitralyzer is provided with suitable provisions for the accommodation of a recording attachment.

#42240 Nitralyzer (CEDCO) is shipped complete with vacuum pump, vacuum gauge, ionization chamber and photocell in separate remote unit, rubber tubing and connectors. Each \$1,425.00

For information request Bulletin #20-104.



ALOE SCIENTIFIC
DIVISION OF A. S. ALOE CO.

5655 Kingsbury, St. Louis 12, Mo.

LOS ANGELES • SAN FRANCISCO • SEATTLE
DENVER • MINNEAPOLIS • KANSAS CITY
DALLAS • NEW ORLEANS • ATLANTA
PITTSBURGH • WASHINGTON, D. C. • MIAMI